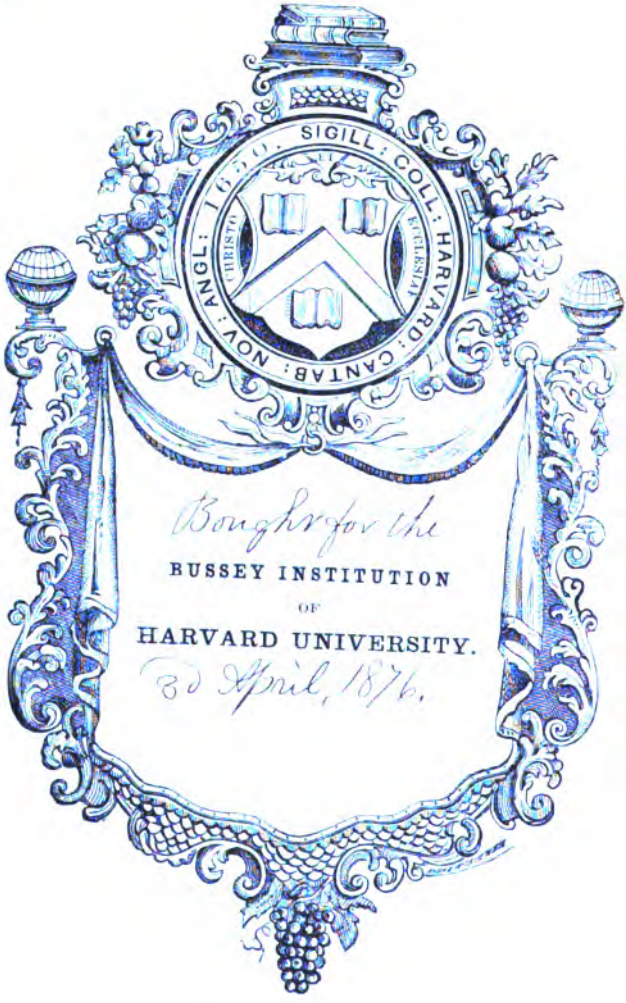

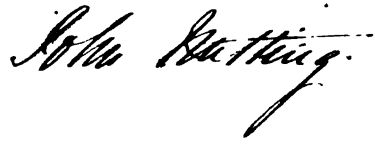

THE

# VETERINARY RECORD,

AND

## TRANSACTIONS

OF THE

# VETERINARY MEDICAL ASSOCIATION.

EDITED BY

PROFESSORS SPOONER, SIMONDS, AND MORTON,

ROYAL VETERINARY COLLEGE.

VOLUME III.

ILLUSTRATED BY ENGRAVINGS AND WOODCUTS.

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

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THE

# VETERINARY RECORD, &c.

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## ROYAL VETERINARY COLLEGE.

The Medical Session commenced at the above Institution on Monday, October 12th, 1846. The Introductory Address was delivered by Professor Sewell.

The Professor having expressed gratification at seeing so many friends around him, proceeded to remark on the alteration made in the period for commencing the lectures, which, he believed, would prove beneficial by allowing a longer time to students for dissection, and also enabling them during the summer months to be practically engaged in the acquirement of professional knowledge with their preceptors. It was a source of satisfaction to him to know that within the walls of the College were now taught all the divisions of study necessary to the perfecting of the education of the veterinary surgeon; and, the curriculum being thus far complete, he felt assured that but one desire would actuate both the teacher and the taught,—namely, that of advancing the veterinary profession by the establishing of sound principles, and the inculcation of a spirit of oneness and of amity.

In the earlier ages the practice of medicine was necessarily rude and empirical; and traditions were handed down from one practitioner to another, these having no foundation beyond that of benefit having once resulted from the adoption of a particular course, or the employment of a certain agent. And probably, before the flood, diseases were not so general as afterwards; the altered condition of the earth favouring their development.

The practice of veterinary medicine was, doubtlessly, coeval with that of the human, both having their origin in similar causes. Moreover, "flocks and herds," we are told, constituted the riches of the inhabitants of the East during many generations, the horse

being used only for parade or pleasure, and in war; yet, when he became more domesticated, and his enduring powers were better appreciated, many diseases shewed themselves in him from which previously he had been altogether exempt.

The history of China, it has been before stated by me, has records of the employment of chemical compounds from a very early period. But although these are at the present day viewed as chemicals, they were doubtlessly not formed by processes of art, but were natural productions; such are Glauber's salts, natron, and saltpetre. The remains of ancient monuments, too, would lead us to conclude that excellent mechanics and artisans then existed; and it is but fair to infer that they formed instruments to be employed in surgical operations, by which they rivalled the untutored Esquimaux, who, after having divided with a fish-bone the skin and muscles of an arm or a leg, places the limb in a crevice in the ice, and snaps the bone in two, staunching the blood with burning moss in lieu of moxa.

The wealth of a nation conduces to the prevalence of quackery, and it is now as rife as ever. During his time he had witnessed the employment of "earth balls," "metallic tractors," and "medicated vapours." And we have now Hydropathy, Homœopathy, and Mesmerism: these, too, will by and by cease to be fashionable, and pass away, giving place to other modes of cure, fancied or real.

The earliest practitioner of human medicine of whom we have any authentic account was Hippocrates. He practised in Greece, and dissected apes and quadrupeds; shewing how thus early anatomy was considered as the basis of medical science.

Then arose two schools, the one opposed to the other as to the remedies to be employed in the cure of diseases. Galen and his disciples advocated the use of vegetable substances, which are certainly not always to be relied on, since their properties will vary with climate, season, and mode of culture. In chemical compounds unquestionably we have far more energetic agents, yet the influence of many of these on the tissues, we are, even at the present day, not fully acquainted with; and therefore great caution is requisite in their administration, and an intimate knowledge of the governing laws of chemistry called for.

Virgil, the celebrated poet, may be said to have first practised

the veterinary art; and this he did in the stables of Cæsar Augustus: he was also an excellent meteorologist, and carefully noticed the barometric and thermometric changes that took place in the atmosphere. And this should be done now; since the advantage resulting from an application of scientific principles may be seen in the erection of stables, and their proper ventilation; for before this was properly understood, the numbers of animals that were destroyed or died from diseases engendered by foul air in stables almost staggers our belief at the present day. This is one benefit that has followed from the establishing of veterinary schools for the instruction of educated young men, both in this country and the continent, although it is true that we are indebted to France for having set the example.

A succinct history of veterinary schools was then given by the Professor, embracing the origin of the Royal Veterinary College; and he proceeded to remark on the necessity of, and advantages derivable from, a division of study, and the student giving to each his particular attention. A general outline of anatomy would be given by the appointed teacher within the walls of the theatre; but the dissecting-room must not be neglected, since there the pupil would be rendered even more familiar with the structure of the frame, by handling it himself, and instituting the necessary investigations. Physiology, or the function of parts, would next occupy his attention. The eye, the ear, the lungs, and other organs, would be passed in review; and the uses of bones, ligaments, muscles, and nerves, pointed out, as well as the changes that take place in them by disease, constituting pathology.

In the performance of many operations the first named divisions are imperatively demanded. Thus, in cases of chronic lameness, when neurotomy is had recourse to, were the nerve simply divided, it would re-unite in about two months, and the lameness, in all probability, return; but by excising a portion of the nerve, the horse is rendered fit for work for many years after.

We think that some progress, and some improvement too, have been made in veterinary science since the Veterinary College was established in England. This mode of performing the operation of neurotomy we might, perhaps, be permitted to refer to as a proof: and there are many other lamenesses than that arising from what is called the "navicular disease," for which it has been advantageously had recourse to. Glanders, a disease at one time

so prevalent and so fatal, is now far less frequently met with, and certainly is not incurable in its earlier stages, especially that form designated chronic glanders. The plan successfully adopted here, of late, has been to trephine the frontal and maxillary sinuses, and to pass a seton through from one to the other, so as to evacuate the cavities; conjoining the use of stimulating injections with the internal administration of the sulphate of copper, which acts as an astringent tonic. And even in the acute form, when ulceration of the septum nasi has taken place, this agent, when given in large and repeated doses, has occasionally proved the means of bringing about a cure; but, when the turbinated bones become involved, and the lungs are extensively diseased, this result is always doubtful.

Of many maladies, different, and we hope more correct, views of their nature are now taken. Thus, at one time, "roaring" was made to depend alone upon a band of effused lymph which stretched across the trachea. But this, certainly, is not the only cause. A distorted state of the rings of the trachea frequently gives rise to it; this being induced by horses being tightly reined in. Or tumours pressing on this tube may cause it; and also a paralyzed state of the laryngeal muscles.

"Stringhalt" has been found to be the result of a diseased state of the muscles of the thigh and the nerves thereof;—"shivering," an affection of the stifle-joint, associated with a luxation of the patella;—"kumree," a peculiar disease of the loins, attacking horses in India, is now known to be paralysis, arising from an effusion of blood on the spinal cord; illustrative of which are those beautiful drawings by Mr. Ashton, V.S. of the Hon. East India Company's service*;—"rabies," a fatal disease in all animals, is essentially an affection of the meninges of the brain and its continuation, the spinal marrow, arising from the blood being empoisoned, and by the withdrawal or entire alteration of this fluid is the only hope we have of effecting a cure†.

With respect to operations, these are now performed in accord-

* We hope, in a future Number, to avail ourselves of these, accompanied with a paper on the disease.

† We are indebted to Professor Sewell for the drawing that accompanies the present Number of THE RECORD, with the history of the case in which the morbid changes occurred; and we have great pleasure in announcing that it is his intention shortly to publish his views on this direful malady, illustrated with coloured engravings.

ance with true principles of surgery; and sometimes we have recourse to such as the practitioner of human medicine hesitates to perform, being fearful of the consequences; for instance, œsophagotomy and tracheotomy. The extraction of calculous concretions from the bladder has become a common operation, and subcutaneous periosteotomy is constantly performed to relieve the lameness attendant on splents and spavins; care being taken, in the last-named affection, that the capsule of the joint be not wounded, while the subsequent and long-continued use of a seton will be required to perfect the cure.

If we turn from the horse to our other domesticated animals, here, too, it will be seen that some improvements—the result of the onward march—have been effected. The pustular disease, still occasionally seen, but once so prevalent among ruminants, readily yielded to the remedies employed; but in pleuro-pneumonia, which is now so general in the same class of animals, we have been less successful in our treatment; this, in great part, arises from the cases not being placed under the care of the veterinary surgeon sufficiently early. The cause of these epizootics appears to be occult and altogether inexplicable; but he would suggest that they had their origin in the changes that are at the present time going on within the bowels of the earth, whence a constant disengagement of gaseous matters takes place from the earth's surface in the form of mephitic exhalations; and this may be said to be now existent all over the world. Cattle in South America, for years past, have been diseased as they now are in Europe; and in the West Indies a similar affection has shewn itself.

Nor has the vegetable kingdom escaped. The reason why the herbivora should be first attacked may be assigned to the miasm being more energetic near the ground, to which their nostrils are continually brought while collecting of food, so that they are compelled to inhale it. But the same law we find to obtain with the human subject. Thus, during the prevalence of a fever, not long since, in Glasgow, those inhabiting the basement stories were first and most severely affected, while those who lived on the higher floors experienced, comparatively, slight attacks.

In certain localities, however, this exudation from the surface of the earth does not take place, but, instead thereof, volcanoes burst forth, by which the like poisonous gases become diffused in

the atmosphere. It is thus that Nature is relieved; and unless this be afforded by some such means, chaotic confusion would again take place, from a disruption or a breaking up of the crust of the earth. These effects may appear to us to be "partial evils;" but they, nevertheless, are productive of "universal good."

The lecturer closed by adverting to the several veterinary authors, and offering some general advice to the students as to their plan of study, associations, &c.; feeling convinced that their future conduct would be much influenced by the bend or inclination given to the mind while at the College; and that, although youth may be at times too sanguine, still by circumspection of conduct, with probity and industry, a reward would assuredly be reaped.

Especially would he advise them to pay much attention to the practice of the Infirmary, by which an inculcation of those principles is effected that, in after-life, prove of paramount worth. To morbid anatomy some portion of time should also be devoted; and the knackers' yards would often impart an instructive lesson, and, at the same time, enable them to learn to perform many operations, and become expert in the use of the surgeon's knife. But he could not too strongly deprecate operations performed on living animals. No good resulted from the act, and the public feeling was wisely against it. Torturing experiments on animals did but debase the man that resorted to them.

Nor must the principles of the science of chemistry be neglected by them, as their application would prevent the practitioner committing many errors in the combination of the curative or therapeutic agents he may employ; and also enable him to counteract the effects of poisons, and to demonstrate their existence after death.

Nor did he apprehend any thing but good to follow from that which seemed to alarm some members of the veterinary profession, namely, the dissemination of knowledge by means of agricultural schools and colleges. They had his hearty support, since he was convinced the principles there taught would cause the veterinary surgeon who was thoroughly acquainted with his profession to be more sought after and consulted during the existence of epizootic and other diseases, both among horses and cattle, the agriculturist finding that he alone is capable of successfully combatting with disease who has received an education based on science; and thus the

farrier and the cowleech would be effectually driven from the station which they have so long usurped. Indeed, it would not surprise him if each county, in the course of a short time, possessed its separate and independent school for the instruction of students in agriculture, a division of science that has been too long neglected in this country.

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## COMMUNICATIONS AND EXTRACTS.

### CASE OF RABIES IN THE HORSE.

*By Professor* SEWELL.

*(Illustrated by a coloured engraving.)*

A PAIR of coach-horses were severely bitten in the hind legs during the night by a dog that was kept in the stable with them, and which proved to be rabid. He soon after made his escape, and bit several other animals, and also two individuals. On the following day the two horses were sent to the Veterinary College. I immediately excised the wounded parts, and freely applied the actual cautery subsequently; but the wounds proved tardy in healing.

As I had not known a case of rabies to occur in less than two weeks after the infliction of the bite, nor at a later period than nine weeks (with one exception and that of a doubtful kind), and these animals appearing in good health, they were discharged from the infirmary at the end of the ninth week. One of them, however, was re-admitted eight days afterwards, rabid.

The usual symptoms were manifested, except ferociousness, and a disposition to bite or strike those persons who approached him, or to do any mischief, which I have observed always attends ordinary cases of rabies in the horse. In the absence of these generally predominant symptoms, the animal had the additional and peculiar one of kicking alternately with the injured legs, as if he dreaded, or at times really felt, the attacks of the dog at his heels; at other times he stamped violently, as horses usually do to dislodge reptiles or insects, such as adders, snakes, wasps, &c. Another peculiarity was the exquisitely sensitive state of the wounded limbs, the touching of a single hair at any part producing an immediate convulsive motion: at the same time the fore extremities were in

a state bordering on paralysis, and were altogether incapable of motion during the last few hours of the animal's existence.

These unusual symptoms continued with slight intermissions during the protracted period of four days, while the disease in ordinary cases proves fatal in two days, and frequently in a few hours.

The *post-mortem examination* exhibited the following lesions:—the skin of the bitten legs easily peeled off; and about two feet above the wounds the cellular tissue was filled with a dark brown effused fluid, having no odour, and resembling blood in a very decomposed state. The nerves of those limbs were in a high state of inflammation, which had extended to the spinal marrow, occupying its central portion principally, as far as the dorsal vertebræ. The dorsal with some of the cervical portion of the medulla spinalis was also softer than usual, and on the medulla oblongata and part of the cerebellum was a fluid similar to that found in the cellular tissue of the hind legs, and which fluid, when mixed with water or spirits of wine, gave to it a turbid appearance, resembling brown coloured pigment.

The other horse, I was informed, was attacked with similar symptoms about the same time; and the proprietor had him destroyed, unfortunately, without any examination either before or after death.

This case shews in a very marked manner the empoisoned state of the blood in rabies canina; and, as the animal lived longer than is generally the case, and the most usual violent symptom—namely, ungovernable fits of ferocity—was absent, these deviations may be ascribed to the poison not being completely absorbed before the bitten parts were excised; but had the operation been delayed a few hours longer, or until the following day, the disease, in all probability, would have caused a more speedy and violent death, such as I have observed in several other instances occurring both in horses and ruminants. The brown extravasated fluid appears to be blood decomposed by the peculiar poison of rabies, which, by Nature's efforts to eject it from the vascular system, becomes effused into the cellular tissue of the legs, and on the surfaces of the brain and spinal cord. And this suggests, as a remedy for rabies, the transfusion of healthy blood into an animal when thus affected; having first drawn off as much of the diseased blood as he will bear, and then injecting about half the quantity taken away, or just as

much as will suffice to keep up the vital functions. Other fluids might be tried on an emergency, as tepid milk, whey, or even water, the temperature of which should not exceed 100°.

The injection of tepid water in one severe case of tetanus and locked jaw proved most decidedly efficacious in removing all the symptoms in ten minutes, and it also excited active purgation. It likewise relieved another case in less time than this. I therefore consider it worthy of trial in rabies, and hope it will not be lost sight of by the members of the profession.

In rabies it is evident the poison must be rendered innoxious by dilution or by neutralization, and this has never as yet been accomplished by any internal remedy employed, or by the absorption of external applications. Almost every article of the materia medica has been tried during more than 2000 years, and that without one successful case resulting. Had one only occurred, a repetition of the remedy, it might fairly be expected, would have proved its usefulness, or otherwise.

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## ARISTOTLE ON THE DISEASES OF DOMESTIC QUADRUPEDS;

*Translated from the eighth Book of his "History of Animals," by* ALFRED TULK, *M.R.C.S.E., and designed as an Appendix to the allusion made concerning that subject at* p. 390, vol. ii, *of the "Veterinary Record."*

AMONG quadrupeds, Pigs have to contend with three diseases, of which one is called βεράγχος, angina or quinsy, and in this the parts about the jaws and throat are those principally inflamed; it occurs also in other parts of the body, for the foot is frequently attacked, and sometimes the ear. The part becomes putrid or gangrenous, retaining the disease until it has reached the lung, when the part dies and the disease increases rapidly. The animal eats nothing when attacked, however slightly, by the malady; and the swineherds, when they perceive that the disease is feeble in character, can cure it, though by no other means than entire excision of the part affected. There are two other diseases, both of which are called χοῖνιγα, struma or evil. Of these one

consists of pain and heaviness in the head, and many individuals are attacked with it; in the other, the belly is lax and disturbed, and this indeed appears to be incurable; but in the former assistance is rendered by applying wine to the nostrils and injecting them with wine; yet this disease also is difficult to be got rid of, for the animal is killed by it in three or four days. Pigs are chiefly attacked by angina or sore-throat when the summer crops have proved abundant, and they have become very fat. The remedies are the administration, internally, of mulberries, and ablution in large and warm baths, with scarification of the under surface of the tongue. Pigs are χαλαζώδεις, i. e. measly, when the flesh is soft both around the legs, neck and shoulders, parts in which the tubercles are produced in the greatest abundance. Now, if the animal has few of them, the flesh is sweeter to the taste; but if many, it becomes very moist and insipid. The indications of measles are to be derived from the lower surface of the tongue, where the tubercles are most apparent, and from the hairs, when plucked from the mane, appearing bloody at their root. Besides this, measly pigs are not able to support themselves on their hind legs. They are not affected by the disease during the period of sucking. Measles are exterminated by *tiphe*, and this is useful for the purposes of nutrition. Pigs are fattened and nourished best by beans and figs, but the chief thing is not to give them simple food, but to vary it; for the food being changed is agreeable to them as to other animals, and, at the same time, it is said that the flesh is rendered tumid and fat by the food. Acorns are readily eaten, but they make the flesh moist; and if pregnant sows eat much of them they abort like sheep, for it is more manifest that sheep suffer this from eating acorns. The pig alone, of the animals known to us, is affected with measles.

Dogs suffer from three diseases, which are called rabies, cynanche, and podagra: of these, rabies makes them mad, and all animals bitten by them turn mad, with the exception of man. The disease kills dogs and any other animals they may have bitten, except man. Cynanche also kills dogs, and few escape from the podagra. Rabies seizes also upon camels. Elephants are said to be free from the other maladies, but to be troubled with flatulency.

Gregarious cattle are infested with two diseases, one of which is called podagra or foot-rot, the other struma or evil. In the former the feet swell, but they do not die or shed their hoofs. They get better by having the horny parts smeared with hot pitch; but when afflicted with struma, the breathing becomes hot and frequent; and what fever is in man, that is the κρᾶνος in oxen. A symptom of the disease is depression of the ears and inability to eat. The patients die rapidly, and, upon being opened, the lung appears putrid.

Amongst Horses, the field kinds are exempt from the other maladies, except podagra; but they suffer from this, and sometimes cast off the hoofs, yet they forthwith grow again; for while one hoof is growing up or being replaced, the other is cast off. The symptoms of this disease are, that the right testicle is spasmodically affected, or that a little below the nostrils and between them there arises a ragged ulcer. Stabled horses suffer from the most diseases, for they are seized with colic or gripings in the belly, the symptoms of the malady being, that the hind legs are drawn towards the fore, and so brought under the belly as to enter slightly into collision with them; but if, after some days' fasting, they are afflicted with madness, abstraction of blood and castration are the remedies. Tetanus also seizes them. The symptoms of this disease are distention of all the veins, and of the head and neck, the animal walking upon stiff legs. Horses likewise become purulent. Another disease also attacks horses, and is called κριθίασις, or barley; the symptoms being, that the palate becomes soft and the respiration heated; and unless the malady desists of its own accord, it is incurable.

What is called νυμφῖαν, or a fit of sexual mania, is restrained by some one playing upon the pipe: the animal's forehead is depressed, and upon mounting the beast it starts off until stopped by some opposing object. The countenance is depressed also if the animal has rabies: the symptoms of this are, depression of the ears towards the mane, and their being again protended; courage deserts the animal, it faints away and breathes with difficulty. Cases are also incurable, if they suffer pain at the heart (the symptom of this being a contraction of the viscera during pain); and if the bladder should alter its position (the symptom of which is inability to void the urine and retraction of

the penis and nates); or if the beast has devoured σταφυλίνον, which is the size of a σφενδόλη. The bites of the shrew-mouse are injurious also to the other draught animals: pustules are produced, and the bite is more pernicious if inflicted by a pregnant female, for the pustules caused by the bite then burst. Moreover, what is called χαλκὶς by some, by others ζιγνίς, kills either by the bite or rapidly induces pain. This creature resembles the small lizards, and its colour is that of the blind serpents. In short, those skilled in such matters unanimously affirm that the horse and sheep suffer from almost all the diseases incidental to man. The horse and every labouring beast is killed by the poison σανδαράκη, or red arsenic, which is given and percolated in water; and the pregnant mare aborts from the smell of a candle when put out, which happens also to some pregnant women. So much with regard to the diseases of horses. What is called hippomanes is born, as it is said, with the foals, and the mares, licking and purifying, eat it up; but the other stories about this disease are fabricated by old women and witches. It is beyond dispute that what is called the pullium is emitted by mares before they bring forth. Horses recognise, by hearing, the voices of other horses with whom they may have sometimes fought. Horses delight in meadows and marshes, for they drink turbid water, and, if it be pure, they stir it up with their hoofs, when, after having drank, they wash themselves in it. The horse is an animal most partial to bathing in the waters, wherefore the nature of the river-horse has been thus constituted. The ox is the reverse of the horse in this respect; for unless the water be pure, cold, and clear, it does not wish to drink.

Asses labour principally under one disease, which they call μηλὶς or glanders. It begins about the head, and a thick purulent matter flows down the nostrils, which, if it descends into the lungs, causes death, but when confined to the head is not fatal. Of all animals, the ass is the most impatient of cold, wherefore asses are not bred about Pontus and Scythia.

Elephants suffer from flatulent disorders, whence it happens that they can neither expel the moist excrement or urine, nor that of the belly; and if they have eaten earth, they become diseased, unless they have been constantly in the habit of doing this, in which case they are not injured. Sometimes also they de-

vour stones and are attacked with diarrhœa, of which they are cured by warm water being given them to drink, with hay to eat steeped in honey: both of these remedies arrest the disease. When they are wearied from want of repose, a cure is effected by rubbing the shoulders with oil and warm water; but if the shoulders are in pain, roasted pigs' flesh is applied with relief. Some elephants do not drink oil, but others do, and such, it is said, have the power of ejecting any iron weapon that has been plunged into the body; but to those who do not drink it they give roots cooked with oil.

Thus much concerning quadrupeds.

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## CONTRIBUTIONS TO VETERINARY PATHOLOGY.

*By Mr.* J. Purvis, *V.S., of the Hon. East India Co.'s Service.*

### 1.—Strangulation of the Ilium.

The symptoms, on the admission of the animal into the infirmary at 4 P.M., were those usually attendant on spasmodic colic. An antispasmodic draught, consisting of the tincture of pepper with opium, was administered, and enemata of warm water were thrown up. At 7 P.M., no relief having been afforded, the draught was repeated, combining sol. aloës ʒiv. At 10 P.M., the animal being worse, blood was abstracted to the amount of eight quarts, and hot water dashed over the abdomen.

On the following morning the symptoms were more urgent, and I expected a speedy dissolution. The pulse was much accelerated, and feeble—the respiration laboured—cold perspiration covered the surface of the body—and the countenance was extremely anxious. The belly was again scalded, and the laxative draught repeated, the bowels not having responded; but death quickly terminated his sufferings.

*Post-mortem examination* presented about a yard of the ilium, near its termination, strangulated by passing through a rupture in the mesentery.

2.—Stomach Staggers.

The animal was admitted about 9 P.M., reported as being unwell. During the day he had been apparently quite well. The symptoms when admitted were, a staggering gait—convulsive motion of his legs—frequent passing of flatus by anus—increased flow of saliva from his mouth, the animal apparently constantly swallowing something; and also lying down and rolling. Gave tinct. pimenta ʒiv, with a large dose of aloës in solution, and threw up clysters. Two hours afterwards abstracted blood, five quarts, blistered the belly and throat, and gave two drachms of aloës in the form of ball, believing he had lost a large portion of the drink. Additional symptoms now present were, pulse scarcely to be felt, being so very weak, but not quickened—breathing laborious and accelerated. He was said to be easier on the following morning.

The next day the pulse was still weak—the breathing very quick—the eyes not much discoloured—the animal lies down—and the belly rumbles a good deal: he has dunged freely during the night after the clysters—the saliva continues to run from the mouth, but not in such quantities as it did, and the convulsive motion of the legs is gone. Occasionally he seems excited, and other times very dull—no appetite. Gave tinct. pimenta ʒij. The blister not having taken sufficient effect, scalded the belly. In the evening the respiration was more tranquil, but the animal was much the same otherwise.

16*th*.—In the morning pulse stronger and quicker—penis pendulous from weakness—respiration not so laborious—no staggering gait—and the animal lies seldomer and seems easier. Threw up a clyster, when a few balls of dung came away. Gave spirit. æther. nit. ʒj in gruel, and immediately afterwards he seemed much relieved, and picked a little grass and drank some gruel. In the evening repeated the spirit. æther. nit.

17*th*.—Better. Gave the spirits of nitric æther as yesterday.

19*th*.—Gave calomel ʒj, there being a little yellowness of the membranes, and spirit. æther. nit. as before. He is better to-day, and eats grass more freely. In the evening gave aloës ʒij.

20*th*.—Purging a little more than desirable. Ordered rice-water.

21*st*.—The regiment marched from Leypore to Roorpoorah, and the horse was left behind, with directions to have rice-water if he continued purging. Diet, aŭrdâwúr, &c. He feeds well on grass, and the penis is much excoriated and swollen from hanging down. Washed it, and applied tinct. myrrh.

24*th*.—Arrived well in camp.

26*th*.—The penis is still much swollen: scarified it, and gave a diuretic.

30*th*.—Swelling of penis diminished, yet cannot be drawn within the sheath; otherwise the animal is quite well.

*Dec*. 2*d*.—Discovered an ulcer in the penis: dressed it with comp. tinct. myrrh. The organ can now be nearly drawn into the sheath.

On the 11th of the following month the animal was discharged to the lines.

### 3.—Scrotal Hernia.

At daybreak on the 6th of October, I received a note from Lieut. Hill, asking me to look at his horse, which had been attacked on the previous evening, and during the night had been lying down and suddenly rising again, and knocking himself about as if suffering from spasms. The usual stimulants had been had recourse to, with blood-letting and enemata. On my arrival I found the animal to be affected with hernia on the off side, the intestine having passed through the abdominal ring into the scrotum. The horse was cast, and after a great deal of trouble, aided by the taxis, the hernia was reduced. Immediate relief was afforded, and hopes were entertained of an ultimate recovery. The pulse regained its natural tone, and the ears and extremities became warm.

I ordered a dose of aloes, and threw up some clysters, which brought away balls of dung covered with mucus. At twelve o'clock the pulse had become quick and bounding; the horse was lying down, suffering acute pain, and the scrotum was becoming much enlarged. Blood to the amount of three quarts was abstracted, when the pulse faltered and became weak. He continued to get worse, and at 4 P.M. the abdomen was blistered. During the night he endured great agony, and in the morning died.

*Post-mortem appearances*.—About a foot of the ilium near to

its termination had passed into the scrotum, and become strangulated. The other small intestines, especially those contiguous to the strangulated ilium, were much inflamed; as was the villous portion of the stomach, and the omentum. Flakes of lymph were adherent to the last-named tissue, and also to the peritoneum, which was much discoloured. A large quantity of serum existed in the abdominal cavity, and the spermatic cord was enlarged and sphaceletic.

Had my advice been earlier sought, and the operation of castration performed, I think the result would have been different.

### 4.—Inflammatory Œdema.

The animal was reported to be affected with rheumatism, and when removed from the pickets he could scarcely put the hind leg to the ground. In the evening he was much worse; the pulse being quick and strong, the breathing hurried, and the mouth hot and dry. V. S. Ten pounds from the jugular. Give aloes ʒij, antim. pot. tart. ʒj, digital. pulv. gr. x, in ball, and insert a rowel under the belly.

*Next day.*—The animal is no better. When the hind leg is touched great pain is evinced, and, if pressed, is drawn up, and the horse nearly falls. The constitutional disturbance is also considerable. Give resinæ flav. et pot. nitr. āā ʒiv, antim. pot. tart. et digital. ut ante cum tereb. com. q. s. fiat bolus; which repeat in the evening.

*Following day.*—Relief afforded. Pulse less quick, and rowel has excited much contiguous swelling. Repeat the ball as before ordered.

*Two days since last report.*—The animal has continued gradually to improve, and, although the leg remains swollen, it is not so painful when touched, and the systematic excitement is allayed. Gentle walking exercise may be allowed, and let the rowel, which discharges freely, be dressed as before. Gradually return to ordinary diet.

*A week after.*—The swelling of the leg has nearly disappeared, and the animal's general health has returned. Remove the rowel, and give regular exercise: the animal may be returned to the lines.

5.—Inflammation of the Stomach and Bowels.

The animal was brought to the hospital at 7 P.M. The belly was then tympanic, and much pain was evinced. Gave sol. aloes ʒv, tinct. piperis nig. ʒj, in haustus.

At 10 P.M., no relief being afforded, blood was abstracted to the amount of six pounds, when the horse broke out in a profuse perspiration.

At 11 o'clock he seemed better. He stood quietly, and the belly was no longer distended; but occasionally he perspired as if in pain.

At 2 A.M. he became worse, when the blood-letting was repeated, the belly scalded, and sp. ether. nitrici ʒjss given; the surface of the body being cold. In the morning, when I visited him again, he was evidently dying, and death took place about 10 A.M.

*Post-mortem appearances.*—The stomach much distended with fluid aliment, and inflamed, and a small abscess existing between its coats. The ilium much diseased, being in one part thickened and violently inflamed; indeed, to such an extent had diseased action gone on, that the gut had become almost impermeable, and its coats resembled strong buffalo's hide. Anterior to the contraction the contents were fluid; posterior, they were hard and dry. The larger intestines were not so much affected, but their contents were quite dry. The bladder was inflamed.

This animal had been the subject of repeated attacks resembling colic.

6.—Gastritis, with Efforts to Vomit.

The symptoms present are those of specific inflammation of the stomach. The animal lies down frequently, and quickly rises again—the belly is tympanic—a rattling noise is heard in the œsophagus—saliva is secreted in increased quantities, and flows continually from the mouth, and efforts to vomit are made, but the pulse is not much affected. Give aloes ʒiij in solution, combining tinct. piperis ʒiij. Throw up an enema containing aloes, and apply friction to the abdomen.

At midnight, no relief having been afforded, and the pulse being accelerated, blood was abstracted till an impression was made on

the circulation; the draught was repeated, and the belly scalded with hot water.

At 2 A.M. the indications of pain were no longer present; the belly was less swollen, and the medicine appeared about to operate.

On the following morning all unfavourable symptoms had disappeared, and the animal gradually recovered.

### 7.—Gastro-Enteritis.

The animal has been the subject of repeated similar attacks. The symptoms present are, laborious breathing—hard and wiry pulse—belly tympanic—ears cold—surface of the body covered with a cold clammy sweat—pain evinced by lying down and rolling on the back, and vomiting by the nostrils. Take blood from the jugular vein till the pulse falters, and give an antispasmodic draught combined with solution of aloes. Scald the belly. No hope is entertained of ultimate recovery.

*Two hours after.*—The pain is mitigated, and the animal lies down less frequently; but the breathing has become even more laboured, and the vomiting continues. Repeat the bloodletting, and give solution aloes ʒj et spt. ether. nit. ʒj in haustus, and throw up aloetic enemata.

The following morning the animal was much worse; the pulse was sinking, the ears and legs deathy cold, the membranes pale, and at 8 o'clock he died.

*Post-mortem appearances.*—Stomach much distended with food, water, and air, and highly inflamed. Small intestines also inflamed, and in some places the remains of chronic disease were perceptible. The mucous coat of the large intestines was highly inflamed. The colon contained a portion of partially digested food, but the cæcum and rectum were empty. He had purged the morning before he died once, and the farrier-major said that he discharged about twelve or fifteen seers of fluid by the nostrils just before death took place.

### 8.—Ruptured Stomach.

The horse was brought to the hospital about noon, and I saw him at 1 P.M.

*Symptoms.*—Constantly looking at his flanks—ears and extremi-

ties cold—skin cold all over the body, and that covering the testicles particularly so, and wet with cold perspiration—pulse irregular, sometimes small and hard, at other times full and quick, and sometimes nearly normal—conjunctiva slightly reddened—mouth pale, and not hot—trembling slightly—had not lain down while I was at the hospital, but had done so repeatedly before I arrived—had also dunged and staled often. When he attempted to swallow it seemed as if something was lodged in his throat. I pronounced it to be a case of ruptured stomach. I bled to the amount of vij quarts, and gave aloes in solution ʒiv, with tinct. pimenta ʒij. The farrier-major had clystered him before my arrival, and the clysters brought away some soft dung. To be reported in an hour. Just as I had left the hospital the farrier-major came after me to tell me that the horse had discharged a large quantity of fluid through his nostrils.

I saw him again about 5 P.M. The symptoms then present were much the same. Repeated the draught and scalded the belly, though I did not entertain the least hope of the animal's recovery. He died the following morning about 5 A.M. This horse was ridden by a Naique, appeared quite well, and had eaten his food in the morning. He was a valuable horse, and in his prime.

*Post-mortem examination.*—The contents of stomach escaped into the abdomen, the coats of which were ruptured to the extent of about three inches in length.

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*To the Editors of "The Veterinary Record."*

Gentlemen, *India, July* 16th, 1846.

A friend and brother vet. calling on me the other day, and seeing various periodicals lying on my table, exclaimed, "Why don't you get THE VETERINARY RECORD? It is the best periodical extant." I immediately applied to my agents in Calcutta for the work, and received it in due time. I can only say I am delighted with it, and have consequently become a subscriber to it. Permit me to congratulate you upon the style in which it is got up. It is not only edited in a very superior manner, but the contributions appear so numerous and so well written, that if it never alters its form, it is likely to stand the test of ages; and I feel convinced that every member of the profession must heartily wish it success.

And now, "*à nos moutons*," should the following cases be deemed worthy a place in THE VETERINARY RECORD, pray insert them; if not, consign them to your waste paper basket. Not being certain as to dates, I will omit them, and merely give a plain statement of the several cases as they occurred in my practice.

I remain, Gentlemen,

Your's faithfully,

JNO. ROB. HOEY, V. S.

9th Bengal Cavalry.

CASE 1.—TETANUS.

A bay yearling filly was admitted into the infirmary with slight tetanic symptoms. On minute examination, I could detect no external wound, nor abrasion, nor any cause for the existing appearances; but on making particular inquiry, I ascertained from the groom, whose master was absent at the time, that she had been standing in a very thinly choppered stable, so that the rain (then falling daily) had been constantly dripping on her body. I will not enter into the symptoms of tetanus here, as they are too well known to practitioners, but merely state that the jaw was not completely locked, although mastication was performed with great difficulty; and all the other symptoms had set in with more or less urgency.

*Treatment.*—I bled her freely, and administered an active aperient —back-racked and clystered repeatedly—had her bedded down, and left her for the night.

The following morning the disease had assumed a more alarming aspect. The jaw had become perfectly locked, and all the other symptoms aggravated: pulse and respiration accelerated, and the bowels unmoved.

I considered it imperative, under these circumstances, to resort again to phlebotomy; and I also repeated the purgative and enemata as before; blistered the skin covering the vertebral column throughout its course, and likewise the neck and external masseters.

The symptoms not abating during the day, I administered a sedative, to be repeated every three or four hours until the rigors had assumed a milder form. I also continued to administer laxatives, and injected into the rectum a decoction of opium at inter-

vals of two or three hours; and gave good nourishing gruel as freely as I could through a tube made for the purpose.

The symptoms continued more or less urgent till the morning of the third day, when the bowels were moved; but no other alteration took place: I therefore passed the firing-iron over the masseter muscles and along the course of the spine—continued the sedatives, and mild laxatives, as circumstances warranted—and supplied the animal with gruel both by the mouth and anus.

The symptoms and treatment were much the same throughout the fourth day; but on the fifth, the jaw relaxed slightly: still she had not the power to masticate.

I then resorted to tonics morning and evening, taking care not to forget to keep the bowels in a soluble state.

From this time till the eighth day she gradually got better, and fed upon some lucern grass and other succulent vegetables, but became so emaciated and weak that I was obliged to sling her. On the tenth day she ate about five pounds of lucern grass, and two or three pounds of cleanly picked grain, continuing to do this daily, and at length she appeared to be perfectly recovered, and got on as well as she could be expected to do in a sling.

I continued the tonics night and morning, the green food serving as a laxative, and she was improving daily. I was congratulating myself on my successful treatment, when about the fifteenth day I observed a small abscess forming on the anterior part of the large pastern joint of the off fore leg. I looked on this suspiciously; yet, after carefully examining the part, I could find no foreign body there, nor even the slightest abrasion of surface. It at length suppurated, and burst. My suspicions, however, were soon set at rest on observing a similar enlargement forming on one of the hind extremities. This also suppurated, and discharged freely. That in the fore leg now assumed a very virulent form; ulceration and sloughing went on rapidly in spite of all my applications, and to such an extent, that the extensor tendon, and parts adjacent, were completely destroyed by it, an open-joint formed, and the bones seriously implicated. The foot was turned backwards, the heel nearly touching the flexor tendons; and, under all these untoward circumstances, I ordered the animal to be shot. Had not this occurred, a perfect cure of my tetanic patient was anticipated.

### Case 2.—Tetanus.

A bay troop horse, standing in the infirmary for lameness, was attacked with tetanic symptoms, which soon assumed a very marked appearance, and mastication was much impeded, though the jaw was not locked. I proceeded as in case No. 1, except that I did not *fire* over the spine, &c. Under this treatment the disease yielded, and in five or six days the animal was as well as ever, and had no return of any one unfavourable symptom.

I could find no external cause in this case either for the attack, and therefore referred it to some disarrangement of the abdominal viscera. The horse was soon after this discharged, free from lameness, and sent to his work.

### Cases 3, 4, and 5.—Fractures.

A bay troop horse was admitted with a complete transverse fracture of the anterior part of the inferior maxilla.

*Treatment.*—I bled him, and administered a purgative—fastened his head to the rack—applied a compress bandage to the part—administered generous gruel as nourishment—and always after drenching fastened him up again.

In a few days the fractured edges of the bone began to unite. I gave occasionally laxatives; and Nature did all the rest. The horse got quite well, and in three weeks was discharged fit for duty.

This fracture was caused by a kick while in the ranks.

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I had also a very severe case of compound fracture of the radius. This horse belonged to the artillery, of which I then had the medical charge, and was kicked while drawing a gun. The case proved incurable. A committee assembled, and the animal was shot by their order.

The most uncommon case of fracture I have had occurred with a troop horse of my own regiment. On being ridden to water he got one of his hind legs into a hole in the ground. He struggled and fell, and fractured the lower part of the femur transversely through its condyles, and also through the upper ar-

ticulating surface of the tibia in an oblique direction outwards and downwards, for some inches.

This was also an incurable case, and he was shot by order of Committee. I reserved these bones for the museum of the College, but during the late campaign they have been lost.

### Case 6.—Scrotal Hernia.

A bay troop horse was admitted with scrotal hernia. This horse had been some time in the hospital before I saw him, and had been cast, and sundry manipulations performed by the farrier major, to reduce the hernia; but all to no purpose.

When I saw him, from the tense state of the parts, accelerated pulse and breathing, clammy sweat about the flanks, &c., I determined on performing herniotomy.

*Treatment.*—I first bled copiously and back-racked; I then cast the animal, and secured him upon his back, properly supported at his sides. On carefully opening the scrotum, the gut made its appearance, slightly engorged. I then lifted up the strangulated portion of intestine with the greatest care, passed the fore-finger of my left hand forward to the stricture, introduced the concealed bistoury, and divided the stricture, when the gut disappeared at once into the abdomen. I next (as is my usual practice) castrated on that side, fastening the clams high up; and in a short time the animal was allowed to rise. I afterwards administered a purgative, and placed him in a quiet box.

The following day the surrounding parts were much tumefied. I, however, did nothing more than steam them well five or six times a-day by means of boiling water placed in an earthen vessel. A healthy discharge from the incision soon followed; the wound was dressed twice a-day with simple digestive ointment, and occasionally zinci sulphas was applied, and in a fortnight it had become perfectly healed. The animal remained a fortnight longer in the hospital, during which time I gave him another purgative, and then discharged him fit for duty.

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There is a horse in the regiment, in which I have reduced the hernia eight or ten times by the taxis, and he never does a day's work without the gut making its appearance in the scrotum. He is an old horse, or would have been operated upon by me long since.

### Case 7.—Opacity of Cornea.

An officer's charger was brought to the infirmary with opalescence of the cornea of the off eye.

This, I was informed, had existed more or less for a year or so; but that it had only slightly impaired his vision on that side, causing him to "shy."

However, at this time disease had assumed a more acute form. The lids were much swollen, drooping heavily over the eye; a flow of tears constantly bedewed the cheek, and vision was completely prevented by the opacity. The surrounding parts also partook more or less of the inflammatory action set up.

*Treatment.*—I bled from the jugular vein on the affected side, administered a purgative, and fomented constantly.

The inflammation subsiding, I applied over the cornea twice a-day a solution of nitrate of silver of the strength laid down in that excellent work of Professor Morton, "*A Manual of Veterinary Pharmacy.*" In the course of a few days decided benefit was the result; and in a fortnight or three weeks the eye had become clear, and vision more perfect than it had been for some time. The nitrate of silver in this form excels all other applications I have employed in these cases.

### Case 8.—Indigestion and Rupture of the Stomach.

A black English horse, the property of the colonel commanding the regiment, was attacked with symptoms of indigestion. The pulse was accelerated, not hard, but rather full; respiration hurried, mucous membranes injected, extremities rather cold; constant straining to void the fæces, without accomplishing the same; occasionally lying down; an anxious eye turned now and then toward the side; and eventually sweating slightly at the flanks.

*Treatment.*—I abstracted blood quickly and freely—gave a drench of aloes—back-racked, and got away a quantity of undigested gram—threw up clysters frequently, and subsequently gave a tobacco enema. The pulse was lowered after awhile by the bleeding, and softened a little, but was now gradually rising again and becoming fuller. I rubbed and bandaged the extremities, and applied hot

rugs to the abdomen, but he got worse: the respiration became more hurried; diaphoresis in full force was present; the mucous membranes were highly injected, and the animal more untractable, knocking himself about, kicking violently at his belly, and occasionally lying down and rolling. He made several attempts to vomit, and at last did so, passing a quantity of undigested gram through the nostrils.

I then gave it as my opinion that the stomach was either ruptured or filled to excess, rendering it incapable of performing its function; but I inclined to the first named. He died very shortly after this, and the post-mortem examination shewed that my prognosis was correct, as the stomach was ruptured to the extent of several inches. It was crammed to excess, as well as the intestines, with undigested gram and grass, and a coating of the same existed over the abdominal viscera.

I must here beg again to remark, that I have had many similar cases since I have been in India, and I never, in one solitary instance that I recollect, found the stomach ruptured and vomition had not taken place previous to death.

*Query.*—Did a partial rupture exist when I was first called in, or did the animal cause it by his violence, when his stomach was in that distended state? I opine the latter view is the correct one. This horse was valued at 200 guineas. Possibly at the first indication of this disease the use of the stomach pump would be attended with benefit, and it is certainly an instrument with which the veterinary surgeon in India should be furnished from the Honorable Company's stores.

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### Case 9.—Premature Parturition, with lacerated Perinæum, Rectum, &c.

A dark brown mare, the property of the superintending surgeon of the station, was sent to me for inspection. She had been marching for some weeks before this, when in foal, and near her time. She was a thorough-bred mare, and had been covered by an Arab horse of unexceptionable blood. When within five or six marches of her destination, premature labour came on, and she dropped a very large dead foal. This, I have no doubt, was the effect of the

over-exertion of marching at the period named. I did not see the mare till some time after this occurred. I was then requested to examine her. I did so, and found that the distention of the parts during labour had been so great, that the vagina and anus had become one common opening, the perinæum having been completely rent in twain. From the length of time that had elapsed, the edges of the wound had become perfectly united without any treatment whatever, and the animal voided her fæces and urine through one common opening.

The vagina was uninjured; but the most extraordinary part of the case was, that the rectum was completely torn from the anus, also partially severed from its other attachments, and had receded two or three inches. This, as all the other parts had perfectly healed, was the cause of my not attempting any operation; the owner of the mare concurring with me that the rectum could not be included in any operation whatever without the chance of producing intestinal derangement, and, probably, an acute inflammatory attack resulting. Another thing against it being the situation of the parts, and the consequent strain there would have been upon them on every effort being made to void the fæces, even though aperients might have been resorted to. Therefore, as the rectum was severed from the anus, and the perinæum also rent in two, the unsightly appearance alone could have been obviated by an operation, and the fæces must have dribbled through both orifices at every expulsion after the perinæum had re-united. Under these circumstances, we mutually agreed that matters had better remain as they were.

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And now, gentlemen, I have brought these remarks to a close, and I hope they will not prove too tedious for you to wade through. India, above all other places in the world, in my opinion, is the best field for a veterinary surgeon. Even in times of peace he sees more practice here in one year than he would meet with in many localities in England in quadruple the time.

During the late Punjaub campaign I had an opportunity of witnessing some fearful cases of sabre cuts, round shot, and grape shot wounds, the latter by far the most severe and dangerous. They did not occur in my own practice; as it is the fortune of war that every portion of the army shares not in the thickest of

the fight, and which, indeed, was terrifically hot in the late battles with the Sikhs; but I had an opportunity of seeing them in the various hospitals of the army, and can only hope that, should these remarks meet the eyes of those in whose immediate practice the cases occurred, they will at once seize the golden opportunity, and launch forth to the world the treatment and results of the various cases they had on hand, both for the benefit and honour of the profession to which they belong.

"Indocti discant, et ament meminisse peritis."

P.S. I shall have, at a future period, a few remarks to offer on the services and retiring allowance of veterinary surgeons in the Hon. Company's service in India; and also some suggestions to make, that will benefit both the government and their servants. Are such remarks admissible in the pages of THE RECORD?

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[To this last inquiry, made by Mr. Hoey, our reply is, that at all times it will afford us the greatest pleasure to introduce any subject that is connected with the advancement of our common profession. Its best interests ever will be studied by us; and we cannot but believe that the objects Mr. Hoey has in view will be promoted, and his professional brethren advantaged, by the judicious propositions he will make connected with his appointment.—EDITORS.]

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## CASE OF OSSEOUS TUMOURS WITHIN THE THORAX OF A COW, AND OF AMPUTATION OF THE PENIS OF A BULL.

*By Mr.* W. COX, *M.R.C.V.S.*

Dear Sirs, *Ashbourne, Oct. 10th,* 1846.

I HAVE enclosed a small portion of a tumour (twelve ounces in weight) taken by me from the pleura of a cow. The history of the case is as follows:—A farmer in this neighbourhood sold the cow to a gentleman at Uttoxeter at our last August fair; but she was soon perceived to be unwell, consequently the seller received notice to take her back, when he called on me and requested I would examine her, which I did, and, together with Mr. Walters, V.S. of Checkley, pronounced her unsound, arising from disease of

the sensorium. She was therefore returned, and I had her under treatment for several weeks; but finding no amendment to take place, I gave orders to have her destroyed. At the post-mortem examination we found hydrocephalus to exist, with disease and softening of the substance of the cerebellum, which, had not the animal been killed, would soon have caused death. I, however, more especially wish to direct your notice to a particular disease in her thorax, the existence of which neither Mr. Walters nor myself suspected. It is called by the butchers, grapes. In this case there were thousands of these tumours or excrescences covering the pleuræ, varying in size from that of a garden-bean to the tumour I have sent you a portion of, which was twelve ounces in weight, and of the shape of a kidney. This one I took from the superior mediastinum. Those which adhered to the pleura costalis much resembled bunches of grapes, while those which were attached to the pleura pulmonalis were single ones. All the tumours I laid open appeared the same as the portion I have sent to you. The parenchyma of the lungs was healthy. The gentleman who sold the animal bred her, but had never observed any illness; yet she has not grown nor milked well this summer. She was five years old, and had two calves. I should like to know your opinion of the nature and also the cause of these deposits.

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The next case is one of amputation of the penis of a young bull. He was the property of Mr. Gallimore, of the Hutt's Farm. In the month of June last, when performing the act of copulation, or rather when endeavouring to do so, he doubled up his penis against the tuberosity of the ischium of the cow, from which time he was never able to draw the penis within the sheath, constituting paraphymosis. After various means had been tried, and without any benefit resulting, I recommended amputation of the penis to be performed, which the owner agreed to. The bull being cast and turned on his back, I found the injured part to be diminished in size, and situated about nine inches from the end of the penis. With the scalpel I cut through the urethra and spongy portion of the penis, and nearly through the cavernous structure, a little above the contracted part, leaving a small portion of it superiorly situated undivided (inferiorly as the animal

lay on his back), by which means the stump was kept from retracting within the sheath, and which enabled me to cauterize the bleeding vessels with the budding iron; after which the remaining portion of the cavernous structure was divided. The animal got well in a short time, and very little swelling or inflammatory action followed the operation. I have tried the plan of operating that is recommended by some practitioners, of placing a ligature of tape above the part to be amputated, and at once cutting it off. By such a mode of procedure the cautery must be applied over the whole of the stump, so as to stop the hæmorrhage; but, in fact, the pressure of the tape stops the bleeding for a time, consequently the operator cannot see where to apply the iron, or, if need be, to take up the vessels by ligature. Moreover, if the tape is slackened, so as to shew the ends of the divided vessels, the stump of the penis is immediately retracted, rendering the operation incomplete, as it is impossible to again withdraw the end of the penis.

I have not seen the fact mentioned by any of the writers on Pleuro-pneumonia which is now so prevalent among cattle, that the blood when drawn from the jugular vein is of a lighter colour, i. e. more of a scarlet hue than it is in health. I have observed it in many cases.

I am, your's most respectfully.

*To the Editors of "The Veterinary Record."*

[The tumours attached to the viscera of the thorax of a cow are similar to some we have occasionally met with. On this subject our English veterinary authors are silent, and we believe the above to be the only case of the kind recorded.

The peculiar feature in Mr. Cox's case, and to which we can add our experience, is the absence, not only of any diagnostic symptom, but of all indications of disease existing in the chest; for it was not until death had taken place that this abnormal state of the thoracic viscera was known, or even suspected to exist: and we may state, that in three or four instances our attention has been directed to the fact by the butcher who had slaughtered the animals, he believing them to be at the time in a state of perfect health. One case fell under our observation of a three years old heifer, fattened as a prize beast, which was found after death to have the

pleura pulmonalis and costalis as thickly covered by these tumours as it is possible to imagine. In the Museum of the College is a splendid specimen of these abnormal deposits; and, since the portion forwarded by Mr. Cox came to hand, we have subjected both specimens to a minute examination, chemically and microscopically, and we find each to be alike, and to contain osseous matter deposited in a granular form in a large excess of morbid animal matter, analogous to that met with in scirrhus. The bone deposit is not, however, true osseous tissue, as no appearance of a Haversian system exists; and the phosphate and carbonate of lime which it contains is simply "bone earth," deposited here and there within the substance of the tumour.

Of the cause of these morbid growths within the cavity of the chest we cannot offer any satisfactory explanation.—EDITORS.]

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## CASE OF GENERAL PARALYSIS IN A MARE.

*By Mr.* JOS. WOODGER, *Market Street, Paddington.*

THE subject was a bay mare, five years old, nearly thorough bred, belonging to J— M—, Esq., Harlesden-green. My attention was first called to her on the 10th of June last, when I found the following symptoms to be present:—Pulse 48—membranes blanched—respiration slightly increased—appetite impaired—bowels costive—extremities abducted, and colder than natural—her head pendulous—and the eye very dull.

*Treatment.*—I ordered her to be removed to a loose box, placed flannel bandages on her legs, and gave sol. aloës ʒv, spirit. æther. nit. ʒj, in haustus.

*June 11th.*—Seven o'clock, A.M., pulse 52, and very weak, being scarcely perceptible at the submaxillary or temporal artery—extremities deathy cold—and the animal has not lain down during the night. Removed the bandages, and having well rubbed the legs, replaced them. The bowels not having responded, I threw up an enema of warm water: ordered warm mashes with gruel and meadow hay to be allowed her as diet.

*Six o'Clock,* P.M.—The symptoms remain nearly the same as they were in the morning. The fæces are pultaceous, and during the day she has partaken of some gruel and a mash, and attempted

to eat some new meadow hay; but I noticed a great difficulty in the acts of mastication and deglutition, which led me to think a soreness of the throat existed. I consequently applied oleum cantharides q.s, and gave spirit. æther. nit. ʒj, cum tinct. opii. ʒj, in draught.

12*th*.—Pulse 68, and still very weak—great prostration of strength—and extreme relaxation of the whole muscular system. The animal possessed the desire to eat, but had not the power to do so, except it consisted of such food as required little or no mastication. If hay or green meat were presented to her she would take it and hold it in her mouth, and, after repeated ineffectual attempts to masticate it, drop it. The rectum, the sphincter ani, and the sphincter of the bladder, participated in the same loss of power. Her urine escaped involuntarily, and if she coughed it was ejected to a considerable distance. She had also lost the power of voiding her fæces, which would accumulate in the rectum, and there remain till removed by the hand. The sphincter ani was continually open, sufficient to allow of the arm being placed into the rectum without exercising the least force; her tail, with other parts, appeared equally involved, and she possessed not the least power to move it, even as a protection against the flies, which happened at the time to be very plentiful; and if raised by the hand, it felt as flaccid, and was as easily moved, as if it had lost all vitality. She would stand in her box in one position for hours together, and if she attempted to move, or was made so to do, it was accompanied with the danger of falling. She was frequently pawing with her fore feet, until she got all the litter within her reach into one heap; but this I attributed more to her natural irritability than to any pain experienced. Having witnessed in several cases the benefit resulting from the use of strychnia, I gave it in one-grain doses, combined with gentian and ginger, twice a day, and allowed my patient plenty of gruel and mashes, with a pint and a half of stout twice during the day, and kept the bowels acted on by means of clysters.

14*th*.—Pulse 64, and appetite good. I again tried her with a little green meat, but with the same result: she was unable to masticate it. Increased the dose of strychnia to two grains, which I gave twice a-day, and continued the use of the enemas.

15*th*.—A slight improvement in the general symptoms is perceptible. Continue the same treatment. Professional business requiring me to call at the Veterinary College, I related the case to Mr. Morton, who suggested a trial of the iodide of iron, giving it in junction with the strychnia. This I immediately did, by exhibiting half-drachm doses of it twice a day.

18*th*.—Pulse 60. The animal has lain down for the first time since her attack, and she walks across her box with more confidence and strength. Continue the medicine as before.

20*th*.—Pulse 54, and the tone improving. She has eaten some Italian rye grass and a small portion of new meadow hay, the first hard food she has been able to eat since the 10th instant.

24*th*.—Pulse 50, and considerable general improvement visible. I had her led out from the box, but she evinced much weakness across the loins and in the hind quarters, indicated by a rolling gait.

26*th*.—The improvement is more marked. She can now eat hay and corn, and walk about her box much stronger; she also voids her fæces naturally, but her urine still escapes involuntarily. Give only one ball a day, and withhold the stout.

*July* 3*d*.—The animal may be reported as convalescent, although the urine is not retained in the bladder as long as natural, and some weakness of the loins is still present. I suggested the propriety of placing a "charge" across the loins; but the owner had an insuperable objection to it. The medicine was now discontinued, and the animal turned out.

*Sept*. 3*d*.—I saw my late patient to-day at grass, where she has been since discharged from my infirmary. She was looking as fat and as well as ever she had been; but there still existed a slight weakness over the loins, and a partial paralysis of the sphincter of the bladder, which allowed the urine at times to escape involuntarily. She soon after passed into the hands of another owner, who consulted me respecting her; and, repeating my former advice, he allowed me to place a "charge" across her loins.

*Oct*. 30*th*.—I again saw the animal, when she appeared as strong as ever she was, and well in all respects, every organ performing its functions naturally.

As I am indebted to you for suggesting the trial of the iodide of iron, which appears to be a therapeutic of value, I may be permitted to state, that I have most successfully employed it in those cases of profuse staling commonly called Diabetes, and which disease frequently results from allowing horses bad provender. While it induces a healthy state of the urinary organs, it also checks the extreme thirst that is so commonly present in this affection. Two or three doses generally suffice to bring about a visible and beneficial change.

I am, dear Sir,

*To Mr. Morton.* Your's &c.

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## Case of Hæmaturia in a Mare.

*By Mr.* T. W. Gowing.

Dear Sirs, 1, *Stucly Terrace, Camden Town.*

A case, not of every day occurrence, having lately fallen under my notice, and it being one possessing more than ordinary interest, I have sent it to you for insertion in the Veterinary Record. The history of the case is as follows:—On Thursday, Nov. 19th, at 8 A.M., a mare was brought to my infirmary, when the following symptoms were observed by me. The visible mucous membranes pale; the pulse increased in number of beats, and feeble; extremities cold, with straddling of the hind quarters, and frequent attempts to empty the bladder, and at intervals a quantity of blood was thrown with some force from the vulva. On making inquiries, the man told me that before he brought her she had thus discharged about three parts of a pailful of blood, as near as he could guess. I immediately made an examination per rectum, explored the bladder, and found it full of coagulated blood. I then passed a catheter, and was enabled to draw off about two ounces of blood of a bright scarlet colour, shewing that it was with hæmorrhage going on from the kidneys I had to contend. I immediately ordered the mare to be placed in a loose box, and commenced the following treatment:—Gave a ball containing

acetate of lead half a drachm, with common mass q. s., and ordered it to be repeated every four or six hours, if the bleeding continued; applied cold water to the loins, and directed an enema of cold water to be thrown up. This having produced much straining, it was not repeated. The cold applications to the loins were continued till I saw the mare again at one o'clock P.M. There was then not so much straining, but, occasionally, blood was forcibly ejected from the bladder in somewhat considerable quantities. I requested that no fluids might be given to her, nor, in fact, any thing until I saw her again. The cold water to the loins to be persevered in the use of. At six P.M. the mare was visited again by me. The pulse was then 64, and stronger; extremities warm, and she was lying down, and appeared much easier. Repeat the ball as before, with the other treatment.

*Friday*, 10 A.M.—Mare much better in every respect. Pulse increased in volume; no straining, nor any voiding of blood. She passed, when I was with her, about two quarts of urine, which was very high coloured, and of the appearance of coffee. On examining it, I found in it some coagulated blood. Gave a sedative of another kind, discontinuing the acetate of lead, and ordered some infusion of linseed to be allowed her, with a mash, which she ate freely, as she had been fasting for some time. The action of the bowels continued throughout natural.

*Saturday*, 11 A.M.—Pulse 56, tone full. Repeated the sedative, and ordered the same diet as before.

*Sunday*, 12 A.M.—The mare up and feeding, and character of the pulse improved. The man stated that she had voided a pretty fair quantity of urine without any difficulty, and not so high coloured as it was. All treatment was now discontinued, the animal's general health being apparently good; and in about fourteen days from this time she was taken to work again, without any unpleasant symptom having shewn itself up to the present period.

I remain, your's &c.

*To the Editors of "The Veterinary Record."*

## On Aloetine.

*By M.* E. Robiquet.

(*From the Pharmaceutical Journal.*)

To obtain the *aloëtine* or *purified aloes*, commercial aloes, reduced to powder, was exhausted with cold distilled water, by which means none of the salts present, excepting the ulmate of potash, and a small quantity of sulphate of lime and carbonate of potash, are taken up. This solution was evaporated over a water-bath until reduced to one-half, and an excess of neutral acetate of lead was then added, which threw down a light flocculent yellow precipitate, consisting of a mixture of gallate, ulmate, and albuminate of lead, and containing traces of carbonate and of sulphate of lead.

The solution now contained, in addition to the aloes, acetate of potash, and acetate of lime, resulting from double decomposition, and the excess of acetate of lead. On adding a sufficient quantity of ammonia, the precipitated oxide of lead carried down all the aloes contained in the liquor, forming a kind of lake of a pure orange-yellow colour, passing in a few minutes, under the influence of the solar light, to a greenish-yellow. This lake, quickly separated and washed with boiling water, was decomposed by a current of sulphuretted hydrogen, atmospheric air being excluded. On the conclusion of this operation, the sulphuret of lead was covered by a perfectly colourless supernatant liquor, which, on being carefully decanted and evaporated *in vacuo*, afforded no crystals, but dried in scales, having the appearance of a kind of varnish, with a very slight tint of yellow.

I used the product thus obtained in my examination for the presence of nitrogen, and also in the analysis with oxide of copper. To distinguish it from the crude aloes, I have called it *aloëtine*.

*Aloëtine* is obtained in the form of nearly colourless scales, if in the process air be as much as possible excluded. It is very soluble in water and in alcohol, little soluble in ether, and completely insoluble in the fixed and essential oils. On calcination in close vessels, a shining voluminous residue is left, which entirely disappears on incineration in the air. The aloëtine is not coloured by either the *per* or *proto* salts of iron; and it gives no precipitate with acetate of lead: in other respects its reactions are similar to those of socotrine aloes.

If the aloëtine be dried in contact with air, the scales, instead of being colourless, will have an intense red colour, due to a slight absorption of oxygen. With the exception of the difference in colour, it undergoes no modification in its chemical properties, and probably analysis would hardly detect any difference between that altered by the contact of air, and that prepared *in vacuo*. The process may, therefore, be rendered much more easy by drying the product over a water-bath, or by exposure to the heat of the sun, when it is not desired to obtain the aloëtine in a state of absolute purity.

Aloëtine possesses in a high degree the purgative properties and bitter taste of ordinary aloes. For medicinal use eight parts of aloëtine are equivalent to ten parts of socotrine aloes and fifty parts of Cape aloes.

*Journal de Pharmacie.*

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## On the Advantages resulting from the Presence of Bicarbonate of Lime in Water used for Alimentary Purposes, and the Objections to the Presence of other Salts of Lime.

*By M.* Dupasquier.

(*From the Pharmaceutical Journal.*)

I have read with much interest a note on ossification in the pig, communicated by M. Boussingault to the Academy of Sciences; and the result of his investigations confirms, in a striking manner, the opinions I had for some time formed with reference to waters used for alimentary purposes, in opposition to the previously expressed views of some scientific men, "that those waters should be preferred which contain the smallest quantity of mineral substance in solution."

It appears from the experiments made by M. Boussingault on young pigs, that the calcareous salts contained in the water which they used furnished a large portion of the lime required for the formation of the bones, &c., and which was not contained in sufficient quantity in other portions of their food. From this M. Boussingault arrived at the conclusion, that the calcareous salts

contained in most of the potable waters ought to be considered as very useful, if not absolutely necessary; and furthermore, that those waters which are least charged with calcareous matter, are far from being the most conducive to health.

Without detracting from the merit of M. Boussingault's experiments, the value of which I am fully sensible of, I may be permitted to remark, that for more than eight years I have not ceased to condemn the erroneous opinions generally entertained in reference to potable waters.

The following is an extract from one of my works, published during that period:—

"Those waters which are the purest in reference to the quantity of matter contained in solution are not on that account the best. Absolutely pure water—distilled water, which contains no salts—is not agreeable to drink; its taste is insipid; and experience proves that it is heavy on the stomach, and tends to indigestion. It is, therefore, a wise provision of Nature, that waters contain a greater or less quantity of foreign substances in solution. Their quality as potable waters does not therefore depend on their purity."

I have further stated, that all substances generally found in waters do not contribute to render them potable; some few even render their properties hurtful. I have therefore divided the substances which are found in waters into those the presence of which is useful and even necessary, and those which cannot exist in any considerable quantity without injuring the quality of the water for alimentary purposes.

In the list of *useful substances*, I have placed, first, *atmospheric oxygen*; second, *carbonic acid*, to which too little attention had previously been paid in regard to its presence in potable waters; third, *chloride of sodium*, the value of which for promoting digestion is daily experienced; fourth, and lastly, *bicarbonate of lime*, which I was the first to shew ought to be ranked among the most useful of these substances.

In the list of *injurious substances*, I place, first, *organic matter*, especially in a state of putrefaction; second, *sulphate of lime*; third, *other calcareous salts* (excepting the bicarbonate of lime), such as chloride of calcium, nitrate of lime, &c., when in excess.

Here my opinion seems to differ from the tendency of M.

Boussingault's experiments, which indicate in a general manner the utility of lime, whatever may be its state of combination. But this difference is but apparent.

M. Boussingault having occupied himself exclusively in investigating the influence of mineral substances in the process of ossification, has necessarily admitted that the calcareous salts, considered collectively, may all furnish the base of the earthy matter of bones.

I, on the other hand, who was studying the question of potable waters in all its bearings, took into consideration, that although sulphate of lime, chloride of calcium, and nitrate of lime, may all contribute to the process of ossification, yet they ought not the less to be considered as injurious, because all soluble calcareous salts (excepting the bicarbonate) render the waters unwholesome—that is to say, they communicate to them that objectionable property of being heavy to the stomach, of decomposing soap, and of hardening vegetables during the process of cooking, by which their digestion is rendered more difficult.

Bicarbonate of lime, on the contrary, is eminently useful, for while contributing to the organization the calcareous matter which is indispensable, it does not render the waters prejudicial to health. I have demonstrated, that the waters which contain even a large proportion of bicarbonate of lime (excepting the mineral waters of St. Allyre, St. Nectaire, &c.), become only opalescent when a solution of soap is added, and that there is no precipitate of insoluble calcareous soap. Therefore, the bicarbonate of lime ought not to be confounded, in this respect, with the other calcareous salts; for in the proportions in which it is generally contained in potable waters, it does not decompose soap, or interfere with the cooking of vegetables; but, on the other hand, it promotes the process of digestion, acting as a stimulant in the same way as bicarbonate of soda, and it contributes to furnish the calcareous matter required in the process of ossification.

Admitting, then, that sulphate of lime, chloride of calcium, and nitrate of lime are capable of furnishing the earthy matter required in the organism of the body, yet it is, according to my view, the bicarbonate of lime that principally contributes to this object. A consideration of the importance and utility of bicarbonate of lime in potable waters has induced me to seek a method of re-

cognising its presence independent of that of other salts of lime. The test generally employed, oxalate of ammonia, precipitates lime from all its combinations, and consequently leaves it undecided which salt predominates in the water examined. The means of distinction which I sought I have found in the use of an *alcoholic tincture of logwood*, which is capable of detecting the smallest traces of bicarbonate of lime in water.

This tincture should be made, either with or without heat, from logwood which has been recently cut, and which presents a yellowish colour. When the wood is of a deep red colour, it has undergone a change from the action of the air or water, and is no longer fit for making the test. The spirit should be charged with the colouring matter of the wood, so as to present a deep brown colour.

In using this test, three or four drops of it are to be added to a glass of water: if the water contains the least trace of bicarbonate of lime, it will assume a fine violet colour. The larger the proportion of bicarbonate present, the deeper will the colour be. In distilled water, either pure, or with the addition of a solution of any salt of lime excepting the bicarbonate, the test will communicate only a feeble yellow colour. The same effect takes place if the test be added to water that has contained bicarbonate of lime, but from which this salt has been precipitated by boiling. The same effect is also produced on saturating the bicarbonate of lime with a few drops of any acid. In fact, the bicarbonate is the only salt of lime which acts on the colouring matter of logwood, in the same manner as the alkalies.

It may, perhaps, be objected against the employment of this test, that the carbonates of soda and potash would give the same reaction as the carbonate of lime; but it is well known that those salts do not exist in potable waters; and further, if a case should occur in which there may be any doubt on this point, it may be set at rest by first boiling a portion of the water so as to precipitate the carbonate of lime, after which the test will give a yellow colour, if it contained only the carbonate of lime; but, on the contrary, it would give a violet colour if any alkaline carbonate were present.

*Journal de Pharmacie.*

## REVIEW.

THE SURGICAL, MECHANICAL, AND MEDICAL TREATMENT OF THE TEETH: INCLUDING DENTAL MECHANICS. Illustrated by 139 Engravings, drawn by Felix Roffe. *By* JAMES ROBINSON, *Surgeon-Dentist to the Metropolitan Hospital, &c.*—W. Webster, 60, Piccadilly, London, 1846. Second Edition.

WE do not know what is the average number of works published annually on the human teeth, but, like the number of deaths in the metropolis, or any other calculable statistic, it no doubt follows an invariable law. Month by month small *brochures* are issued, in which young and aspiring dentists dilate with eloquent earnestness on the miraculous properties of some new tooth-powder, or on the wonderful adaptation of means to ends exhibited in the contrivance of a patent tooth-brush. And this is done with a gravity which bespeaks a vast amount of self-control.

In the work before us, however, and which we ought to have noticed earlier, we have a performance that (whether it be a compliment or not) stands quite apart from the publications we have alluded to. Mr. Robinson writes because he has something to say, and he has well succeeded in saying it.

The work is essentially a practical one. We are by no means surprised that it has already reached a second edition, when we consider the several classes to which it appeals. In the first place, it contains so complete a treatise on the popular side of the subject, with so many intelligible and useful instructions to all, and to parents especially, that it is no wonder it should supersede the many venal books and pamphlets which are constantly addressed to the *public*. In the second place, it is a work of great value to the *medical profession*, from the combination of science and information with common sense, and from the high professional tone which everywhere pervades it. In the third place, to the *dentist* it is invaluable; and on one large department of his art, viz. the mechanical, it is not only the best, but the sole treatise hitherto published in England. This phase of the book is, indeed, its strongest point of appeal, and Mr. Robinson deserves great credit indeed for having the boldness to enter this new field, to

divulge its secrets, and take it for ever out of the province of empiricism.

But we should not do justice to Mr. Robinson did we not allow him to expound for himself his views on this subject. We therefore cite the Introductory Remarks to Part II of the work.

"It is certainly remarkable, that while in this country there are many excellent works on dental surgery, there should not be even so much as *one* on the mechanical branch of the profession; and the more so, as our brethren in America have already communicated to the world a mass of sound information upon this necessary and useful department of the dental art.*

"The causes of our deficiency in this respect are various.

"Foremost among these is the fact, that dentistry is too often separated from mechanics; and that the dentist is only very partially informed concerning the lower processes of his art, upon which, however, so much of its success depends. Thus the artizan and mechanic has become in many cases the sole depository of a knowledge that his employer, the dentist, ought, of right, to be thoroughly acquainted with. The knowledge, therefore, has remained traditional, and the art of printing has not yet reached it in England. Many other branches of practical science are in the same condition, and have not hitherto had the benefit of the daylight and free air afforded to every subject by the printing-press.

"This state of things it is our hope to remedy. For it must be remembered that the art of dentism is essentially mechanical, and that for this very reason it has been constituted a separate branch of practice; so that no man can be considered an accomplished practitioner who is not to the same extent a mechanic, both theoretically and *practically*. For, putting out of sight the adaptation of artificial work to the mouth, which will occasionally draw largely on the knowledge, ingenuity, and experience of the practitioner, even the every-day operations of stopping, scaling, filing and extracting, cannot be well or safely performed by any but one who is versed in the laws and resources of mechanism.

"The whole art of dentism is so intimately connected with

* To the ingenious and scientific Dr. Brown, of New York, I am indebted for the method of fixing, &c., the American mineral teeth.

mechanics, that a man may be a good anatomist, physiologist, and pathologist, yet, unless he be at home in the science and manipulations of mechanics,—unless he be mechanically-minded and mechanically-handed,—he must necessarily be a bad dentist; nay, however well he may write prescriptions and give advice, he must practise his art with disadvantage both to himself and to his patients.

"We are aware that many dentists consider the mechanical branch of the art as beneath professional dignity, and some even *pride* themselves on their ignorance of what is the greatest aid to practice. The latter are men whom we cannot hope to conciliate, and for whom real and correct knowledge exists in vain. We are well content to bear their strictures, and we appeal from them to the good sense of the public, of the medical profession generally, and of all the most enlightened practitioners of the dental art.

"We feel that secrecy is in no way necessary to the success of our calling; that by divulging with honest freedom whatever we know, we strike the most effectual blow against fraud and quackery, at the same time that we expose the knowledge for which we are indebted to our ancestors and to our own minds, to that wholesome action of public opinion, by which gradually error is sifted away, truth made brighter, invention added to and improved, complex things simplified, and the basis of all arts widened, until at length their benefits become available to the great mass of the people. And if at any time we have spoken with enthusiasm of our art, it is because we are devoted to it with sincere admiration. In it, as in a perfect though minute mirror, we contemplate the whole of surgery: it is the most defininite, precisely because it is the most mechanical, of the healing arts: it in a manner embraces them all; and in proportion as it is perfected, it must become an illustration and example of the pitch to which medico-chirurgical science generally ought to endeavour to attain.

## VETERINARY MEDICAL ASSOCIATION.

The first meeting for the Session was held in the Theatre of the College, on Tuesday, November 10, 1846.

The President took the chair, and presented to the successful competitors the Prize Medal and Certificates of Merit. Previous to this the following Report was read:—

### The Secretary's Report for the Tenth Session, 1845-6.

It is now ten years since the Veterinary Medical Association arose, phœnix-like, from out the ashes of a society which doubtless had done much for the advancement of the veterinary art. Having from the first received the support of the profession as a body, it has been able to accomplish that which its predecessor failed to do; and in proof thereof it can with no little exultation refer to the published reports of its proceedings.

With each returning year, the retrospect has developed fresh causes for congratulation; and although the charm of novelty now no longer exists, and the excitement always attendant on that which is new has long since died away, yet the body remains healthful and vigorous, age having given to it worth and stability; and increasing years, it is confidently hoped, will yet add to its estimation.

The past session has not been less prolific than others in promoting the object for which the Association was established; still, it may be, that its leading features are not precisely like those that have gone before. In one respect, however, they are; namely, in the cordial unanimity of feeling that has existed among its members, and the uninterrupted harmony which has prevailed at its weekly meetings. May no jarring or discordant note ever be permitted to disturb these unions, nor unfriendly and unprofessional disputations usurp the place of legitimate debate; but may each member, actuated by a sense of that which is conducive to the benefit of the whole, so comport himself as if on him alone rested the perfecting of the means by which the sought-for object is to be obtained—as if on him the eventual and anticipated success solely depended.

That which may be said to have marked the past session, is the

number of contributions we have received, either in the form of cases or morbid specimens, from members of the profession. The ESSAYS introduced have been less numerous than on antecedent years; yet from among them may be selected some that are highly creditable to their respective authors. Mr. Mannington's paper on many of the Diseases affecting the Encephalon of the Horse, gave proof of his observant powers and desire for investigation. Mr. Bass, by his Essay on Digestion in the Horse, shewed his love of scientific research, and the application of those principles which aid us in the comprehension of the mysterious changes that take place in the animal organism.

The subject of Pleuro-pneumonia Epizootica, introduced by Mr. Fishwick, was well calculated to call forth the unreserved opinions of those who had had opportunities of witnessing the sad ravages this disease is productive of among cattle, and to suggest modes of cure, or the adoption of prophylactic measures; nevertheless, it is unfortunately the case, that much yet remains altogether unknown, both as it respects the immediate cause of this malady, and the means successfully to be had recourse to to overcome it. Mr. Varnell introduced a paper on several singular diseases incidental to the horse in America, and which are not met with in this country; and Mr. White gave us a practical paper on Diarhœa in Sheep. Essays were also read by Mr. Rose on Laminitis, Mr. Dexter on Garget, Mr. Mitchell on Foot-rot in Sheep, and Mr. Kent on Pneumonia in the Horse. From among these the Council have deemed the following to merit the Thanks of the Association, by which their authors rank as Honorary Fellows of the Association:—

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| On Diseases of the Brain..... | By Mr. J. MANNINGTON. |
| On Digestion in the Horse .... | — Mr. E. T. BASS. |
| On certain Diseases to which the Horse is liable in America.. | — Mr. G. VARNELL. |
| On Diarrhœa in Sheep..... | — Mr. G. WHITE. |

Mr. T. H. Hurford, of the Hon. East India Company's service, forwarded several morbid specimens from India, and among them were two or three very large mulberry calculi. During the vacation Mr. Kent, of Bristol, sent an enlarged and scirrhous spleen, taken from a horse; and Mr. W. C. Spooner an introsuscepted

colon; these specimens being accompanied with the histories of the cases in which they had occurred. Allied to this last named disease was a rupture of that gut, communicated by Mr. Gowing; and also a vascular tumour existing within the same intestine by Mr. Woodger; a similar case having been recorded by him during the previous session.

But it has been said that PATHOLOGICAL CONTRIBUTIONS characterized the past session. Therefore, to particularize each and every instance, would occupy too much time and space: a few only can be noticed.

To Mr. Daws and Mr. Ainslie we were indebted for the history of a case of rabies in the dog, with the removed morbid parts, beautifully shewing the characteristic changes that result in this much and justly-dreaded disease. The first named gentleman subsequently exhibited an ulcerated larynx and trachea of a horse, detailing the symptoms that had existed prior to death.

Mr. Ernes commented on an enlarged guttural pouch that had been filled to repletion with pus, taken from a pony; also on the lacerated œsophagus of a cow, caused by an improper use of the probang; likewise on the ruptured rectum of a horse, with introsusception of the single colon and its protrusion through the sphincter ani. Mr. Litt forwarded the enlarged tonsils of a bull, with the history of the case; and diseased bullocks' tongues, the result of glossitis, were received from Mr. Bainbridge and Mr. Nobbs. Instances of abscesses on the brain of the horse, associated with meningitis, were given by Mr. Ferguson and Mr. Dunsford, and a case of softening of that organ by Mr. Mannington. A singular case of ruptured pericardial sac, and phrenic hernia, was sent by M. Garner; and specimens of ruptured spleen by Mr. Cooper and Mr. Dyer. Mr. Gowing exhibited a splendid specimen of polypi within the bladder of a cow; and also a portion of the medulla spinalis of the same animal, shewing the changes that take place in it during parturient apoplexy, probably from reflex action.

These selections will suffice to shew how valuable this division has been, and how much it is calculated to enhance our knowledge of pathological anatomy. Here, too, will not be misplaced our acknowledgment of the highly interesting and important cases of "poisoning by arsenious acid, the compounds of lead, and colchicum autumnale, with the effects produced on the tissues by

those poisons, and mode of treatment," communicated by Mr. Evers Musgrave, and with which the pages of the VETERINARY RECORD have been enriched.

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The new or improved forms of instruments that have been laid before the members during the session are,—

A spring truss, advocated by Mr. Wells, for distention of the bursæ, and more particularly of the hock-joint.

A double sliding heel-rest shoe for rupture of the tendons, invented by Mr. T. Rogerson.

A bullock-holder, by Mr. W. Cox.

Clams for the castration of lambs, by Mr. W. Burrowes.

A portable stethoscope, by Mr. H. Surman.

A needle for carrying the flexible suture wire, by Mr. J. Clements.

The attention of the members was likewise directed, by Mr. Jos. Sewell, to a material consisting of cork-cuttings and gum elastic, for stopping the feet of horses, and also to interpose between the shoe and sole.

The general approval of the members was given to the hames invented by Mr. Bencroft.

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The LIBRARY has received some few additions of books by purchase, and many by exchange, during the session; while the works continue to be freely circulated.

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The number of new Members admitted is twenty-eight.

Certificates of Membership have been granted to twenty-six; of Fellowship, to nine; and of Honorary Fellowship, to four.

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### PRIZE ESSAYS.

In this division, it must be confessed, the wishes of the Council have rarely ever been met. Again they have to regret the absence of all competition among practitioners; and even among the students that laudable spirit of rivalry has not been awakened they wish to see, since only one Prize Essay was received by them. For this, however, the senior members of the Council unanimously awarded to its author, Mr. J. Mannington, the large silver medal,

expressing their conviction that, by his industry, and the numerous careful dissections made by him of hock joints, he had well earned the reward.

For the coming session the following prize subjects have been selected by the Council :—

*For Practitioners.*—The Pathology and Treatment of the Bursæ Mucosæ of the Hock and Pastern Joints of the Horse.

*For Students.*—The Anatomy and Physiology of the Foot of the Ox and Sheep.

*The Anatomical Prize Preparation for Students.*—The Fore Extremity of the Horse from the Shoulder to the Foot inclusive, shewing the Muscles, Blood-vessels, and Nerves; the Foot being removed and separately prepared.

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Again the closing meeting of the session was

A Conversazione,

Held, as heretofore, at the Freemasons' Tavern. And again we have to record a most pleasing and profitable re-union. From the success that has attended these meetings, we could almost wish they were more frequent; yet, perhaps, this would tend to make them less attractive. The admirable papers read by Mr. Part and Mr. Tulk need not our poor commendations: they speak for themselves. The support we have received from the members of our sister profession, we are solicitous to acknowledge, and shall continue to court; for we have no wish to be alone like the midnight owl, symbolic though she be of wisdom, or solitary, "like the pelican in the wilderness." Self-love and the pride of independence have not yet engendered the spirit that contemns assistance. Reciprocal dependence seems to be existent all around us. We give, and we receive in return. The sciences are but links of one common chain; and if they hold not together, affording mutual aid, what becomes of the strength of the whole? Moreover, knowledge is accumulative; 'tis like a perennial fountain that is ever full: it is, therefore, false parsimony that refuses to communicate from it, since this but prevents the acquirement of more. To accept of support does not necessarily imply weakness,

since that which is strong may be rendered stronger, until the fortress becomes impregnable; and then truth, lodged within its mighty holds, may and can bid defiance to all the assaults of ignorance and superstition.

While thus, with feelings of no little satisfaction, we have recorded the progress of the Association for the past session, there remains that to be adverted to which, if rightly considered, ought not to awaken sorrow; yet, constituted as we are, regret will ofttimes press most heavily on the mind when death has removed those from among us with whom we once held converse. Their departure should remind us of what we owe to this life, and cause us to set our regards more on the solemn and eventful change which awaits us in our turn, when the irrevocable doom will be fixed from which there is no escaping, and which, too, admits of no delay: to the truth of this both reason and revelation have alike set their seal.

Since this subject was last alluded to several of our members have "shuffled off this mortal coil," and "put on immortality."

> "Immortal! what can strike the sense so strong
> As this, the soul? It thunders to the thought;
> Reason amazes; gratitude o'erwhelms;
> No more we slumber on the brink of fate;
> Rous'd at the sound, the exulting soul ascends,
> And breathes her native air—an air that feeds
> Ambitions high, and fans ethereal fires;
> Quick, kindles all that is divine within us,
> Nor leaves one loit'ring thought beneath the stars."

In conclusion, we may be permitted again to express our fervent hope that the Veterinary Medical Association will long continue in the undeviating course it has hitherto pursued; carefully guarding against the introduction of subjects foreign to it, maintaining the same cordiality of feeling among its members that has prevailed up to the present period, and promoting to the utmost of its power the best interests of the veterinary profession by accumulating and disseminating those truths on which it is based; thus establishing principles which, while they serve to guide its practitioners, will also be the means, when rightly applied, of not only lessening the amount of suffering experienced by animals during the invasion of disease, but likewise lead to the adoption of preventives, from

an acquaintance with the laws that govern the animal organism and the physical agents that influence it; thus enabling the veterinary profession to take its stand among the liberal and most useful professions of the day.

W. J. T. MORTON, *Secretary*.

The following officers for the session were then chosen:—

*President*..... Professor SPOONER.

*Treasurer* ..... Professor SIMONDS.

*Vice Presidents.*

| | |
|---|---|
| Mr. J. TURNER | Mr. C. TWIST. |
| " T. TURNER. | " S. T. HARMAN. |
| " J. WILKINSON. | " T. W. GOWING. |
| " W. ERNES. | " E. CRUNDALL. |
| " W. MAYOR, jun. | " D. R. FOY. |
| " G. VARNELL. | " T. J. MERRICK. |

*Secretary and Librarian*.... W. J. T. MORTON.

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TUESDAY, NOVEMBER 17, 1846.

The TREASURER in the Chair.

ON the table were laid the presentations to the Library received during the vacation. They consisted of—

"Adventures in Search of a Horse," by the Author, Sir George Stephen.

"Swendenborg's Economy of the Animal Kingdom," by the Swedenborg Association.

"The Surgical, Mechanical, and Medical Treatment of the Teeth," by the Author, Mr. J. Robinson.

"The Veterinarian," by the Editors.

"The Pharmaceutical Journal," by the Editor; and

"Journal de Médécine Vétérinaire, publie à l'Ecole de Lyon," in exchange for the "Veterinary Record and Transactions of the Veterinary Medical Association."

Specimens of Dānnāh, or Bengal gram; of Cooltee, or the gram of the Carnatic; and of Croton Seeds, were received from Mr. J. Western, V.S., Hon. E. I. C. Service.

We are indebted to Mr. D. R. Foy, who has resided many years in India, for the following account of

## Indian Gram.

Of the order graminæ we have, indigenous to India, a species cultivated very largely by farmers in the upper provinces of Bengal, called by them "Dānnāh;" by the natives of Madras and Bombay, "Chúnnáh."

The plant is an annual, averaging from two to three feet in height; its leaves short, irregular, and slightly serrated, and of a dirty green colour; its flowers small, and of a pale yellow hue; and its seeds invested in a calyx.

Prior to gram being sent into the market, it undergoes a process somewhat similar to wheat. On the seeds ripening, which is generally evinced by the splitting of the calyces in which they are enveloped, the plants are up-rooted and exposed to the sun several days, and, when thoroughly dry, "thrashed." Thus denuded of their covering, the seeds are re-exposed to the action of the sun's rays till they assume a light brown colour.

The price of gram varies according to the district whence it is produced, the "Patna" fetching the highest price, the "Dinapore" next: that cultivated in "Mirzapore," "Benares," and other districts, selling at an inferior price.

Gram is sold in India by the maund, a measure equivalent to eighty pounds, for from two rupees to two rupees eight annas per maund (four to five shillings).

When green and recently collected, gram is partaken of as a luxury by the natives as well as Europeans, in the form of a "mess" called "kedgeree," a preparation of rice, ghee, and gram, with condiments. The poorer classes of natives live upon it principally when in season.

In its dried state, gram constitutes the chief provender of horses in India, the quantity allowed to a full grown animal, and in constant work, averaging from five to seven seers, or ten to fourteen pounds per day; with as much green grass as the horse can eat. It is either given boiled, coarsely ground, or steeped in

cold water, in three portions, morning, noon, and evening, with a little "kāllee noon" (block salt).

On the line of march, when forage is scarce, an allowance of a seer or two extra is made.

I have frequently, in the lower provinces of Bengal, seen gram given with "bhoosee" (bran) in the proportion of two to three, or to every seer of gram a quarter of a seer of "bhoosee." Whether this is done from a principle of economy, I know not. I have invariably found my horses thrive better with gram steeped in cold water than with the addition of bhoosee, or plain boiled gram.

As goat's milk is drank in large quantities by the Hindoos, a certain quantity of gram is allowed to milch goats, varying with the size of the animal: to a full-sized goat, from two to three seers (four to six pounds) are given per diem.

Cattle intended for the market are likewise fed on gram; hence the high price which gram-fed meat obtains in the bazaars of India. I cannot with certainty say whether milch cows are fed on gram: it may be allowed in some dairies; I do not, however, believe it to be generally given.

On the line of march I have seen camels fed on gram. As these animals would consume a large quantity if it were allowed as their only food, the bulk of their daily allowance is constituted of bhoosee, with about six seers of gram, and as much of the leaves of the "bubbool" plant as they will eat.

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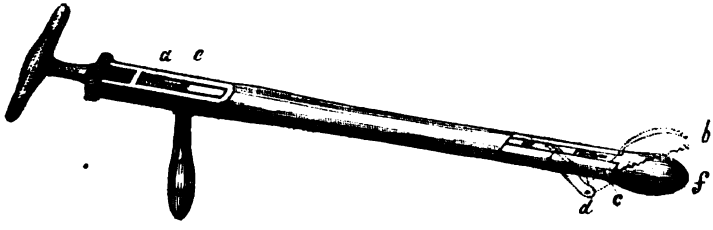
A model of a Lithontriptor, invented by Mr. W. G. Robinson, of which the subjoined woodcut will convey an idea, was presented.



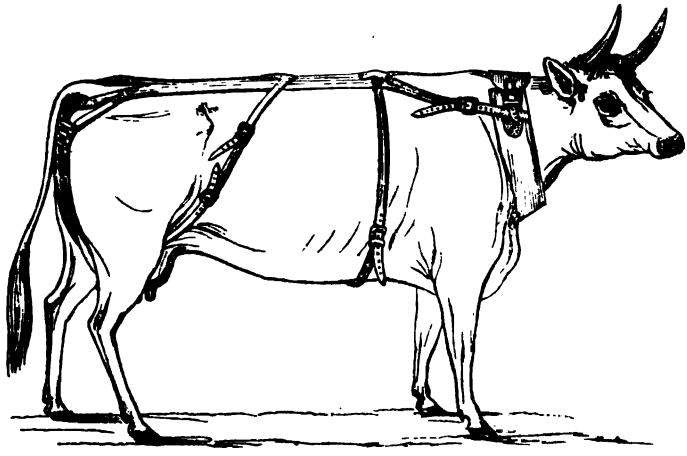

*a*, Thread of screw as 10 to 1.
*b* to *c*, and *c* to *d*, As 2½ to 1.
Therefore the actual ratio of power is as 3 to 1.
*a* to *f*, Position of the Instrument when closed.
*e*, *d*, *b*, Its position when open.

Mr. Robinson also suggested that a portion of the peritoneal membrane of the small intestines of the ox should be attached to the urethral dilator, instead of the bag now made use of, which is formed of Mackintosh cloth.

An improved form of the Wooden Clams used for castration was exhibited by Mr. Varnell. He proposes that, instead of a groove being in one of the clams for containing some caustic agent, as is generally the case, a ridge on the opposite clam shall be made to fit into it perfectly, so that by pressure the cord may be effectually destroyed.

Mr. J. Thacker forwarded an improved Muzzle for a Dog. It is formed of open wire-work, affixed to the head by means of leather straps; and it readily allows of the administration of medicine, fluid-diet, &c., to the animal without removal.

Mr. T. W. Gowing exhibited an ingenious little instrument, invented by him, and designated the "Metallic Suture Forceps." Also, a complete Harness, or Truss Apparatus for the Cow. *(See the subjoined woodcut.)*



The following communication will best explain the advantages derivable from the use of this apparatus. Mr. Simonds expressed his conviction of its being a decided improvement on any yet introduced, and to be preferable to that hitherto advocated by him.

Dear Sir, 1, *Stucley Terrace, Camden Town.*

I HAVE forwarded to you a form of harness, or truss-apparatus, that I have been in the habit of using for a long time past in cases of inversion of the uterus and protrusion of the vagina, or falling down of the first passage, as it is termed, in cows, and which so frequently occurs during the time of pregnancy. Under such circumstances, I have usually allowed the animal to wear the apparatus for a week or two, taking care, at the same time, to have the stall made lower in front, so that the cow's hind quarters may be elevated. Such treatment has proved most successful in my practice; and I think it is far preferable to the passing of metallic or other sutures through the vulva, which is sometimes recommended.

Deeming this might be worth a nook in THE VETERINARY RECORD, may I beg of you to place the apparatus before the members of the Veterinary Medical Association at their earliest meeting?

I am, your's respectfully,

*To the Secretary of the Veterinary Medical Association.* T. W. GOWING.

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The following communications were then read:—

My dear Sir, *Crediton, Oct.* 6, 1846.

I HAVE sent you a phial of "Red Water" with a list of the tests made use of by me to prove the existence of albumen, &c. in it. You will have the goodness to examine the same; and I have no doubt but that your analysis will either prove the correctness of my inference, or nullify the same. I hope soon to forward you my opinion as to the cause of this disease, in addition to what I have now sent you, namely, the characteristic properties of the urine.

I am, dear Sir,

Your's truly,

*To Mr. Morton.* R. READ.

*Tests.*

1. An alkaline reaction with the reddened litmus or cabbage-paper test.
2. Nitric acid, when added, instantly coagulates it.
3. Placed in a spoon and held over flame has the same effect.

4. If allowed to stand a short time after it is coagulated, a red muddy deposition takes place, and a transparent pale-coloured fluid floats above.

5. Stir the fluid and coagulum together; then filter, a muddy red substance is left.

6. Each fluid ounce contains about one drachm of this substance in a moist state, after being slightly compressed between folds of bibulous paper.

7. Add liquor potassæ to the substance left on the bibulous paper, and you have the primitive fluid perfectly restored.

8. The specific gravity of red-water is much above the natural standard.

9. The solid part of red-water, examined under the microscope, shews it to be made up of lymph and red globules.

10. The colouring matter of red-water is caused by a mechanical suspension of red globules, and, most probably, hæmatosin, modified by excess or want.

11. Red-water is therefore a disorder in which, from an atomic alteration of the blood-globules, blood is excreted from the kidneys in an unusual condition.

12. Bile cannot be detected in it by the usual tests.

13. The diarrhœa attendant on red-water is also of a serous character, and the alvine dejections afford indications of the presence of serum when tested.

14. Artificial red-water, made by stirring blood in urine, behaves in a similar manner to true red-water when these tests are applied to it.

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## On Crassamenturia, or Red-water in Cattle.

I have purposely given to the disease this name, in contradistinction to albuminaria, as in the latter affection the albumen of the blood only is met with in the urinary excretion; whilst in the former the colouring matter and blood-globules are also found along with it. Red-water, or crassamenturia, is of very frequent occurrence among cattle; and the real nature of this disease has been for years past a matter of dispute among the members of the profession. I will, therefore, endeavour to place before the Association in a lucid manner my peculiar views, observing,

1st. That the premonitory symptoms are rarely noticed, and animals labouring under this affection seldom evince much indisposition at the onset, so that scores of beasts pass it off without any remedial means being had recourse to, from their presenting no general disturbance in their habits; and in nine cases out of ten the urinary discharge is the first thing noticed, and that by some casual observer.

2d. That the symptoms which manifest disease in the animal are in conformity with the duration of the attack and the loss of blood.

3d. That "Red Water" and "Black Water" are identical diseases; the colour of the urine being modified by the long or short duration of the attack.

4th. Crassamenturia is a defibrination of the blood, produced by an alkalinity of that fluid, whereby its atomic arrangement is altered, and it then escapes through the secerning vessels of the kidneys along with the urine; it being a well-known and established fact, that either the volatile or the fixed alkalies will render the blood more fluid and less coagulable.

5th. The attendant diarrhœa is of a serous character, and the dark colour of the fæces arises from the exudation of the colouring matter of the blood into the intestines. The serum is indicated by the usual tests.

6th. The peculiar saffron-colour of the inside of the ears and the skin of the mammæ, and the cutis generally (in some cases), is owing to the infiltration of highly-coloured serum into the subcutaneous tissue; and this is frequently observed in congestive pneumonia of the horse, in the conjunctiva and iris, and is erroneously by some ascribed to the bile.

7th. It is by some practitioners disputed to be blood in "red water," because it does not coagulate. It might be just as well said that there is no albumen in albuminuria, because it does not coagulate until nitric acid is added to the urine. In crassamenturia no clot is found, although serum and red globules are suspended or held in solution in the urine, the fibrine of the blood remaining behind.

8th. Its attacks are usually in conformity with the seasonal variations; such as sudden change of pasturage, more especially after showers; peculiarity of soil or of herbage; or the food not being matured, or improperly saved; mow-burnt or musty hay;

chemical action induced in the rumen, or certain agents existing there; for instance, hydrogen in excess may be evolved, which, combining with the nitrogen taken in with the saliva, either during mastication or rumination, may combine chemically, so as to form ammonia; and if this be considerable, or more than can be neutralized by the free muriatic acid of the digestive apparatus, it may pass into the circulation, and cause the alkaline reaction possessed by the urine in crassamenturia.

9th. Ænemia in an animal labouring under red-water arises from the waste of the albumen and red globules of the blood; and supposing an animal voids 450 ounces of urine per diem, the daily loss of muscle-forming principle and of red globules will amount to more than three pounds weight, calculating each fluid ounce to contain one drachm, as I have proved by experiment. When an animal is about to recover from crassamenturia, the urine begins to assume a more florid colour, the hæmatosin and red globules are the first to disappear, and the albumen last of all. If the disease continues unabated, the animal dies about the fifth or sixth day from the loss of the vital agencies in the circulating fluid. Animals also die after the urine has resumed its primitive or natural colour, when the beast, on examination, proves to be exsanguineous, or, in other words, dies from a deficiency of red globules, these being essentially necessary for the performance of the functions of animal life.

*Treatment.*—In accordance with the views I have taken of the disease, my first plan is to increase the secretions of the bowels, so as to diminish the excess of fluid serum in the blood; and, secondly, to supply its loss of albumen and red globules by giving azotised fluids, accompanying the same with the internal administration of acids and mineral tonics. This I have found to constitute a most successful mode of practice in this disorder.

*Post-mortem examination.*—Among the few cases I have had for examination after death, two occurred in which the kidneys were *decarbonized.* This state is called gangrene by many pathologists. Now it is a fact that the urine in both cases had resumed its natural colour, and was voided in full quantity; but the animal died from pure debility. Sometimes a portion of one kidney only is affected, at other times both kidneys exhibit this blue-black appearance on their surface, which smells strongly of *animal carbon.*

It does not extend into the substance of the kidney, but is confined to the external surface, not exceeding the sixteenth of an inch in thickness; nor has it the least appearance of being surrounded by any congestion or inflammation, and the substance of the kidney contiguous to it is healthy. My conviction is, that it arises from that gland, which is chiefly composed of animal fibrine, not being able to withstand the attack of oxygen which the blood carries to the organ with renewed vigour as the animal is recovering; it being a fact well known to all, that animal fibrine possesses but little force against the action of oxygen, so that this black or rather blue tinge is, in fact, combustion of the kidney.

These are my views of the nature of crassamenturia, physiologically explained on chemical principles. I trust, therefore, this subject will be discussed by members of the Veterinary Medical Association dispassionately, my sole object being the advancement of our science. If I have erred, it is not intentionally, but arises from the frailty we all labour under.

*Notes added.*

1. Crassamenturia must not be confounded with the accidental discharge of blood mixed with the urine arising from mechanical causes, such as blows over the loins, hard-worked oxen in the plough, and severe parturition in cows: in such cases coagulated blood is met with.

2. Atmospheric air is conveyed into the rumen with the saliva during mastication and rumination, proved by the bubbles formed.

3. Hydrogen is rapidly evolved from fresh herbage, more particularly after showers.

4. Some farms on which (from peculiarity of soil) cattle have it once a-year, there are certain fields known to be productive of this disease under the influence of the seasons; thus, on clay soil it is more commonly seen than on red land, from the former possessing inorganic alkaline bases.

[This paper led to an interesting discussion; but we have chosen to give to the professional public Mr. Read's somewhat novel views on this disease in the state they reached us, rather than to append the speculations of others. The subject is one worthy of investigation; but whether the ingenious theory advanced by him be

correct, or whether the varied changes that take place in the organism can be explained by a reference to chemical principles alone, are questions we are, fortunately, not called upon to solve. We may, nevertheless, be permitted to express our conviction, that there is a higher force or power in operation in the living body by which these principles are controlled; but when this ceases to act, or becomes less potent, then it is chemical laws may and do obtain the ascendancy, and thus very many of the transmutations are effected in the animal frame: and, assuredly, no division of natural philosophy comes so powerfully to the aid of the physiologist as that designated Chemistry; still "there are changes of which our philosophy has not yet dreamt."—*Editors.*]

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TUESDAY, NOVEMBER 24, 1846.

The PRESIDENT in the Chair.

The following communications were read:—

CASE OF RUPTURED STOMACH OF A HORSE.

*By Mr.* W. ROBINSON, *M.R.C.V.S.*

Dear Sir, *Tamworth, May* 14, 1846.

I SENT to you this morning a packet containing the ruptured stomach of a horse. The extent and violence of the mischief appearing to me of rare occurrence, I could not forego the opportunity of troubling you to place the specimen before the members of the Veterinary Medical Association, hoping it might afford some interest and instruction to the junior members of that body.

The horse had had three similar attacks during the two last months, but more slight than this (the fourth), which ended in death.

I saw the horse yesterday morning and the symptoms then present were very violent. The animal was incessantly lying down and instantly rising again, and on each occasion he would raise his fore quarters, and rest a moment or two upon his houghs before the act of rising was completed. He constantly looked back to his sides; but there was no scraping or pawing of the ground with

his fore feet. Perspiration covered the whole body. The pulse was quick, and the mouth offensive. He was bled copiously, to the amount of seven quarts, and afterwards four quarts of blood were abstracted. An extensive blister was applied over the belly, and repeated at short intervals, with the injection of clysters every hour. Death, however, took place twenty-four hours after the attack.

On opening the abdomen, it was at once evident that the stomach had given way, the whole of the contents of this organ being lodged in the omentum in one entire mass. Indeed, this viscus seemed to have received the whole of the solid contents of the stomach, consisting of oats, linseed, and hay, the first two being in an unmasticated state, and to have held them in its folds, as but little food was apparent in the fluid portion floating in the belly. The intestines were free from disease, except one or two spots and a slight blush of inflammation on the small ones. The apex of the cœcum was much contracted, and of a purse-like form, the gut itself being quite empty. The pyloric orifice of the stomach and duodenum I wish to be particularly examined when the parts are laid open, as I think the portion of the stomach where it blends with the duodenum is thicker than ordinary. It may have been the seat of spasm, and that to such an extent as to prevent the passage of the food into the intestines; or, was the food detained by indigestion, thus producing gastritis and death?

I am, dear Sir,
Faithfully your's.

*To Professor Morton,*
*Secretary to the Veterinary Medical Association.*

[Unfortunately, the morbid specimens sent by Mr. Robinson were received during the vacation. They were, however, examined by Mr. Pearson B. Ferguson, V.S., of the 12th Lancers, then Demonstrator of Anatomy at the College, and the following description of the lesions that had taken place has been kindly furnished by him.]

Gentlemen,—The morbid parts obligingly forwarded to the Association by Mr. Robinson, of Tamworth, were examined by me. I observed that a rupture of very large dimensions had taken place

at the great curvature of the stomach, which, having allowed of the escape of the ingesta into the abdominal cavity, as a matter of course, soon caused the death of the animal.

This kind of lesion is not at all uncommon in the horse, and was not sent by Mr. Robinson as such, or as being even a rare case; but as an instance presenting some peculiarities well worthy of our attention.

The most remarkable feature in the case, and one which also seems to have struck Mr. Robinson, was the great dimensions of the rupture, and the nature of the laceration of the coats of the stomach, which I will endeavour to describe as accurately as I can. The rupture was complete from that part of the organ which becomes thickened, before the formation of the pylorus, to about three inches beyond the junction of what has been described as the mucous and cuticular coats; that is to say, it pervaded the entire of the mucous division of the organ, and also extended about three inches into the cuticular. Thus far all the coats of the stomach had given way; and the rupture was, therefore, complete at those parts. But the lesions were not confined alone to the region I have mentioned, but on the outside of the organ the peritoneum was torn nearly the whole extent of the great curvature, the edges of the separated parts being very far asunder. The laceration of the muscular coat was also of greater extent than the complete rupture, but still not so extensive as that of the peritoneal, and the edges of the separated parts here were not so distant from each other, so that there was a part of the muscular coat uncovered by peritoneum on each side of the laceration; while, again, the muscular tissue left a part of the internal coat bare on its external side.

Now, by reflecting on the appearances presented in Mr. Robinson's case, we are led to a most interesting inquiry, and I may add satisfactory conclusion, as it regards these lesions. The first question which the pathological anatomist will ask himself, if he be really desirous of tracing the relations of cause and effect, is, how, and in what manner do these lesions take place? The *cause*, as every one must know, is distention of the organ, and the *modus operandi* is clearly demonstrated by the appearances which were so strongly marked in the case under notice. I dare to say it has

often been observed by the mere beginner in anatomical pursuits that there is a very great difference in the *extensibility* of the tissues composing the animal body; and in no one organ is this difference more remarkable than in the stomach, which is commonly described as being composed of three coats—the peritoneal, the muscular, and the internal or mucous. Now, of all these, the peritoneal is the least extensible. The muscular or middle coat is more so; while the internal, although exceedingly delicate, is nevertheless *with its connecting areolar tissue* the most extensible of all. And, bearing these facts in mind, it is facile to account for the appearances that presented themselves in Mr. Robinson's case, where distention, arising from indigestion, caused the laceration of each coat successively, according to its non-extensibility. Thus, the peritoneum tore first; then the muscular layer yielded to the utmost of its extension, and at last gave way; and so likewise with the internal coat, thereby producing that peculiar appearance of irregular separation of the lacerated edges of each coat as related to the others.

This, however, is not the only question bearing upon lesions of the tissues of the stomach which may be explained by reflecting on this case. There is another of even greater importance, which is the *possibility of the recovery of an animal after a rupture of the stomach has taken place*. In several pathological works mention is made of instances in which, on post-mortem examinations having been made of cases that had died from various diseases, cicatrices were found in the stomach; and these are cited as recoveries after absolute rupture of the organ. Now, if we for a moment reflect, this inference must at once be considered as erroneous, since it is evident that, if complete rupture had once existed, an escape of the aliment would take place into the abdomen, and death must inevitably follow.

These cicatrices may, however, be accounted for by bearing in mind the facts I have stated of the difference in the extensibility of the coats of the stomach and the consequent different liability to laceration. The truth is, that in the cases cited as recoveries from ruptured stomach the peritoneum *only* was lacerated, and the cicatrix was the natural result, when laceration of the other tissues of the organ did not take place.

Probably, however, there are many who disagree with me as to the *modus operandi* of rupture of the stomach; and who will contend that the muscular layer will be the *first* to give way; and such, no doubt, will endeavour to support their view by saying that here, as in other situations, the muscular tissue gives way and tears from the violence of its own contractions, which are exerted to overcome the distention of the organ; and then, the principal coat having given way, the others necessarily follow. To those who argue thus I would, however, with the greatest respect for their reasoning powers, beg to state the fact, that the ultimate structure of the muscular tissue of the stomach is quite distinct from that of ordinary voluntary muscles, and that its contraction or mode of action is also different. And, moreover, that, in all kinds of muscular tissue, the power of re-action or contraction is lost if the tension or distention be gradual and *long continued;* and thus, it being acknowledged by all physiologists of eminence that the *tonicity* of muscle is evanescent, it will at once be seen that the lesion under discussion cannot take place by the force of *contraction*, but is most certainly the result of *distention*.

Mr. Robinson, in his letter, alludes to that portion of the stomach which blends with the duodenum, and seemed to think it would be found thicker than natural, and, if so, that it may have been the seat of spasm, and that to the extent of preventing the passage of the food into the intestines. There was not, however, any unusual thickening about these parts more than what would have followed the rupture; and it should be always borne in mind by us, that this part of the organ is normally thicker than the contiguous parts, and thus, in fact, forms the half-valvular opening called the pylorus. The immediate cause of death, then, was the rupture of the stomach, which itself was the consequence of indigestion, as suggested by Mr. Robinson, and this was shewn by the unmasticated state in which the food was found at the post-mortem examination. It also seems that this animal had been frequently the subject of indigestion; for Mr. Robinson states that within the last two months he had no less than three attacks, the symptoms resembling those of the last attack, which proved fatal.

As to the peculiarity noticed by Mr. Robinson, of the animal assuming a sitting posture, there is nothing unusual in this taking

place in cases of rupture of the stomach or the diaphragm, but is rather to be viewed as a pathognomonic sign. It is, nevertheless, not invariably present in those lesions; still its absence is to be considered as an exception to the general rule rather than the rule itself.

I am, your's respectfully,

*To the Members of the Veterinary Medical Association.*

PEARSON B. FERGUSON.

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CASE OF RUPTURED STOMACH OF A HORSE.

*By Mr.* T. W. GOWING.

1, *Stucley Terrace, Camden Town.*

Dear Sir,

SOME time in May last a horse was brought to my infirmary supposed to be labouring under spasmodic colic. The following symptoms were present:—The patient shewed general uneasiness, such as would arise from acute abdominal pain, evidenced by pawing and drawing himself up or crouching, and endeavouring to lie down. The pulse was from 50 to 55, as near as I could take it from the uneasiness of the animal, with a vibrating stroke every third or fourth beat. The previous history of the case was then inquired into, and the man who brought the animal to the forge stated that he had been fed with the other horses previous to his taking him out in a waggon loaded with coals, his journey not being above two miles, but a part of the road was particularly hilly. When he had accomplished about three-fourths of his journey, he was observed to shew some uneasiness, and to manifest those symptoms generally observed in colic; he was, therefore, unhooked from the team, and brought to my infirmary. An opiate draught was immediately administered, an examination made per rectum, the fæces removed, and an enema thrown up. After the administration of the draught the pain became more acute, perspiration covered the body, and the animal appeared to be suffering intense agony. I directed him to be placed in a well-littered box, and to have hot water freely applied to the abdomen. The animal was seen again by me in an hour, when I was informed that the pain

had continued without any intermission whatever. Another draught was given; but I at once told the owner that from the severity and continuation of the symptoms I thought it most probable that a rupture of some part of the alimentary tube had taken place, and the case would prove fatal. The horse died in five hours from the attack.

*Post-mortem examination.*—On laying open the cavity of the abdomen, a large quantity of ingesta appeared free in the peritoneal sac. The colon was removed, with the other intestines, and they were found to be healthy, with the exception of a slight blush of inflammation on the peritoneal coat. The cœcum was rather flaccid, the intestines contained no flatus, and the contents of the colon were in a softened state. The stomach was next removed, and in it was perceived a large rupture, extending eight or nine inches along the large curvature, which was, of course, the cause of death. In this case the characteristic symptom usually said to be present when a rupture of the stomach has taken place was not observed, namely, attempts to vomit; but there was great difficulty in performing the act of deglutition.

I am, your's, &c.

*To the Secretary of the*
*Veterinary Medical Association.*

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## Case of Ramollissement of the Brain, with Effusion into the Ventricles and Theca Vertebralis.

*By Mr.* H. S. Copeman.

Dear Sir, *Walpole, Nov.* 2, 1846.

The following is a brief history of the case connected with the cranium of the horse, which I have forwarded to you. He was a bay horse, aged, of full habit of body, and of strong, able conformation.

On October 17th, my attention was first directed to him. A degree of stupor has been evident for several days past, which has continued to increase, until at length all consciousness at times seems to be lost. He is evidently deaf, and his sight is also very imperfect. Pulse 30, and full; visible mucous tissues injected;

skin dry, and coat harsh; head constantly depressed, nodding and waving about: when moved, he reels and staggers. Any attempt being made to either fix or elevate the head is forcibly and violently resisted, and the bowels are constipated.

*Treatment.*—Withdraw blood, and give a strong cathartic combined with a stimulant.

18*th.*—Head a little relieved, but still much dulness is present, and the horse staggers when moved. Pupil of the eye dilated, breathing stertorous, and the bowels remain torpid. Give more cathartic medicine, and blister the whole of the top of the skull.

19*th.*—The medicine and blister have both had the desired effect, and the animal is evidently much relieved.

20*th.*—Still improving; action of bowels regular.

21*st.*—Symptoms not so favourable as yesterday.

22*d.*—A decided relapse. Pulse 40, and full; conjunctiva of an orange hue; pupils dilated; partial paralysis of the hind extremities; bowels again torpid, although nearly ʒiv of Barbadoes aloes have been given every day. Give croton oil a full dose, and insert a seton, ten inches long, on each side of the poll.

23*d.*—Very little alteration perceptible, but the medicine is beginning to operate.

24*th.*—The symptoms are more favourable. He takes notice when spoken to: the fæces are pultaceous; pulse 32, and soft.

25*th.*—The animal evidently improved, the setons discharge copiously, and the pus is laudable, while the action of the bowels is regular.

26*th.*—Again an unfavourable change has taken place. The pulse is 40, weak and irregular; mouth hot and dry; extremities cold; coat staring, and animal very drowsy; the head nodding and waving as at first.

27*th.*—Animal still worse; he is almost constantly walking or rather staggering round his box; snapping his teeth; occasionally catching up his litter, and carrying it about in his mouth; and now and then pushing his chest or head forcibly against the walls or manger, as may be.

28*th.*—The symptoms have become more favourable, and the animal continued to improve till the 30th, when I saw him at noon. He would then turn his head when spoken to; neigh to the other horses; and nothing particular was observed until about eight

o'clock in the evening, when in a short time all the worst symptoms of delirium set in, and the partial paralysis returned in an aggravated form. When I arrived he was rushing violently round his box; the eyes appeared ready to start from their orbits, the nostrils were dilated, and he frequently seized the walls and manger with his teeth. I immediately had recourse to bleeding, and gave an opiate combined with a cathartic, which in a few hours relieved him very much. From this time, however, until the 2d of November, he was unable to partake of either food or water, having apparently lost all power of getting them into his mouth: still he could swallow medicines when they were forced over the dorsum of the tongue. When at liberty he was constantly turning round, and that always in one direction, forcing the off side of his face against the wall. He several times fell from debility, but rose again in a few minutes. He then gradually became weaker, and appeared to me to die from sheer exhaustion, produced by constant exertion, excitement, and an inability to take food, rather than from actual disease. I may be permitted to add, that immediately after death his jugulars were opened, and he bled freely.

*To Mr. G. Varnell,* I am, your's faithfully.
*Demonstrator, Royal Veterinary College.*

My dear Sir, *Walpole, Nov. 9th,* 1846.

In consequence of a misunderstanding relative to the time when the horse's head would reach the Royal Veterinary College, I much fear my last note was written in such a hasty manner, and so very abruptly finished, that it is hardly intelligible.

I have much pleasure in sending a few more particulars of this singular case. The horse was bought at an auction, several miles distant, only a few weeks since; and was observed by the man who used him to walk with his nose protruded, also that he experienced much difficulty in flexing his head or turning, and at all times appeared stupid, obstinate, and dull.

The following is a copy of my notes of the autopsy:—

"On laying open the abdomen, the stomach was found firmly contracted upon its contents, which consisted of about half a peck of coarsely masticated food (principally straw)—the villous and cuticular tunics were corrugated, but presented no abnormal

changes—the large intestines healthy, and their contents semi-fluid, except a small quantity in the rectum—liver and spleen both slightly congested, but firm—lungs and heart perfectly healthy; in fact, I never saw these organs so free from congestion in an animal not slaughtered—kidneys and bladder free from disease; the bladder however was distended with thick straw-coloured urine; a section of the vertebræ disclosed the spinal cord in its course through the cervical portion somewhat softer than natural, with an injected state of its membranes. This was very observable at those places where the nerves are given off and pass through the theca vertebralis. On proceeding towards the dorsal division these abnormal appearances gradually decreased, and in the lumbar portion only a slight inflammatory blush could be detected. I observed the morbid sac on the poll, but could not detect any cicatrix in the skin. In my opinion, the walls of this sac consist principally of calcareous matter. It contained about an ounce of a pellucid fluid."

I should have informed you that, when the head was taken off, a large quantity of transparent fluid escaped from the spinal sheath.

*Remarks.*—In this case the peculiarities are, a partial loss of vital energy in the whole nervous system. The remarkably slow and feeble pulse (for it was only during the paroxysms of delirium that the pulse at the submaxillary artery could be called full), the tardy action of the respiratory and the torpid state of the digestive organs, all indicated a great want of power in the nervous system; producing, not organic, but simply, at first, functional derangement of all the most important organs of the body. The animal's persisting in standing from the first until he died, is also somewhat singular.

I am extremely obliged by your prompt reply, and beg to remain,

Your's truly,

*To Mr. Varnell.* H. S. Copeman.

*Mr. Varnell.*—I examined the morbid specimen sent by Mr. Copeman, which consisted of the cranial portion of the head of a horse, with the atlas attached to it, the skin having been taken

off. In separating the atlas from the dentata, there can be little doubt but that a large quantity of fluid had escaped, as stated by Mr. Copeman, from the blanched appearance of the parts within the theca vertebralis. A ligature was tied around the theca, which prevented the escape of *all* the fluid. On the poll, immediately under the ligamentum nuchæ, were the remains of an abscess, the walls of which consisted principally of calcareous matter, involving the ligament that proceeds from the atlas to the upper border of the foramen magnum of the occiput, and also the capsular ligament. I next proceeded to expose the brain and spinal marrow in the usual manner, and I observed no congestion nor turgescence of the vessels, more than we might expect to find in a horse that had not been bled to death. On removing the brain from the cranial cavity, and cutting through the olfactory nerves, a large quantity of straw-coloured fluid escaped. There was no abnormal growth of bone within the skull, nor any tumour. On laying open the lateral ventricles, they were found to contain a larger quantity of fluid than natural; and on examining the substance of the brain and spinal marrow, it was in a softened state, much more so than is natural; and particularly the medulla oblongata and medulla spinalis, which were also diminished in size.

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## Case of Ulceration of the Uterus of a Bitch.

*By Mr.* Geo. Yeomans.

Dear Sir, 87½, *Guildford-street, Nov.* 24, 1846.

A small bitch of my own, large with pup, fell from a height of four feet about three weeks before the time of parturition. In four or five days after the accident a great desire to sleep was shewn by her; the belly became unusually pendulous, and pressure on it created much pain, evinced by a shrill cry, which was also emitted when she was taken up; a most unusual thing with her. As the period of parturition approached these cries became more frequent, and much uneasiness was expressed. As but little could be done under existing circumstances, she was kept quiet and

made comfortable. On the evening of Thursday last she brought forth four puppies, the last one being dead. A little warm milk was given to her, the bed made up, and she was left for the night. On the following morning she had a violent fit. I placed her in a warm bath, and afterwards gave a table-spoonful of the castor oil mixture. In the evening I repeated the bath, and threw up an injection of warm water. On Saturday morning she experienced a more severe attack. She got out of her bed, and ran round the place as if mad, her eyes appearing ready to burst. The baths were repeated at intervals during the day, and in the evening I thought she was better, as consciousness had returned; but on Sunday morning she was found dead.

*Post-mortem examination.*—On opening the abdomen, the peritoneal lining, and also that covering the intestines, was perceived to have been inflamed, and the abdominal cavity contained much dark-coloured fluid. On laying open the intestines, only a little bile was met with; but on examining the uterus the cause of death was at once apparent. Two large and ill-conditioned ulcers existed on one of the horns of this organ. They had completely perforated all the coats, forming a ready communication between the uterus and the abdomen. The condition of the uterus shewed that these ulcerations were recent, and probably owed their existence to an injury inflicted on the organ when in a forward state of gestation, thus forming a prominent part for receiving the greatest amount of the force of the fall, and bruising the uterus between the walls of the abdomen and one of the fœtuses. To this succeeded inflammatory action, which quickly terminated in ulceration.

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TUESDAY, DECEMBER 1, 1846.

The TREASURER in the Chair.

Mr. J. Wilkinson, V.S., Second Life Guards, placed on the table a fractured metatarsal bone of a horse, which was accompanied with the following history of the case in which it occurred.

*To the Members of the Veterinary Medical Association.*

Gentlemen,—As the following case presents some extraordinary features, I have deemed it not unworthy of your consideration.

The patient was admitted into the hospital with an incised wound, completely dividing the skin to the extent of an inch and a half on the inside of the lower portion of the right metatarsal bone. There were not any unusual appearances either in the wound itself, or its consequences.

The diet was retricted to soft food, the wounded leg bathed in warm water, and then enveloped in moist bandages to the extent of six inches above and to the same extent below the wound. This treatment was continued until the fifth day after the accident, when the wound was dressed with digestive ointment, and the bandages applied as before. This latter treatment was pursued for seven days, during which time the granulations were luxuriant and healthy, and the patient did not suffer from any systematic irritation.

On the thirteenth day the granulations were not looking quite so well as I wished to see them, when a modicum of common petroleum was added to the ointment, which had the desired effect; and the healing process continued to go on until the eighteenth day, when the sides of the wound approached each other for cicatrization, and the patient took his walking exercise without any apparent pain or lameness.

On the morning of the nineteenth day *the leg was found fractured*, and the patient in excruciating agonies. I directed him to be shot immediately, there not being the least chance of an ultimate cure; and upon a post-mortem examination I found a considerable quantity of blood recently extravasated into the cellular tissue surrounding the fractured bone; but the periosteum and membranous structure lying contiguous to the fracture did not indicate inflammatory action of long standing, or, in short, any that may not be said to have been produced by the lesions attendant upon the havoc of the preceding night.

The fracture, as you will perceive, is an irregular transverse one, and very suitable for keeping the parts in apposition during the period when the limb was obliged to support its share of the

superincumbent weight of the animal. From the demi-smooth appearance of the fractured surface of the bone, I think there can be little doubt that the fracture took place at the time the external injury was sustained; but that the periosteum, aided by the dentiform margins of the fractured ends of the bone, kept up the rectiform position of that portion of the extremity, until by some mischance the weight was thrown out of the vertical line upon the part fractured, and then it was that a perfect separation of the ends of the bone took place.

I may be permitted to add—which, nevertheless, I presume I should have been given credit for—that I carefully examined the wound with my finger, which I prefer to a probe of any kind, on the admission of the patient into the infirmary, and could not detect the slightest injury inflicted on the bone. Nor was there at any time, until the complete separation of the fractured bone took place, the slightest constitutional disturbance, nor from the wound the offensive discharge that indicates the bone to be involved; and there was also the absence of all pain, and lameness, and undue swelling.

I am, your's, &c.

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*Mr. Bass* considered the case to be one possessing much practical worth, from the absence of those symptoms which are usually attendant on fractures, and the long time that had interposed between the infliction of the injury and the unfortunate result. He had witnessed a similar instance, in which the radius was fractured; and here, too, the periosteum was entire. As a general opinion, he thought veterinary surgeons were too hasty in ordering animals with fractured limbs to be destroyed, since there was a greater tendency to union in their bones than in those of man: of course, he did not mean his observations to apply in this case, since it was one altogether unusual. From the appearance of the divided ends of the bone, he was inclined to infer the absence of the necessary amount of inflammation so as to result in the deposition of osseous matter, this being dependent on the want of constitutional power.

*Mr. Herman* thought it was attrition that had prevented the throwing out of the granulations.

*Mr. Reeve* had observed, in two instances of fracture occurring

in old horses, that there was not the slightest tendency to reunion. Age, therefore, should be always taken into account before an opinion is expressed as to the probable result of the case.

*Mr. Woodger* adverted to cases recorded by him in the proceedings of the Association for 1840 and 1842. In one case, a fracture of the pastern bone, the horse had travelled twenty-four miles afterwards without evincing pain; and in the other, the navicular bone appeared to have been fractured five months. He also related another case, in which a horse received a violent kick on the tibia while at work, yet he walked away as if nothing had occurred, and returned to his stable in the evening; and it was not until after he had lain down and was rising again that the bone was perceived to be fractured. He therefore advocated, in all *suspected* cases, the keeping of the animal in a standing posture for some time by means of slings. It was true, as observed by Mr. Wilkinson, that in cases of contused wounds much relief would be afforded by the animal being allowed to lie down; but he spoke in reference to those cases where, from the amount of injury inflicted, grounds existed for apprehending a fracture to have taken place, although it may not have become perfect or complete.

*Mr. Simonds.*—The case of fractured metatarsal bone, which Mr. Wilkinson has kindly placed before the meeting this evening, possesses several singular features; and not the least interesting among them is the fact that a complete separation of the ends of the broken bone did not take place for a considerable length of time subsequent to the injury being inflicted. An explanation of this is difficult, and any opinion offered thereon will, of necessity, be unsatisfactory. It, however, appears to me that a combination of causes operated to produce so unusual a result of a fracture happening to the metatarsal bone. The lesion, you perceive, is situated a little above the lower head of the bone; and, at this part, it must be remembered that the extensor tendon in front, and the suspensory ligament with the flexor tendons behind, would tend mechanically to prevent a separation of the bone in either of these directions. And laterally a similar cause was in operation from the denticulated character of the fracture, as observed by Mr. Wilkinson, this, as it were, locking the parts together. Moreover, on looking to the interior of the bone, it is also evident that the can-

cellated structure was not completely broken through at first, and probably it only gave way a short time before the true nature of the injury was discovered; if so, here would be another cause to prevent immediate separation. All these conjoined may assist us in offering an explanation.

Another singular circumstance in the case is the little attempt which Nature has made to effect a reunion by callus. The throwing out of osseous matter has, however, taken place here and there; and no doubt this would have been more considerable, had it not been prevented by the nature of the lesion, it being a compound fracture; and, consequently, the formation of the callus was delayed by the process of granulation going on to first effect a restoration of the soft parts.

Cases of fracture of the tibia, without immediate separation of the ends of the bone, have fallen under my notice; and the diagnosis in these cases, although always doubtful where little constitutional disturbance is present, is much assisted by the peculiar movement of the limb and the existence of a slight swelling, which is very painful on the application of pressure on the inner side of the thigh opposite to the lesion in the bone; but in the case before us, the diagnosis was rendered extremely difficult from the absence of lameness as well as all the other usual symptoms denoting the existence of a fracture.

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## Case of Gastric Disease accompanied with Cerebral Derangement.

*By Mr.* B. Cartledge.

An aged brown cart-horse was brought to my preceptor's infirmary, Mr. H. Taylor, Sheffield, on November 19th, 1844.

The report received from the owner of the animal was as follows: During three weeks previous he had shewn some dulness, with a disinclination for food, and but little ability to perform his usual exertions. The village farrier had been consulted, who, after an examination, pronounced the horse to have "farcy in and around the near shoulder," and for this disease he was treated by him.

A few days elapsed, and the animal appeared to become more

stupid, paying but little attention to the voice or whip of his driver, and would sometimes stagger, and with difficulty save himself from falling. The farrier was again referred to, who said it was nothing but idleness, and three or four days' hard work would set him to rights again. It was at this juncture that the horse was put under Mr. Taylor's care. The predominant symptoms then present were, an accelerated pulse; injection of the visible mucous membranes; fœtid mouth, and partial insensibility: the animal offering considerable resistance to being led into the stable. His diet was restricted to mashes, and quietness enjoined.

*Nov. 20th.*—Pulse 60. The animal has eaten nothing during the night, and the symptoms generally are as reported yesterday. Give aloes Barb. ʒiv, hyd. chlo. ʒss, resin. flav. ʒiv, in ball, and repeat the same to-morrow, unless the action of the bowels should contra-indicate it.

*22d.*—Purging; pulse 50. Extremities of the natural temperature. He has not lain down since admission, but is continually walking round the box, lifting up his feet and putting them down again with great care, and always going in one direction. The Schneiderian membrane is a little more injected, and a disinclination for food still manifested, but water is partaken of freely.

*23d.*—Pulse 60; purging considerably; mouth still fœtid, and he is constantly grinding his teeth as if masticating, although there is nothing in his mouth. The perambulations round the box are continued, with the pace somewhat quickened—the animal nevertheless looks more cheerful. Flour gruel to be given, to check the greatly increased action of the bowels.

*24th.*—Purging not yet abated; the breath emits an exceedingly disagreeable odour, and the pulse numbers about 64. He eats a mere trifle; indeed, it is supposed he has not consumed two pounds of solid food since under treatment. Give spts. æth. nit. ʒij, in haustus, and let the gruel be continued.

*25th.*—The alvine excretions are more consolidated, and the frequency of the pulse is decreased; the horse also eats small portions of hay, and does not walk round the box so often.

*27th.*—Pulse 48; and the appearances generally are more favourable; but another and very peculiar symptom is shewn to day—that of grabbing at his food, as if fearful of its being taken away from him. This is done at every endeavour to replenish

his mouth. Twenty minutes' walking exercise given this morning caused much fatigue and drowsiness for the rest of the day. Give pulv. croton tiglii sem. gr. x, cum resinæ flav. ʒiv, in bol.

29*th*.—The unfavourable symptoms have again returned. The pulse is more accelerated; the inappetence is as great as ever; the mouth offensive; the frequent and hurried walking round the box renewed, and he appears as if unconscious of all around him; seldom stands with his head towards the manger, but thrusts it into a corner of the box, and there remains for some time, when he suddenly starts and traverses the box—sometimes carrying in his mouth a portion of hay, which he retains for hours without any knowledge of its being there.

*Dec.* 1*st*.—With the exception of his keeping his nose close to the ground when going round the box, there is no marked alteration in the symptoms this morning. Give spts. æth. nit. ʒij, cum tinct. gentian co. ʒiv, in draught, and insert setons on each side and over the cranium. During this operation he purged violently (although but a short time previously the fæces were voided in the ordinary state), and was much excited.

3*d*.—An active blister was this morning applied to the head, extending all over the part occupied by the setons and a few inches around it. Our patient seems a little better this morning; he now sees food when put before him, and eats a little hay.

5*th*.—Pulse 50; the blister has acted well, and the horse is not so stupid.

7*th*.—He is to-day more fixed in his standing, shewing great indisposition to move, but he now feeds heartily. The setons are acting well.

10*th*.—Was discharged to-day at the solicitation of the owner, with a recommendation to be put to light work only, and the same continued daily. An alterative was directed to be given occasionally, and the setons re-inserted after the lapse of a short time, and a stimulus applied to them every day.

Being much interested in this case, I was desirous of ascertaining its termination; but the great distance existing between the home of our patient and the town of Sheffield prevented me from seeing him afterwards, except on one occasion, when he was brought over for that purpose. This, however, did not preclude my hearing from the owner, and placing on record the symptoms

which from time to time were manifested, and of which the following are some of the principal:—

*Jan. 7th*, 1845.—The horse is said not to be so well. To use the proprietor's own words, "he grabs at his food like a dog," and he is afraid of the animal's doing some mischief, since, when standing with a load behind him, he is obliged to be checked by a man at his head, for sometimes he starts off so headstrong as if prompted by a kind of fit which occasionally seizes him; and unless he is constantly reminded by the man of his being with him, he becomes insensible to all around him—rushes forward, seeing nothing before him; and would, as he says, "walk into a coal-pit without seeing it." The appetite is not the least impaired, and he rests as well as any of the other horses. The setons are still acting well, and the bowels are kept relaxed by the occasional exhibition of laxatives.

14*th*.—A second vesicant was applied a few days since, which caused much constitutional excitement. This, however, gradually passed away, and was followed by a more sensible appearance of the animal, with greatly increased appetite. He has lately shewn a considerable objection to making turns to the left, and always bears to the right side.

*Feb. 4th*.—Since the 14th ult. Mr. B. tells me that no very marked change has taken place. The horse feeds well, but his food is obliged to be chopped for him and put into the manger, as he never sees it if placed in the rack. He says he could get him as fat as a bullock in a fortnight, he appears to thrive so rapidly; and when turned out in the field, he "jumps, gallops, and kicks like a foal."

*Jan. 13th*, 1846.—Between the date of the last report and the present time I have several times written to Mr. B., but not until to-day has any reply reached me; and I am now informed the horse was sold in May last, the owner being completely tired of him. Up to that time the symptoms almost daily became more and more aggravated. He would plunge violently when any thing obstructed his going; and when a load was behind him, he would so exert himself to move it as to render it dangerous to be near him. His owner also tells me that many of the symptoms present during the early part of the attack returned; such as the retaining of food in his mouth for a long time, and the snatching at

it—groaning when not excited, &c. But when labouring under the more urgent symptoms, he tore down the manger and rack completely, and, by jumping off his legs and falling sideways, shattered the box on each side to pieces.

He was, nevertheless, in good condition when he parted with him, and, fortunately, when shewn for sale, the mildest form of his disease was present: so that the owner found no very great difficulty in selling him, a "screw-dealer" becoming the purchaser.

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*Mr. Broad* related a very analogous case, in which there was much dulness or unconsciousness, with refusal of food; which, whenever presented to him, the animal grabbed at and retained it in his mouth for some time, and then let it fall. From time to time he walked round his box, and then would suddenly thrust his head into a corner. The bowels were obstinately constipated, and when going he always inclined to the right side; the lips were also paralytic, though without loss of sensation. Occasionally he became vicious and kicked violently. There was this difference between this case and Mr. Cartledge's,—the animal was always very poor, and was ultimately discharged, apparently well.

*Mr. Harman* instanced a case of long-continued disease of the brain, as ascertained after death, in which the symptoms during life simulated the above cases.

The remainder of the evening was occupied by the reading of portions of the following Thesis.

## PRIZE ESSAY.

### On the Comparative Anatomy of the Tarsus of the Horse, Ox, Sheep, Dog, and Pig, illustrated with Drawings and Preparations; also the Physiology of the Joint.

*By Mr.* J. Mannington.

*To the Council of the Veterinary Medical Association.*

Gentlemen,—It will be evident to you, on the perusal of this Thesis, that I have somewhat overstepped the subject matter for consideration, and with it the limits of an essay. Indeed, I have found it impossible to confine myself totally and entirely to the

tarsus itself, and at the same time make myself so comprehensive as I could wish to be. Moreover, to do full justice to the physiological division of this subject would require much more time than has been allotted by you to its consideration, and a greater amount of experience than any pupil can be expected to possess; yet I trust my remarks on this head are not faulty, although necessarily somewhat circumscribed. Of the anatomical division I can speak somewhat confidently, careful and repeated dissections having convinced me of its correctness.

I say careful dissections; for although the anatomy and treatment of the diseases of our lower animals have of late been more especially the study of the veterinarian, still this essential division is yet in its infancy. And I would ask, can a true and stable foundation on which to raise such a superstructure as is needed be laid by any one man in the period of time which has passed since the appointment of a Professor on this subject? It is on this account, Gentlemen, that I have only stated what ocular demonstration has proved to me to be correct.

I am,

Gentlemen,

Your's obediently,

THE AUTHOR.

"Metiri se quemque suo modulo ac pede verum est."—HOR., *Ep.* 7, *Lib.* 1.

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*General Observations.*

The structures entering into the composition of the hock are bone, periosteum, tendon, ligament, articular cartilage, and synovial membrane. It is surrounded by cellular tissue, white fibrous tissue, and skin, and, of course, it receives numerous vessels and nerves.

The bones are for the most part of that description called short: they are placed on and surmounted by long bones. Short bones are, generally speaking, of a squarish figure, of compact structure on their inarticular surfaces, covered with cartilage on their articular, and, being cancellated internally, by this means they ward off concussion, and give elasticity to the motions of the animal.

They are more vascular than long bones. They contain me-

dullary matter which is not surrounded by a membrane, and which is termed medullary juice. It is redder and less consistent than that contained in the medullary membrane of long bones. The forms of articulation we meet with in the hock are of two kinds, viz.,—arthrodia and ginglymus; both of which come under the class diarthrosis. The small bones present the best specimen of the former movement that we can meet with; the gliding action being favoured by their slightly concave and convex surfaces, by means of tendons implanted into some of them; and by motion being given to them by flexion or extension of the joint, or by weight thrown on it. The hinge-like joint is seen in the tibio-astragaloid articulation in the horse, and in the astragalo-cuneiform articulation also of the other animals hereafter to be treated of.

The cartilage coating the articular surface of these bones is a white elastic substance, composed of cells (each of which has a nucleus and a nucleolus) imbedded in a matrix, and arranged in a somewhat linear form. It is the remains of the temporary cartilage which supplied the place of bone in early life. When it coats a convex surface, its thickness increases from the circumference to the centre: if it be concave, it increases towards the circumference. It is considered as extra-vascular, and is supposed to be nourished by imbibition; but this statement appears somewhat anomalous, when we consider that it is liable to some of the consequences of inflammation, viz. ulceration and ossification. It is attached to the bones by irregular elevations of its substance, which correspond with depressions in the bones; the bones also send small projections into its substance. On its free surface it is covered by synovial membrane, and it is composed of chondrine, water, and phosphate of lime.

The synovial membrane is formed of a thin epithelium, spread over a basement membrane, which reposes on a layer of condensed alveolar tissue. It coats the articular cartilage, and is thence reflected over the capsular and some other ligaments. It also lines several bursæ which are situated around the joint, and is the source of an alkaline secretion called synovia, which assists in bestowing glibness of motion. Synovia is chemically constituted of albumen, with the phosphates of lime, soda, and ammonia, and is also coagulable by heat or the mineral acids.

The ligaments are whitish dense inextensile bands, having no contractility or elasticity; they are composed of fibres rather loosely aggregated, and are either capsular or connecting.

A capsular ligament encloses an articular surface, forming a shut sac; and its fibres are mixed and interwoven in every direction.

The connecting ligaments serve to unite the several bones together, being firmly attached to them through the medium of their periosteum. They render the bones firm in their use as fulcra, yet allow of motion taking place; and in the tibio-astragaloid joint of the horse they bestow, by their mechanical arrangement, a very peculiar spring-like action. They are insensible except to over-distention; but if their fibres are ruptured by sudden or a great weight being thrown on them, acute pain is experienced.

The periosteum is a dense fibrous membrane enveloping the non-articular surface of bone. Its use is to form a nidus for the vessels which secrete the bone; to serve for tendinous and ligamentous insertion, to prevent tendons from being injured by playing over the bone, and to shield it from external injury.

Tendons are glistening fibrous cords, extending from the sarcolemma of muscles; being, however, of a different structure. They are passive, insomuch as they have no contractile power, yet are motive agents through their connexion with muscles. Some of these are affixed to the bones of the hock; others pass over it, being bound down by ligamentous structures, and passing over cartilage which is lined by synovial membrane. They, as well as the two preceding textures, are composed principally of gelatine.

It is needless for me to enter on the structure of muscular fibre: suffice it to say, it possesses a power of contractility which is inherent in it, and by which every motion of the animal machine is effected. But few muscles are attached to the hock, and those are extremely small. The other constituents making up the hock not being connected with its physiology, I shall not advert to here.

### *The Anatomy of the Hock of the Horse.*

The bones composing the hock of this animal are ten in number, viz. the lower part of the tibia, the astragalus, the calcis, the cuboid, the three cuneiform, and the superior extremities of the three metatarsals.

The lower articular surface of the *tibia* is composed of three prominences, divided by two deep sulci, all of which look outwards. The outer prominence is not so largely developed as the inner: it is sloped more gradually to the sulcus, and laterally and externally it forms the outer malleolus. The inner prominence is more perpendicular towards the sulcus, and is most protuberant inferiorly and laterally, forming the inner malleolus. The middle is concave in form, sloping gradually to the sulcus on each side; its posterior border is most prominent, especially towards the inner side of the joint.

The inner sulcus is deepest and largest; the outer is open posteriorly, and extends to the antero-external corner of the bone.

*The astragalus* is distinguished by a rounded head, a flattish inferior surface; and by its being notched posteriorly in an outward direction, by which both a perpendicular and an oblique surface is formed.

It is divided into superior, inferior, and posterior surfaces; and into inner and outer sides.

Its superior extremity has two prominent convex ridges, divided by a deep concavity, all looking outwards and downwards, and articulating with the inferior extremity of the tibia.

The outer ridge does not extend so far back as the inner, nor does it rise quite so high; its outer edge is sloped off posteriorly, declines more gradually to the concavity at its postero-inner part, and projects most anteriorly.

By the deepening of the concavity inferiorly and anteriorly, and by the divergence of the projecting ridges, more particularly of the outer, a sulcus is left at this part of the bone, which has a canal extending outwards from it.

Its inferior surface is irregularly triangular in form, presenting a slightly convex articular surface placed more to the inner than the outer side of the bone, and being about its middle in connexion with the inner ridge at its inferior part. It is partially divided into two by a roughened depression.

The posterior surface is in part perpendicular and in part oblique; it has four articular surfaces with the calcis:—

1st. An external one of a notched shape, which, were it flattened, would be nearly circular. It is situated on the outer and

upper side of this surface, forming a firm resting-place for the os calcis at its inferior part, and resting on the calcis at its superior.

2d. To the inner side, rather lower down, of an oval shape; convex, reaches to the inferior edge of the bone, and is bounded superiorly by a sulcus receiving the medullary artery, which sulcus is overhung by the posterior part of the groove on the superior surface.

3d. A small one to the outer edge of the bone, sloping from above downwards, and resting *on* the os calcis.

4th. Another small one below, and to the inner side of the latter, facing backward and outwards.

In the middle, dividing these four articulations, is a roughened hollow, extending upwards to the sulcus for the medullary artery, downwards and outwards to the posterior part of the outer convexity on the upper surface, and being continuous inferiorly and externally with the roughened hollow on the inferior surface.

The inner side is of some extent: it is articular around its upper part, and inferiorly it has a protuberance jutting boldly from the bone, extending to the inferior surface. This protuberance serves for the attachment of two immensely strong ligaments.

The outer side is much smaller, in consequence of the bone being excavated postero-externally; it also is articular around its upper edge, and is hollowed about its middle for the tibial ligaments.

Thus, its articulations are,

| | | | |
|---|---|---|---|
| | 1, | with | the tibia |
| 2, 3, 4, | 5, | ,, | calcis |
| | 6, | ,, | magnum and scaphoid. |

*The os calcis* is the largest of the bones of the hock: it is divisible into external and internal sides, anterior and posterior borders, superior and inferior extremities; and an infero-internal articular surface, which is sloped outwards, hollowed, and has four distinct articulations:—

1st. A superior and protuberant, sloping first downwards and forwards, then outwards and downwards, supporting as well as resting on the astragalus, with whose articular surface, No. 1, it communicates.

2d. An inner ovoid shaped, presenting a flattened but slightly concave surface, articulating with No. 2 of the posterior surface of the astragalus.

3d. A small one, which differs materially in shape in different hocks, but is generally nearly spherical. It affords a firm resting-place for the astragalus, articulating with No. 3 of its posterior surface.

4th. Infero-externally situated, sloping outwards and downwards, reaching the apex inferiorly, being continuous with the inferior articulation of the bone, and articulating with No. 5 of the astragalus.

These four surfaces are separated by an irregular non-articular surface.

The inferior extremity is for the most part articular, looking downwards and backwards, being most concave posteriorly. It rests firmly on the cuboid bone, and just touches the large cuneiform.

The superior extremity is larger than that part of the bone on which it rests: it is conoid in shape, and roughened for tendinous attachment, more especially at its posterior part. It is thinner anteriorly than posteriorly, and has a bursa on its anterior part in front of the gastrocnemius externus tendon, and the attachment of the dense crural faschia which extends from the triceps abductor, and serves the part of a tendon inserted into this bone.

The outer side is nearly double the size of the inner: it presents an almost plane surface, slightly concave about the middle, notched infero-anteriorly, and is covered by common integument.

The inner side is scooped inferiorly for the passage of the tendon of the flexor perforans muscle. This part presents a smooth concave surface covered by cartilage and synovial membrane: it slopes downwards and backwards, having a ridge on its inner side.

The anterior border is narrow and short; slightly concave, facing rather outwards. Inferiorly is a synovial articulation described at No. 1. Infero-internal surface.

Its posterior border is much longer and broader, extending from the superior to the inferior part of the bone. It is slightly convex, but more so in some hocks than in others, becoming gradually sharper as it descends, particularly on its outer edge, which descends

the lowest. It is covered by the posterior ligaments and the tendon of the gastrocnemius internus.

Thus, the articulations of the os calcis are,

1, 2, 3, 4, with the astragalus
5, ,, cuboid and cuneiform magnum.

*The cuneiform magnum* is situated about the middle of the joint. Is known by its concave surface superiorly, convex one inferiorly, and by its thin flattened appearance. It has a superior and an inferior surface; anterior, external, and internal lateral borders.

Its superior surface is articular over its whole extent except a small roughened part jutting into its external lateral border. It has two concavities, one large and gradual, the other sharp, this being most posteriorly situated. A small convex ridge separates these concavities, and the bone is higher posteriorly than anteriorly. This surface supports the astragalus.

The inferior surface is convex, bevelled off posteriorly, and possesses three articular surfaces:

1st. Anteriorly placed, slightly convex, forms its principal resting place on the cuneiform medium.

2d. A small one posteriorly placed, sloping backwards, resting on the same bone.

3d. Inwardly placed, articulating with No. 1. Cuneiform parvum.

These are separated by a roughened surface.

The external lateral border has two articulations with the cuboid.

1st. A concave one anteriorly situated, which sometimes touches the outer anterior part of the calcis.

2d. Posteriorly placed, a convex one extending to the inferior part of this border, and being continuous with No. 2 of the inferior surface. The rough surface, separating these articulations, is continuous with the roughened part of the superior surface.

The internal lateral border is non-articular. It has two tuberosities divided by a groove, and gives attachment to ligaments.

The anterior border is rounded off, and extends to the inner side of the bone, which part is protuberant, and sends a projection upwards, forming a sort of ridge to the superior surface.

Thus, the articulations of the cuneiform magnum are,

| | | |
|---|---|---|
| 1, | with the | astragalus |
| 2, 3, | ,, | cuneiform medium |
| 4, | ,, | cuneiform parvum |
| 5, 6, | ,, | scaphoid. |

*The cuneiform medium* is flattish shaped, and distinguished by a projection posteriorly. It has superior and inferior surfaces, and anterior, external, and internal lateral borders, which are well defined.

The superior surface has two articulations, which, however, are oftentimes blended.

1st. Anteriorly, a broad one, slightly concave, supporting the principal part of the cuneiform magnum; scooped out postero-internally by a roughened excavation.

2d. Posteriorly, a narrow one, sloped upwards and backwards; supporting the posterior part of the magnum, and limiting its backward movement.

The inferior surface is nearly the counterpart of the antero-superior articulation, extending farther backward however. It is slightly convex, has a roughened excavation on its postero-external part, and reposes on the large metatarsal bone.

The external lateral border has two articulations with the cuboid.

1st. Is situated on the inferior and anterior part.

2d. Postero-superiorly situated, slopes downwards, and being in apposition with the posterior articulation of this surface of the cuneiform magnum, the two together form a notch for the reception of a projection of the cuboid, which rests on this bone in question. This articulation is continuous with No. 2 of the upper surface. The interal lateral border is, for the most part, non-articular. It is excavated for the cuneiform parvum, with which it has one small articulation of an arched shape, by which the forward motion (in some degree) of the cuneiform parvum, when it is acted on by the inner tendon of the flexor metatarsi, is prevented.

The anterior border is rounded in shape, and has a transverse ridge running along its middle, to which a transverse ligament is attached.

Thus, its articulations are,

1, 2, with the cuneiform magnum
3, ,, large metatarsus
4, 5, ,, cuboid
6, ,, cuneiform parvum.

The *cuneiform parvum* is situated under the internal part of the cuneiform magnum: it is irregularly shaped, has a superior and an inferior surface, an anterior and a posterior extremity, and inner and outer borders.

The superior surface has one articulation, concave, and higher posteriorly than anteriorly, supporting the postero-internal part of the cuneiform magnum.

The inferior surface is concave, and has two articular surfaces:—

1st. Anteriorly situated, flattened in front, bevelled off behind, articulating with the small inner and the large metatarsal bones.

2d. Posterior slightly concave, and rests on the small inner metatarsal. The anterior extremity is narrow and projecting: it has one small articulation with the cuneiform medium, preventing in some degree its forward movement.

The posterior extremity is rounded and projecting; hollowed a little inferiorly, and has very powerful ligaments attached to it. The inner border is irregular and tuberous anteriorly, notched posteriorly: the outer one is convex and regular, widens as it proceeds backwards, and terminates in the posterior extremity.

Thus, its articulations are,

1, with the magnum
2, ,, large and small inner metatarsals
3, ,, small metatarsal
4, ,, cuneiform medium.

The *cuboid* is situated at the outer and lower part of the joint, and is cube-shaped. Its length, reckoning from before backwards, exceeds its breadth, which is also exceeded by its depth.

It has superior, inferior, external, and internal surfaces; and anterior and posterior extremities.

The superior surface has but one articulation:—

Projecting in its middle and sloping on its sides, wide anteriorly, narrow posteriorly, and notched at its inner and posterior part. It supports the os calcis, and a small portion of the astragalus.

The inferior surface has two articulations :—

1st. Anteriorly placed, sharp and projecting in its middle, flattened and sloped upwards at its sides, the outer of which rests on the small outer metatarsal, the inner on the large metatarsus.

2d. Posteriorly a small round surface, articulating with the small internal metatarsal.

The internal surface has three articulations, divided by a roughened groove :—

1st. Superiorly a small one, continuous with the upper articular surface, and opposed to No. 5 of the cuneiform magnum.

2d. Immediately under the last, articulating with No. 4 of the cuneiform medium, and being continuous with the inferior surface.

3d. Posteriorly protuberant, bevelled off superiorly and inferiorly, and fitting into the notch formed by the union of the posterior parts of the cuneiforma magnum and medium, by which the bone receives weight from the former and rests on the latter.

The external surface is non-articular, has two bold protuberances, and is roughened for ligamentous attachment.

The anterior extremity is squarish in its outline; the posterior is irregularly convex, having a small jutting point at its middle, though this surface is sometimes smooth.

Thus, its articulations are,

| | | | |
|---|---|---|---|
| 1, | with the calcis, and slightly with the astragalus | | |
| 2, 3, | ,, | small external and large metatarsal | |
| 4, | ,, | magnum | } cuneiforma. |
| 5, | ,, | medium | |
| 6, | ,, | magnum and medium | |

The upper head of the *large metatarsus* presents a broad articular surface, highest on the outside, convex anteriorly, concave posteriorly, and having a roughened surface extending from its postero-external part into its middle. It has three bones resting on it, and at its anterior edge is a projecting spicula of bone extending upwards.

The postero-external border has two articulations with the small outer metatarsus :—

1st. Anteriorly placed, and continuous with the upper articular surface.

2d. Posterior, ovoid in shape, isolated, and projecting, separated from the preceding by a deep notch, filled by fibro-cartilage matter.

The postero-internal border has also two articulations, which unite the inner small metatarsus. They are smaller than those of the outer border, and similarly situated : the anterior one is continuous with the upper articular surface ; the posterior is isolated, and they are separated by a notch from the anterior, which is also filled by fibro-cartilaginous matter. The articulations on the border are more perpendicular, consequently the inner small bone cannot transfer its received weight to the large bone, as can the outer small metatarsus.

Thus, its articulations are,

1, with the medium, and parvum cuneiforma and cuboid
2, 3, ,, outer metatarsus
4, 5, ,, inner ditto.

The *outer metatarsus* is larger than the inner, and is more posteriorly situated. Its upper surface is convex, and has two articulations :—

1st. Anterior, shaped inwards, and on this account transferring its weight to the metarsus magnum.

3d. Posteriorly a protuberant one, isolated, and articulating with No. 2 of the cuboid.

Its inner surface has also two articulations :—

1st. Anteriorly placed, irregularly triangular in shape, and continuous with the upper anterior articulation.

2d. A posterior one, rather concave, reposing in some degree on the large bone : it is isolated. These are separated by a notch.

Thus, its articulations are,

1, 2, with the cuboid
3, 4, ,, large metatarsal.

The *inner metatarsal* has two articulations posteriorly :—

1st. Anteriorly situated, sloping downward and forwards, being isolated.

2d. Posteriorly placed, sloping downwards and backwards.

The inner surface has also two articulations with the os metatarsus magnum. They are perpendicular, and the posterior one is continuous with the upper posterior articulation; the anterior one is isolated. On account of the perpendicular position of these two latter articulations, the cuneiform parvum resting nearly entirely on this bone, and its being placed more under the centre of gravity, we have often disease about this part of the hock.

The outer border of this bone, and the outer metatarsus, are rounded posteriorly, flattened antero-laterally, and have powerful ligaments inserted into them.

Thus, its articulations are,

1, 2, with the cuneiform parvum
3, 4, ,, metatarsus magnum.

[a] The shape of these surfaces is liable to much variation, which must be evident when we consider the diversity we meet with in the form of horses' hocks; I have, however, described them as I have generally found them in fair even-shaped joints.

The LIGAMENTS uniting these several bones are numerous, complicated, and powerful. In describing them I have made use of the terms *external* and *internal* as applying to the *outer* and *inner* sides of the joint, and not to the situation of the ligaments as it respects each other.

*Tibial Ligaments.*

1. The external lateral extends from the posterior edge of the tibia at its inferior part, and from the outer malleolus to the infero-anterior part of the calcis, sloping backwards. From this point it becomes perpendicular in its course, and is continued on to the outer part of the large metatarsus, just in front of its union with the small outer bone.

2. The oblique runs from the antero-inferior part of the outer malleolus, almost in a direct line backward, to the outer edge of the superior articulation of the calcis and astragalus.

3. The short ligament arises from the tibia, almost in common with the last but a little behind it, and is inserted into the rough middle portion of the outer side of the astragalus.

4. The internal lateral runs from the posterior part of the inner malleolus obliquely forward to be attached to the prominence on

the inner side of the astragalus in a forward direction: from this point it extends perpendicularly downwards to the inner part of the large metatarsus, to which it is attached in front of its union with the inner small bone.

5. The oblique ligament (internal) arises in front of the former, runs backward, its fibres decussating, then spreading out, and becoming inserted into the antero-inferior part of the calcis. It also sends off a small band to the posterior part of the astragalus.

6. The antero-internal ligament extends from the antero-inferior part of the inner malleolus, under the internal lateral, to the infero-posterior part of the astragalus below its inner protuberance, and to the inner part of the cuneiform magnum.

7. The short internal ligament runs in a backward direction from the inferior part of the inner malleolus to the middle of the inner border of the astragalus.

*Calcanean Ligaments.*

1. The antero-external arises from the superior part of the upper articular surface, and is implanted into the postero-superior part of the outer articular convexity of the astragalus, running inwardly.

2. The antero-mesial runs from the middle of the upper articulation of the calcis to the postero-inferior part of the outer convexity of the astragalus, running inwards.

3. The antero-internal runs from the anterior part of the convex ridge over which the tendo-perforans plays to the posterior part of the inner convex ridge of the astragalus: it also slopes inwards.

4. Arises a little lower down, and is inserted into the hollow behind the articular concavity of the astragalus.

5. Arises from the edge of the same surface a little higher up, and is attached to fibro-cartilage, interposed between the tibia and perforans tendon. This fibro-cartilage is interposed between the tendon and bone to allow of freedom of motion; it has a synovial membrane on both its anterior and posterior surface, and during the flexion of the hock, when the tibia is at the anterior part of the astragalus, it falls down in the posterior part of the concavity of the upper part of the astragalus, and affords a smooth surface for the tendon to play over by filling up the hollow.

6. The long posterior ligament runs from the whole of the posterior part of the calcis, to the cuboid, small external, and large metatarsal bones.

7. The postero-external runs from the inferior and posterior part of the edge of the calcis, a little to the outside of the latter, but partly concealed by it, to the small outer metatarsus.

8. The short posterior ligament arises from the inner posterior projection of the calcis; and is inserted into the posterior part of the small inner metatarsus, overlapping the inner division of the flexor metatarsi tendon.

9. The middle posterior ligament extends from that part of the calcis situated between the long and short ligaments, and from below its convex pulley-like surface, to the posterior part of the cuneiform magnum and parvum, and to the small outer metatarsus.

10. The infero-internal runs from beneath the short ligament, being attached to the inferior and inner edge of the calcis, and to the superior and posterior part of the cuneiform magnum.

11. The infero-posterior arises from the calcis at its postero-inferior part, runs under the middle posterior ligament to the posterior part of the cuboid and cuneiform magnum.

12. The superior oblique runs from the same point as the short posterior ligament; extending obliquely forward to the inner and upper parts of the cuneiform magnum.

13. The inferior oblique arises from below the latter: it is wider, pursues the same course, becoming attached below it to the inferior part of the cuneiform magnum, and the upper part of the cuneiform parvum.

14, 15. The infero-external. Two small bands extend from the infero-external part of the calcis, just above its articulation with the cuboid; one runs to the infero-external part of the astragalus, the other to the supero-external edge of the cuneiform magnum.

16, 17. Two small ligaments run from behind these to the upper and outer parts of the cuboid.

18. The internus runs from the middle of the infero-anterior surface, between the articulatory surfaces, to the posterior part of the astragalus, between its articulations.

*Astragaloid Ligaments.*

1. The antero-internal is a very large ligament, arising from the tubercle on the inner side of the astragalus; running forwards, diverging in its fibres, and passing over the cuneiform magnum, to be inserted into the anterior part of the cuneiform medium, to the large metatarsus, under the attachment of the flexor metatarsi tendon, and to the anterior part of the cuneiform parvum.

2. A short ligament from under the latter, to the anterior part of the cuneiform magnum.

3. The postero-internal arises from the posterior part of the tubercle of the astragalus; it runs obliquely backward, to be inserted into the cuneiform parvum and the small inner metatarsus.

4. From under the last to the outside of the cuneiform magnum.

5. Oblique, arises at the posterior part of the tubercle, to be attached to the upper part of the cuneiform parvum: it is situated under the postero-internal.

6, 7. External, are two small ligaments, which might, perhaps, be more properly regarded as calcanean; but from the number and complexity of those, I have placed them here. They extend from the postero-external edge of the astragalus, above the inferior lateral calcanean, to the antero-external edge of the calcis.

*Ligaments of the Large Cuneiform.*

1. Several small ones, running from its anterior part to the cuneiform medium.

2. Internal lateral, from its inner and posterior part to the anterior of cuneiform parvum.

3. External lateral, from its antero-external part to the anterior of the cuboid.

4. Supero-posterior, from its upper and back part to the inner and posterior of the cuboid.

*Ligaments of the Middle Cuneiform.*

1. Anteriorly, several strong ligaments, attaching it to the upper part of the large metatarsus.

2. Internal lateral, to the small cuneiform, from its inner and anterior part.

3. (Inter-osseous). From the outer part of the inferior articulation to the inside of the cuboid.

4. (Inter-osseous). From its inferior part to the middle of the upper head of the metatarsus magnum.

*Ligaments of Small Cuneiform.*

1. From its inferior part to the small inner metatarsus.

2. Anterior, extends from its anterior edge to the supero-internal part of metatarsus magnum.

3. (Inter-osseous). From the inferior part to that part of the small metatarsus nearest the inside of the joint.

*Ligaments of the Cuboid.*

1. Antero-external, from the anterior part to the antero-external part of the large metatarsus.

2. Postero-external, from the postero-external edge to the small outer metatarsus at its upper and outer part.

3. Straight posterior, runs from the postero-inferior part to the postero-superior of the metatarsus magnum, and to the posterior part of the small external metatarsus.

4. Oblique posterior, from the inner and posterior edge to the supero-posterior part of the cuneiform parvum. It assists materially in retaining this bone in its situation during the action of the flexor metatarsi, which has a tendon affixed to it.

5. From the cuboid to the inside of the outer small metatarsus (inter-osseous).

*Metatarsal Ligaments.*

1. From the inside of the upper head of the metatarsus magnum to the head of the inner small metatarsus (inter-osseous).

2. From the outside of the upper head of the metatarsus magnum to the head of the small outer metatarsus (inter-osseous).

*The Hock has eight Synovial Sacs, viz.*

1. Between the articulation of the tibia with the astragalus.

2, 3. The two upper articulations of the calcis with the astragalus.

4. Between the articulation of the astragalus and calcis with the cuboid and cuneiform magnum.

5. Between the articulation of the cuneiform magnum with the other two cuneiforms.

6. Between the articulation of the cuboid cuneiform medium et parvum with the small and large metatarsals.

7, 8. One between the large metatarsus and each of the small metatarsals.

*The Tendons* attached to or passing over the hock are also eight in number; namely, five, which by means of muscles attached to them, or rather giving origin to them, extend the joint; and three which flex it. One muscle is also attached to it.

*Extensors.*

The two tendons given off from the gastrocnemius externus are inserted into the point of the os calcis, one rather to the inner side, the other slightly to the outer. In some instances they blend just above their insertion, and in all instances the two are attached by dense alveolar tissue, so as to form a sheath for the next tendon to be described.

The *use* of this is (by the contraction of its muscle) to approximate the calcis to the tibia, thereby extending the joint; or, the calcis being made a fixed point—as takes place when the foot is on the ground—to extend the femur on the tibia, and propel the body forwards.

*The fine tendon of the plantaris* crosses the front of the last described tendons about two-thirds down the tibia, then gets between the layers of the anterior tendon, and is continued to the point of the os calcis.

*Use.*—To assist in the extension of the hock. It will also pull the gastrocnemius in an outward direction.

*The tendon of the gastrocnemius internus* having wound round the posterior part of the externus, and reached the point of the os calcis, becomes expanded in a cup-like shape, being attached to the lateral parts of the calcis at its superior part by two ligamentous bands, and having a smooth synovial membrane lining its anterior part, where it opposes the calcis. This synovial sheath extends about two and a-half inches downward between the posterior ligaments of the calcis and the tendon I am describing: below this the tendon is united by cellular tissue, passes under another theca at the inferior part of the hock, and then forms the perforatus tendon, being attached to the upper and back parts of the os coronæ.

*Use.*—To act in union with the gastrocnemius externus in the extension of the hock or femur, as may be. It also flexes the pasterns, turning the foot upward and backward.

*The tendon of the flexor perforans* is not entirely freed from muscular fibre until it gains the supero-anterior part of the calcis. It runs in a backward direction over the smooth synovial floor on the inside of that bone, having the posterior tibial nerve and a large vein in its company; it then passes directly downwards through a distinct synovial sheath by which it is separated from the perforatus. About a quarter of the way down the metatarsus it gains the anterior part of that tendon, and is finally attached to the posterior part of the os pedis.

*Use.*—To assist in the extension of the hock, in doing which (from the oblique direction of its muscle inwards) it will turn the posterior part of the hock outwards. Its chief use is to flex the foot.

*The tendon of the flexor accessorius* passes through a synovial sheath over the inner malleolus; it then runs obliquely backward under the short posterior ligament of the calcis, gains the side of the flexor perforans at the head of the small inner metatarsus, and is united to that tendon half way down the metatarsus.

*Use.*—To assist in a slight degree in extending the hock: it also assists the perforans in flexing the foot, pulling the tendon inwardly at the time.

*Flexors.*

As the flexor metatarsi is a very important muscle, and its anatomy has not been correctly given in any veterinary anatomical work, I shall describe it throughout its course.

It has a tendinous origin from the anterior part of the external femoral condyle, and a muscular one from the outer side of the tibial ridge. The tendon courses the leg in front of the muscle, and is attached to the hock, forming a mechanical support to the animal; but besides this, it has fibres from the muscle running into and acting upon it. The muscular portion, as well as being connected to this tendon, terminates in one which pierces the long tendon, appearing on its anterior part at the inferior extremity of the tibia. Thus we have a perforated and perforating tendon; the former of which, after having allowed of the passage of the latter, divides into four parts.

The 1st and 2d divisions run outwards one above the other, and are attached to the cuboid under the straight inferior part of the external lateral ligament of the tibia.

3. A small tendon attached to the middle of the cuneiform medium, sending some fibres to the antero-internal astragaloid ligament, and to the antero-superior edge of the large metatarsus. It has a slightly outward course.

4. A wide strong tendon attached to the projecting portion of the antero-internal part of the cuneiform medium, and to the inner part of the large metatarsus by a few disgregated fibres. It runs outwardly.

The perforating portion, after piercing the perforatus, appears on its anterior part rather to the inner side, and bifurcates almost immediately into two broad flat tendons, the

1st. Runs directly downwards to a ridge on the supero-anterior part of the metatarsus magnum, immediately over the third division of the perforatus.

2d. Winds backwards and inwards to the inside of the hock-joint, dipping under the short posterior calcanean ligament, close to the passage of the flexor accessorius tendon, to become attached to the postero-anterior part of the cuneiform parvum.

*Use.*—Acting as a whole, the muscle will flex the hock very forcibly. The muscular fibres acting on the perforatus tendon will flex and turn the front of the hock inwards, and the perforans tendon being acted on will flex, and in a manner twist, the hock outwards, turning the back part inwards.

*The tendon of the extensor pedis* is firmly bound down by a dense ligamentous band just above the hock, under which it passes with the last tendons before their division. It courses the front of the hock slightly to the outer side, passing under a band at the inferior part of the joint, and is finally distributed to the capsular ligaments of the fetlock and pastern, and to the coronal process of the os pedis.

*Use.*—To assist in some degree in the flexion of the hock, but more especially it extends the foot and pastern.

*The tendon of the peroneus* courses the outer side of the tibia and astragalus in a synovial sheath. At the inferior part of the astragalus it runs obliquely forward, passes under the same annular band as the last-named tendon at the inferior part of the hock,

and is continued on its outer side to the capsular ligament of the fetlock-joint and to the os suffraginis.

*Use.*—To assist in some degree in the flexion of the hock, pulling the metatarsus slightly outward. Its chief use, however, is to extend the pastern and foot.

*The extensor inferior* is muscular, and attached to the outer part of the cuneiform medium, to the anterior of the cuboid, and to the antero-inferior surface of the astragalus; and is inserted into the extensor pedis tendon, one-fourth down the metatarsus.

*Use.*—To tense the tendon, and complete and perfect its action.

A great mechanical support is also afforded to the os calcis (which receives much weight that is transmitted from the astragalus) by means of ligamentous bands inserted into it; for were this weight supported by muscles, they would first become excited into morbid contraction, and then tired and relaxed to a great degree.

The inner and outer crural faschia becomes dense and thick as it descends the leg, until it assumes a ligamentous character, becoming collected more especially into two dense bands, one on the outside the other on the inside.

These converge, and unite about two inches above the point of the os calcis, blending their fibres, and then split into four distinct fascicular bands; two of which run to the os calcis, one being attached to the inner and front part of its point, the other to the outer and front part; the third unites inseparably with the long posterior ligament, and the fourth is attached to the anterior part of the os calcis, about an inch below its point.

Another dense band extends from the outer edge of the femur (just above the origin of the external head of the gastrocnemius externus), increasing in thickness as it descends, winding round, and passing under the gastrocnemius internus, and becoming firmly implanted into the point of the os calcis.

The state of repose is also furthered by the immense bands of tendons extending through the entire length of the gastrocnemius internus.

*Arteries.*

The arteries supplying the hock are the anterior and posterior tibial. The anterior runs under the extensor pedis down the lower half of the tibia, and just opposite the astragalus it crosses

suddenly to the outside, passing under the ligament binding down the extensores pedis and suffraginis, and gains the anterior part of the external metatarsus, at the superior part of which it dips between it and the large metatarsus, and divides into the plantar and recurrent arteries; the latter retrograding on the inside of the leg, in company with the inner metatarsal nerve, anastomosing with the posterior tibial, and supplying the postero-internal part of the joint.

The branches of the anterior tibial are,—1 and 2, which come off just above the hock, one running to the inside, the other to the outer and upper part of the joint.

3. A trunk of some size, which is given off about the middle of the joint, slightly inclining to the outside. It pierces the joint in a notch on the anterior and inner part of the cuboid, then turns obliquely backwards and inwards, and emerges between the suspensory ligament and metatarsus magnum, close to the small inner metatarsus.

4. A branch just below this runs downwards on the inside of the extensor pedis tendon, giving off numerous divisions, which are continued as low down as the fetlock in front.

The posterior tibial courses the tibia, sheltered by the gastrocnemii, and just above the hock it gets to the inside, and ramifies minutely over the inner and back part, anastomosing with the recurrent artery, and also sending up a reflex branch to the gastrocnemii tendons.

*Veins.*

The veins which cross and which return the blood from the hock are the continuation of the metatarsals with the vena saphena, or rather the trunk which afterwards becomes that vessel, and the anterior tibial vein.

The inner metatarsal vein ascends the leg in front of the recurrent artery and inner metatarsal nerve, the artery being in the middle. About two-thirds of the way up it is placed at the posterior edge of the small outer metatarsus, and accompanies the metatarsal nerve and flexor perforans tendon, being covered posteriorly by the gastrocnemii tendons. It terminates in the vena saphena, which vessel is given off from it about an inch above the inferior extremity of the small outer metatarsus. It crosses obliquely to the front of the hock, receiving large branches from its anterior

part, one being very large; then crosses under the tendons of the flexor metatarsi and extensor pedis, and finally gains the inside of the thigh.

The outer metatarsal vein accompanies the outer nerve up the leg. About two inches below the head of the outer metatarsal bone it gets between it and the perforans tendon, and in some instances crosses under the perforatus, and, uniting with the inner vein, forms the large trunk which is to be carefully avoided in the hock nerve operation. In other cases, at the head of the metatarsals it crosses the outer side of the os calcis, and runs up the anterior part of the gastrocnemii, which it gains about two inches above the hock.

The anterior tibial vein arises by three or four trunks from the anterior and outer part of the hock; these soon unite, and form one large trunk, which accompanies the anterior tibial artery.

All these veins receive numerous cutaneous and muscular filaments in their course, and are liable to variation both in their course and relative size.

*Nerves.*

The hock is supplied with nervous influence by the anterior and posterior tibial divisions of the sciatic and by the crural nerve.

The posterior runs between the heads of the gastrocnemius externus, crosses the gastrocnemius internus, and gains the inside of the leg down which it runs, having the gastrocnemii behind, and the perforans tendon in front. At the hock it splits into the external and internal metatarsal nerves, which run in the company of the perforans tendon to the foot, one being on the inside the other on the outside.

The branches of the posterior tibial nerve are,—

1. A branch at its origin which courses the outside of the gastrocnemius externus, then gains the outer and front part of the leg through the faschia lata, and splits into three nerves:—

*a*, Runs to the outside of the hock, being the most anterior branch;

*b*, Runs to the external lateral parts of the os calcis, and the skin covering that part;

*c*, Runs to the inner side of the leg (winding over the back of it), and to the interspace between the os calcis and the tibia.

2. A branch given off half way down the tibia, which runs forward, gains the front of the hock, becoming subcutaneous, and is continued as low down as the fetlock, inclining slightly to the inside.

3. Small branches to the hock joint.

The anterior tibial crosses the outer head of the gastrocnemius externus and the head of the peroneus muscle, to both of which it gives branches, more especially to the latter, and then divides into three parts :—

1st. Runs direct to the extensor pedis and flexor metatarsi ;

2d. To the front of the hock, penetrating the joint;

3d. To the antero-external part of the hock, becoming subcutaneous, and descending as low as the fetlock, inclining slightly to the outside.

The crural nerve pursues the course of the vena saphena. Just above the hock it is in front of the joint, behind the vessel I have named, and as it passes the hock it inclines to the inside, giving off cutaneous filaments in its course, still keeping behind the vein, and being traceable to the fetlock.

### *The Physiology of the Hock of the Horse.*

In a state of quiescence it will be evident that, although every individual bone assists in the support of weight, those on the inside have much more stress laid on them than those on the outside. Thus the astragalus transmits nearly the whole of its received weight to the large cuneiform ; and this, although it rests most firmly on the cuneiform medium, yet gives much of its weight to the cuneiform parvum. I have shewn this bone to rest nearly entirely on the small inner metatarsus, and the articulations between these are not of that nature to shelve the cuneiform on to the large metatarsus ; and, more than this, the articulations of the small inner with the large metatarsus are quite perpendicular, so that none of its received weight can be transmitted to the larger bone.

Now the cuboid, it is true, receives a slight portion of the weight from the astragalus, and that transmitted from the calcis ; but on viewing its inferior articulation it will be evident the large metatarsus receives the greater part of its weight, and that which is

thrown on the small outer bone is, in a manner, sloped off inwardly. Besides this, the weight it has actually imparted to it is, in a great measure, transferred to the large metatarsus by its articulations, which are in some degree overhanging those of the large bone. Thus it is evident from the natural shape of the joint, that besides the inner part being more under the centre of gravity, it is much more liable to disease than the outer.

When the animal moves from a standing position into a walk, it is obvious the leg must first be brought forward, consequently the first motion relative to the hock is its flexion.

The contraction of the flexor metatarsi, aided by the extensors of the foot and pastern, perform this by rolling the astragalus on the tibia, thus widening the interspace between the calcis and tibia, and, I believe, gliding the cuneiform magnum over the astragalus more than is generally supposed. The cushion bones also glide over each other slightly; and the cuneiform parvum has its posterior part pulled a little outward, its anterior part being the fixed point, where it articulates with the large metatarsus.

The limb being advanced sufficiently forward, the foot becomes implanted on the ground, the cushion bones yield slightly, and the small metatarsus also descends a little by virtue of the fibro-cartilaginous connexion with the large metatarsus.

The foot remains a fixed point during the projection of the opposite leg forward, and causes the leg, as high as the astragalus, to become fixed (or very nearly so) as well; consequently the tibia must now be acted upon, for if the foot were pulled backward it must describe the arc of a circle, which cannot be done unless the limb be elongated; and this cannot be accomplished unless the body be propelled, or the ground surface on which the foot is implanted be removed. The former taking place, the femur is pulled straight on the tibia, and the tibia is rolled backward on the astragalus, and nearly approximated to the os calcis, by the powerful contraction of the gastrocnemii assisted by the plantaris, and also by the triceps abductor femoris being attached to the crural faschia which extends down the outer side of the leg to the os calcis, and in some degree by the biceps abductor being attached to the inner crural faschia, which also extends to the same point.

The cuneiform medium and cuboid slide a little backwards over the astragalus; and when the body is far enough advanced to allow of the foot being lifted off the ground, it is accomplished by the contraction of the flexor muscles of the foot and leg: the pastern is flexed, and the foot turned up; whilst, as regards the hock, the small bones glide yet a little farther back on the astragalus. The other leg being now on the ground, the same action takes place as it respects the flexion of the joint as before.

In the trot, the action between the bones is increased; the leg is placed more under the body, and is also extended farther backward; consequent partially on increased muscular action, and partly on a mechanical arrangement of the ligaments uniting the tibia to the calcis and astragalus; and this mechanical action is shewn more in flexion than in extension.

Thus, if we take an extremity from which the muscles have been removed, and flex the astragalus (carrying with it the lower bones of the leg) on the tibia to a certain extent—say three-fourths of its articular surface—it will then suddenly spring forward to its utmost state of flexion. In like manner, if we extend the tibia on the astragalus three-fourths of its surface, it will spring the remaining one-fourth, and become fully extended.

The mechanical flexion is well shewn in a horse labouring under stringhalt, and in some rough trotters; and if we notice a horse in the act of lying down, we shall perceive he has the power of letting himself down on his haunches to a certain extent, when this spasmodic action ensues, and he suddenly drops. The spasmodic action is also seen during the accomplishment of the act of rising.

The bones do not move differently in the trot from the walk, only in degree. Their action is of course greater, more especially between the astragalus and tibia: the descent of the small metatarsals is also greater, and this necessarily communicates increase of action to the cuboid and cuneiform parvum.

The cuneiform magnum and medium also glide more over each other, and over the large metatarsus and astragalus.

There is not so great a difference between the extent of action of the hock in the gallop, compared with the *fast* trot, as between the trot and the walk. In the gallop, the increased flexion and

extension depend more on the powerful contractions of the gluteal, the vasti, and other very active and strong muscles of the haunch, exerting their influence on the hip and stifle-joints, thus causing motion to the greatest extent.

There is little, if any, increase in the motion of any part of the hock itself. This must of necessity be slight, as we often find horses who have the cushion-bones anchylosed performing such severe exertion as hunting, and sometimes racing, and that with ease to themselves and pleasure to their owners, such only evincing, by their action, a slight impairment of the elastic play of their hocks. If there is any increase of motion, I consider the small metatarsals descend more, thus giving a slight increase of motion to the cuboid and small cuneiform bones.

The cushion-bones operate very materially in assisting the animal to turn, as it will be seen they can (more especially the cuneiform parvum) rotate slightly over each other, the foot being made a fixed point. The cuboid has the least power of rotation, it being extremely slight in that bone.

Horses who have anchylosed hocks can never turn quickly, or move sideways with readiness and freedom.

[To be continued.]

## OBITUARY.

On the 27th of September, at Calcutta, Mr. J. Hughes.
On the 26th of October, at Bangalore, Mr. C. Scarr.
On the 13th of November, at Manchester, Mr. J. Hollinworth.

## EXPLANATION OF THE PLATE.

THE larger figure shews the cerebellum in a high state of inflammation; and on the medulla oblongata is seen the dark brown, approaching to black, semi-fluid deposit referred to at page 8.

The transverse section below shews the inflammation to have extended to the centre of the spinal marrow. This, perhaps, is better seen in the longitudinal section by the side, which is a portion of the spinal marrow taken from the lumbar region, contiguous to where the nerves are given off that supply the hind extremities.

THE

# VETERINARY RECORD, &c.

Vol. III.] APRIL 1847. [No. 11.

## ON THE EFFECTS OF THE VAPOUR OF ÆTHER ON ANIMALS.

Credit, generally speaking, is not so much given to him who may accidentally or otherwise discover a principle, as to him who practically and usefully applies it; and we think this is right.

The winds may chance to convey the seeds of a forest to the sterile waste, and fertility prevail where before nothing but barrenness was to be met with; yet it is he who cultivates the trees, and renders them subservient to the uses of man, that obtains the commendation. The pupil of Galvani first observed the contraction of the legs of a frog on the passage of electricity through them, but the division of science this originated has received the name of Galvanism. The theory of atoms, it is said, was discovered by Higgins; Dalton, however, practically applied it, and his name has ever since been associated with the discovery, So it is with the action of a therapeutic agent. Its effects, be they beneficial or otherwise, may have been ascertained, but not promulgated: when, however, they are made known, the public gives the honour of the discovery to him who has been instrumental in doing so.

With the narcotic influence of the vapour of æther doubtlessly many had been long familiar; and individuals without number, racked with torturing pains, may have been relieved by it; but its application as a means of lessening suffering during surgical operations is, we believe, new; and we are told that the originators of its application for this purpose are Dr. C. T. Jackson, a distinguished chemist, and Dr. Morton, a skilful dentist of Boston, North America. That this effect also follows its inhalation *by all*

*domesticated animals*, we have no doubt whatever; still we are not prepared to say that it will prove of universal application. In the lower animals, as well as in man, there will be met with peculiarity of temperament, and likewise idiosyncrasy; so that that which may sooth the many, may to others prove a source of irritation and excitement. We are acquainted with those to whom the nitrous oxide proves a sedative, and the vapour of æther an excitant. Others again are alike affected by both agents. The amount, too, will be productive of different action in the same individual. We are informed by some German physicians who have experimented on themselves, that the influence of æther presents three degrees. At the beginning, the sensibility is exalted as well as the pulse and respiration; then, as a second degree, the perception of pain lessens with the diminution of the pulse, and injuries are only slightly perceived. In the third degree all consciousness has disappeared, and the patient is as insensible as a corpse!

It is, perhaps, the action produced at the commencement of the process of inhalation which renders it so difficult, with *certainty and safety*, to ætherize every horse. The physical powers of this animal are great, and being incapable of reflection, when excited he exerts himself to remove that which offends him, and the apparatus is often dashed with violence to the ground, or, being broken, it is rendered for a time comparatively worthless. The process being thus interrupted, partial or entire failure of the experiment is the necessary result; whereas, could we have compelled the horse to continue the inspiration of the vapour, there is no question but that he would soon have been rendered insensible by it, since this has been the case with many horses; and with the smaller animals no difficulty whatever has presented itself, their powers being under the control of man. Beyond this we have witnessed no accident result from the employment of the æther; we are, therefore, somewhat sanguine as to its becoming, by-and-by, a useful aid to the veterinary surgeon; while the humane man will hail it as a boon to science, from its mitigating pain, and thus diminishing the amount of "ills that flesh is heir to."

The length of time required to render the animal insensible will vary considerably; but as yet we are not acquainted with a sufficient number of experiments to enable us to say even *about* the

period that is necessary. It has occurred within five minutes in the horse, and it has occupied fifteen minutes in the same animal. A very few minutes will generally suffice for the smaller animals, as the sheep, dog, pig, and cat.

The duration of the state of insensibility will also vary, this depending on the time the æther has been inhaled, the nature of the operation, and also those modifying or conditional circumstances already alluded to. But, generally speaking, a sufficient length of time will elapse ere sensibility returns, so that during it all the ordinary operations may be performed on the horse; and it is the same with other animals. When this hypnotic is had recourse to, one fact must not be forgotten, namely, that by it the free flow of the blood through its vessels is for a time checked; and often, when incisions are made in the skin, not a drop of blood escapes from the wound, but subsequently, on reaction being set up, it does so, and that freely. Now, should any operation be performed in which arteries are divided, and ligatures to close them are not employed, but torsion, or the cautery, then hæmorrhage may be feared, as soon as the bloodvessels regain their normal condition and the power of the heart overcomes the depressing influence of the narcotic.

At present we are almost wholly indebted to practitionérs of human medicine for the history of the effects of the æther vapour, who have extensively employed this agent, and that under far more favourable circumstances than we can ever hope to do, except that we are not likely to have to contend with that they have, and which often renders their patients unsusceptible of its influence, or but little affected by it,—the use of opium and ardent spirits. Nor do we apprehend that it will, with the lower animals, be ever used for nefarious ends; yet discrepancies are met with, even among them, as to its *modus operandi*. A writer on this subject in *The Lancet* says, "It is worthy of remark, that ætherization, when duly limited, affects the cerebral system only, and that exclusively of the spinal and ganglionic, thus affording a collateral proof of the correctness of the distinction discovered and promulgated by Dr. Marshall Hall. When kept within its just limits, which this distinction teaches us, the inspiration is unimpaired, and, as Dr. Simpson has shewn, parturition proceeds without interruption; whilst Dr. Ranking has illustrated its inapplicability

to the treatment of tetanus. So of the ganglionic functions." The following experiments, recorded in the scientific journals of the day, would, however, lead to the inference that the spinal system is affected as well as the cerebral. We extract the following from the *Athenæum;* at the same time we confess that we have no feelings in common with those who can perpetrate such acts of cruelty:—

"*Paris Academy of Sciences, Feb.* 8.—There were several communications relative to the effects of the inhalation of æther; and M. Majendie repeated his opinion, that this new method of operating ought to be practised with the greatest possible caution and reserve.—M. Flourens stated that he had made experiments to ascertain the effect of the æther upon the spinal marrow. In the first place, he caused the æther to be inhaled by a dog, which in a few minutes became perfectly insensible. He then laid bare the spinal marrow at the point of the dorsal region; and during the whole of this cruel operation the animal gave no sign of pain. He then divided the nerves of sensation, and still no pain was manifested. Lastly, he pricked, cut, and tore the spinal marrow itself; and the dog did not give the slightest symptom of suffering, and experienced no convulsion. His next experiment was on a fowl, and with the same results. When the effects of the æther were dissipated, the spinal marrow resumed all its vitality.—M. Serres announced that he had made several experiments upon animals, but with liquid æther, as he was desirous of ascertaining its effects upon the nervous system. He had laid bare the nerves of the thighs of several rabbits, and placed them in contact with a sponge dipped in æther. The results were as follow: Sensibility was abolished in the nerve subjected to the action of æther at the points immediately in contact with it, and in all the radiations emerging from the nerve under that point; but the entire sense of feeling remained in the portion of the nerve above the point immerged in the æther. In order to take into account the action of the air, the following comparative experiment was made: Of two nerves which were laid bare, one was immerged in the æther, and the other was exposed simply to the action of the air. Five minutes afterwards, the first was dead to all sensation, even on the application of pincers; the second retained all its sensibility and powers of contraction.

Having thus ascertained the sedative power of the æther, M. Serres resolved to discover whether the sensibility could be restored by the immediate application of strychnine to the nerve which had been deprived of it. He applied the tincture of nux-vomica, strychnine, and the chlorhydrate of strychnine, and all without effect. They neither produced sensibility to pain, nor restored the power of contraction.—A paper was read, giving an account of some experiments made by M. Gruby, to ascertain the effects of æther on several animals, viz. 10 dogs, 4 rabbits, 2 mice, and 50 frogs. To intoxicate these animals required different periods of time, which are shewn in the following table :—

| | Minimum. | Maximum. | Duration. |
|---|---|---|---|
| Frogs..... | 8 m. .. | 35 m. .. | 20 to 25 m. |
| Dogs ..... | 50 .. | 40 .. | 12 to 30 |
| Mice ..... | 2 .. | 4 .. | 4 to 8 |
| Rabbits .... | 2 .. | 8 .. | 6 to 12 |

In general, says M. Gruby, the duration of the intoxication appeared to depend on the intensity of the vapour, the prolongation of the aspiration, the rapidity and force of the inspiration, and the age of the animals. Beyond the term above fixed for respiration, the animals died in a sleep. In young animals the phenomena were more prompt than in those which were full grown. M. Gruby found that the peripheric circulation, the pulsations of the heart, and the respiration, diminish under the influence of the ætherial vapour; and that, if, after the experiment the animal be exposed to the air, the number of pulsations of the heart and the inspiratory motion augment considerably, as does also the cutaneous circulation. Frogs which were wounded immediately before the experiment resisted the intoxicating effects of the æther much longer than those which were uninjured. He ascertained also that the stagnation in the capillary vessels produced by the æther disappears before sensibility is again manifested; and that a frog deprived of its brain, and exposed to the vapours of æther, retains its sensibility and its powers of contraction much longer than one that has not been wounded. The experiments on dogs shewed that they first lose their tactile peripheric sensibility, then voluntary motion, and finally the contractibility of the voluntary muscles. Dogs 20 days old lost their sensibility in 3 minutes, and died in 18 to 20 minutes, under the effects of the æther; grown-up

dogs lost the power of sensation in 8 minutes, and died if the action of the æther was continued for 45 minutes. The dogs recovered their sensibility and motion when they were exposed to the air, if the experiment with the æther was not prolonged beyond 18 minutes for the young, and 40 to 44 minutes for the adults. Young dogs which were apparently dead, having ceased to breathe, were brought to life by copious bleeding from the jugular vein. A young dog, which had already been under the effect of the æther and had recovered, was again exposed to it, and the same effect was produced in 50 seconds; but a dog which had been bled after the experiment, and was again exposed to the æther, resisted much longer than another dog which had not lost blood. In the cases where the experiment was carried to such a point as to produce death, M. Gruby found that the immediate cause of death was an accumulation of blood in the veins of the brain, those of the lungs, the liver, &c."

"*Paris Academy of Sciences, Feb.* 22.—A communication was received from M. Matteucci, of Pisa, giving an account of experiments made by him to ascertain the extent and duration of the magnetism communicated by an electrical current.—M. Flourens made another communication relative to his experiments on animals which he had placed under the action of æther. He states that the action of the æther on the cerebral nerves is successive and progressive: it first attacks the central lobes and the cerebellum, and next the spine. The animal first loses the equilibrium of its movements, then feeling and motion, and then, if the action of the æther be continued, there is a cessation of life.—M. Amusat communicated to the Academy the result of his experiments on the same subject. He states that the action upon men and animals is the same. The arterial blood becomes black at an advanced stage of the inhalation, and resumes its usual colour when the animal has ceased to receive the ætherial vapour. When death ensues, the blood, says M. Amusat, is black and liquid; and, according to M. Flandin, the presence of æther may be detected in it. M. Amusat is of opinion that this is the cause of death.—M. Ducros gave an account of some experiments with æther on dogs. In the experiments of M. Gruby, dogs which were apparently dead from the prolonged administration of the æther were recovered by bleeding: M. Ducros tried another mode of recovery, not in-

deed when the animals were in a state of apparent death, but when they were still breathing, but insensible. He applied galvanic shocks, and the effects of the æther ceased.—M. Lauguier laid before the Academy an account of some surgical operations on ætherized patients."

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It has been suggested that the inhalation of æther vapour will be applicable when a suspension of muscular action is required, as in the reduction of dislocations and of hernia; also, that by its sedative influence it may allay spasm, and alleviate functional pain.

Mr. J. Robinson, to whom the public is indebted for the introduction of this agent into England, in a small work* he has published on the subject, wisely says,

"We would urge those who employ the ætherial inhalation not only to note every symptom or peculiarity, however minute, that may occur in the cases submitted to operation, but to weigh well the previous habits and present state of their patients before they exhibit it; keeping in mind that there are peculiarities of habit and constitution, and particular states of health, in which the effects may be questionable, and some in which it would not be advisable to administer it.

"At present the invention, so to call it, is, although so far successful, a novelty, with the benefits and dangers of which we are, in this country, very imperfectly acquainted. There are, it is true, many cases in which analogical reasoning will suggest its application: some, perhaps, of the most important and dangerous in the whole range of medical practice.

In midwifery, for instance, in which a necessity exists for turning the child in utero, when the contractions of the womb are irregular and violent; in cases of puerperal convulsions, tetanus, &c., its effects remain to be ascertained; and is it not possible, that, if the spasmodic action can be sufficiently overcome to allow its exhibition, the æther inhalation may be available in that most dreadful of all visitations, hydrophobia? We feel convinced that it is not only to the extinction of pain in surgical operations

* A Treatise on the Inhalation of the Vapour of Æther for the Prevention of Pain in Surgical Operations, &c. by James Robinson, Surgeon-Dentist to the Metropolitan Hospital, London. Webster & Co., 60, Piccadilly.

that it will be applied, but that its mission will have a much more extended range, and that it will be of some value as a remedial and curative agent, when the faculty of medicine have examined its effects."

Further on he asks, "But may not the inhalation be advantageously employed in cases of vaccine and equine surgery? in robbing the painful though necessary operations connected with these branches of the art of some portion, at least, of their (at present) revolting barbarity? May not the means that are employed to neutralize the pain in operations on the human subject banish it from those of castration and a variety of others in the brute species, and thus raise the professors of animal surgery in the scale of society by humanizing their art?"

While in the present state of veterinary science we hardly think we merit the severity of the language in which the above inquiries are couched, we will, nevertheless, in what follows, offer an answer to them.

The earlier operations performed at the Royal Veterinary College may be considered as purely experimental, since little was known of the influence of æther on the lower animals generally, and actually nothing as it respected the horse. The apparatus employed, too, although it proved quite effective, was one hastily arranged for the occasion. A sheep was the animal on which the æther-vapour was first tried. She had for months been labouring under disease of the hock joint; the bones having become carious, the discharge profuse and highly offensive, and the pain so acute as to prevent the foot being rested on the ground, while, at the same time, a large amount of ossific matter appeared to be thrown out around the joint. She was caused to inhale the vapour, which was generated from a piece of sponge saturated with æther placed in a tin tube about six inches in length, and two and a half inches in diameter, having a perforated bottom; and in five minutes she was rendered insensible, when Mr. Simonds amputated the limb at the thigh, *without any indication of suffering being shewn*. In eleven minutes from the commencement of the operation the animal was restored to consciousness. No unfavourable symptoms subsequently shewed themselves: the parts have perfectly healed, and she is fast regaining her lost condition.

An aged horse, whose general health was apparently good, but

labouring under chronic disease of the navicular joints of the fore feet, was the next subject of experiment. The form of apparatus now used was modified, and an old inhaler resorted to. In about thirteen minutes the animal was evidently fully under the influence of the æther, and fell forwards; being turned on his side, he remained perfectly quiet while Mr. Spooner divided and excised a portion of each metacarpal nerve of the near fore leg, *without the slightest degree of pain being evidenced*, a convulsive movement of the limb only taking place at the moment a section of each nerve was made. Within twenty minutes the action of the æther had entirely passed off, and the animal, on being returned to his box, commenced eating with avidity.

No mechanical contrivances were necessary to keep the animals in the required position, and it was believed the state of insensibility would have been sooner produced had the apparatus been more perfect.

A favorite cat was sent to the Institution a few days after to be castrated. Its ætherization was effected by a piece of sponge containing the æther being placed in a jelly-pot, and the animal's nostrils held over it. In a minute or two insensibility was produced, and the operation performed without the least indication of pain or inconvenience. A donkey was next subjected to this operation, with precisely the same results. Since which the hock-nerve operation has been performed on the horse, and castration and nicking on other animals of the same class. The ox has also been rendered insensible by the æther-vapour, and the dog likewise, so that no doubt any longer exists of its capability of affecting all our domesticated animals.

Professor Spooner has since most successfully divided the tendons of the flexor perforans and perforatus of the off fore leg of the "Norfolk Phenomenon," the property of Mr. Lines, of Thorpe. The contraction of the tendons has been gradually increasing for the last two years, and in progression the front of the fetlock came in contact with the ground. The animal was extremely vicious, and as a precautionary measure the hobbles were placed on his legs. After inhaling the æther-vapour for about ten minutes, he was evidently affected by it, as he tottered and was falling, when the legs being drawn together, he fell, and lay partially insensible only, but offering no resistance whatever

while the tendons were divided midway between the fetlock-joint and the knee. The adhesions were very firm, requiring much force to be applied so as to break them down. On sensibility returning, and the animal being allowed to rise, the plantar surface of the foot was perceived to be brought nearly in apposition with the ground. A graduated high-heeled shoe was employed, and the wound dressed in the ordinary way. The following extract is from a letter received from Mr. Line :—" I have delayed writing to you, so that I might be able to give you a satisfactory account of the progress which my horse, on which you operated, is making, and I am happy to say I can do so. He has been going on extremely well ever since you left, and can now set his foot quite flat on the ground. He is also much freer from pain than before the operation, and the wound has nearly healed. You would scarcely conceive it possible that his general appearance could have so much improved in the time."

As to the form of apparatus to be used for inhalation by the horse. Here no little difficulty has presented itself; and even as yet, we cannot say we have succeeded fully to our satisfaction, although in ætherizing the smaller animals the tin tube resorted to for the sheep is all that is necessary. Many inhalers, more or less complicated, have been tried by us, and the method now adopted is extremely simple. It consists of a capacious nose-bag, made of Mackintosh cloth; its upper part is padded, and capable of being drawn together by a double string. In front of the nostrils is an expiratory tube, which may or may not be required. At its lower end is affixed a brass collar, nearly three inches in diameter, into which another passes, the junction being effected by a bayonet-joint, or some other equally as simple. To this collar a large bladder is tied, into which a piece of sponge containing from four to six ounces of æther is placed, the whole being fastened to the horse by means of leather straps passing over the head, and buckling under the jaws. The bladder is now to be dipped into hot water of 80° or 90° F.; when the vapour of æther immediately rises, which the animal inhales. The expired air may be allowed to pass out by the valve before alluded to, or a stop-cock may be substituted for it. As soon as the horse is under the influence of the æther, and about to fall, he must be guided by assistants; and when down, the bladder may be removed, so as to

allow of the inspiration of pure air; and, should it be found necessary from sensibility returning before the operation is completed, the bladder may be again applied. When any restiveness is apprehended, it is as well, previous to inhalation, to put the hobbles on the legs, by which the fall may be ensured.

The whole of the æther is rarely, if ever, vaporized; but it is advisable to have more than enough. The remaining portion may, of course, be squeezed from out the sponge, to be made use of again.

We have been favoured with the following communications on the subject from professional friends in the country :—

Dear Sir, *Maidstone, Jan. 14th*, 1847.

From the extraordinary reports of the effects of sulphuric æther on the human subject, I was induced to try it on animals. I selected a fine bitch, on Wednesday last, for the operation of spaying, which from my defective apparatus was only partially successful: to-day, Friday, having prepared a more complete apparatus, I performed two operations for spaying with complete success, the animals being perfectly ætherised and insensible to the knife, and requiring no assistance in holding their legs. The apparatus used was similar to a common glue-pot for containing hot water; in the inner receptacle was placed a sponge saturated with æther, and to the edge of which was tied the leg of a stocking, the other end being drawn over the head of the animal.

The time required in producing insensibility was from six to eight minutes. In the usual mode of operating, the struggles and cries have always been so distressing as often to make me dread it; with the æther it becomes, comparatively, a pleasure. There is crying even now, but of a different character. My brother, Dr. Plomley, Mr. Woolcot, surgeon-oculist, Mr. Slaughter, and others, were present, and expressed themselves astonished at the result.

Do what you please with this communication. Have you yet made any trials? if so, please give me *your* opinion.

Your's, very truly,

*To Professor Spooner.* W. Plomley.

## The Effects produced by the inhalation of the Vapour of Sulphuric Æther upon Animals.

*By Mr.* Richard Barrow, *M.R.C.V.S.*

Messrs. Editors,

The above subject is one so replete with interest to the members of our profession, that I have thought a few cases testing its efficacy may be considered worthy of insertion in your valuable and highly esteemed Journal, The Veterinary Record.

I am truly yours, &c.

*Newmarket, March* 7, 1847.

*Case* 1*st*.—A terrier dog was made to inhale the vapour of æther. In two minutes the effect was perceptible, and in another half-minute he was perfectly under its influence. A portion of his tail was now amputated without his evincing the slightest sensibility, and within ten minutes afterwards he had perfectly recovered from the state of lethargy. The apparatus used in this instance was a small jar containing pieces of sponge saturated with two ounces of æther, to the upper part of which was affixed a bladder (into which the dog's nose was introduced), this being firmly secured by means of tape.

*Case* 2*d*.—A donkey was subjected to the æther vapour by means of an apparatus similar in construction to the one used for the dog, increasing the quantity of æther to ʒiv. The action manifested itself by instability in three minutes, and in four minutes he was prostrate. Neurotomy and nicking were performed, so as to prove his insensibility to pain, with the most perfect success. Complete consciousness was restored in ten minutes after removing the apparatus. In this case the vapour caused considerable coughing, which lasted two or three hours. Ultimately the donkey did well.

*Case* 3*d*.—A thoroughbred mare, two years old, of delicate constitution, was next submitted to the ætheric influence, the apparatus being one temporarily constructed, which I will hereafter describe. In four minutes she was sensibly affected, and immediately afterwards she fell down in a most excellent position: had she lain down of her own accord it could not have been done more easily.

Neurotomy was performed on both fore-legs without the slightest evidence of pain. She was kept under the influence of the æther for twenty-five minutes, an occasional supply of air being afforded her during the time by means of stop-cocks placed on the apparatus. No untoward result occurred. A few minutes after the removal of the apparatus she was quite recovered, and began feeding. This animal has since been subjected to the ætheric influence several times with similar success. The quantity of æther in each trial was ʒiv.

*Case 4th.*—An aged stallion donkey was the next subject of experiment. He manifested some degree of violence upon the application of the apparatus, but soon became reconciled to it. In three minutes and a half he was affected, and in four minutes and a half he fell down perfectly comatose. The operation of castration was then performed without the least visible evidence of pain: the only assistance requisite was a person to hold one hind leg up so as to admit of an easy grasp of the testicles. The animal was kept under the influence of the vapour for fifteen minutes. On the apparatus being removed, a bran mash was given him, which in the space of five minutes he began eating with avidity.

Thus far the experiments related had exceeded our expectations, and they were, perhaps, sufficient to buoy us up with the hope that this discovery would be of infinite service to the profession; but I much question its general applicability to thoroughbred horses, especially those of a suspicious, nervous, or irritable temperament. In proof of such an opinion, the following result of a trial of the æther vapour upon a thorough-bred horse, four years old, possessing the above peculiarities, will testify. The horse was taken to the operating place, and after very considerable difficulty the apparatus was firmly secured to his head: no sooner, however, did he find some impediment offered to his natural respiration, than he became exceedingly violent, fighting and plunging in a most powerful manner, and so completely disarranging the apparatus as to necessitate its removal. A friend being present who was anxious to witness the action of the æther on animals was thus disappointed; but in order to prove to him its efficacy in some cases, the apparatus was immediately placed upon a donkey, when ætherization was perfect in four minutes, and he was kept under its action

for fifteen minutes; restoration being complete a few minutes after the removal of the apparatus.

We were, however, most anxious to test its applicability upon the above description of horse; he was therefore again brought out on the following day, and much care and caution were observed in fixing the apparatus; but he immediately manifested his former violence and in a tenfold degree, the apparatus being again displaced, and otherwise seriously damaged. Feeling now assured that there was no prospect of producing the desired effect, all further attempts were relinquished. Six ounces of æther were used in both trials.

The apparatus employed in the foregoing cases for the purpose of inhalation is of a rude and simple construction, consisting of a tin vessel the form of a muzzle, and capable of holding two gallons of liquid. On the inside, within three inches of the bottom, is an open wire-lid for the purpose of retaining the sponge containing the æther in its situation. Two stop-cocks are placed, one at the bottom, the other about five inches from the top and front of the vessel; there are also four loops, situated one on each side, one in the front, and the other behind, which are secured to a headstall by means of straps and buckles: to the upper part of the vessel is firmly attached an India-rubber bag, about nine inches in depth; and to the upper part of this, on either side, is a light buckle and strap to be passed over the head for the purpose of keeping the bag in the required situation; and within four inches of the bottom of the bag are three loops, through which the nose-band passes, firmly fastened so as to render it air-tight.

In conclusion allow me to observe, that it would have been utterly useless to have persevered in our endeavours to put the animal last alluded to under the influence of æther; and a considerable number of our thorough-bred horses are of the same nervous temperament as he is, so that the mere sight of the apparatus is sufficient to frighten them. And to horses of a lower breed, I am fearful their owners would rather allow them to suffer pain during an operation, than subject themselves to an additional expense by the inhalation of æther.

*To the Editors of "The Veterinary Record."*

Gentlemen,—HAVING seen in the daily papers the successful results of the inhalation of æther as a means to relieve the human subject of pain when under surgical operations, I was induced to try its effects in veterinary practice; for which purpose I procured a donkey as the subject of my first experiment: and if the result will in the least add to the valuable information contained in your Journal, I beg you will make what use of it you think proper.

*Jan.* 31*st.*—About half-past two o'clock the animal commenced inhaling the fumes of æther through one nostril, the other being completely closed by an assistant. In about four minutes he became most sensibly affected, and dropped upon his hind quarters, and then upon his side. The operation of neurotomy was then performed; for which purpose an incision was made through the integuments at the fetlock joint, and the metacarpal nerve was cut down upon and divided, and nearly an inch excised, without the animal evincing the slightest symptom of pain: had he been operated upon in the usual way, no doubt he would have suffered much, and also made great resistance at the time of the division of the nerve.

The actual cautery was now applied to the other leg, as in the operation of firing, and it seemed to cause not the slightest pain. The animal for either operation was in no way confined, except his head being held; but he laid almost motionless on the ground, and, as he became reanimated, he turned his head up, and appeared quite unconscious, or rather as if he had been asleep. He remained down for some few minutes longer, being unable to stand. The pulse during the operations was only slightly increased, but afterwards, and while making ineffectual efforts to rise, it rapidly rose to 94 in the minute. The operations were considered by several medical gentlemen who were present to be quite conclusive, and perfectly satisfactory. Having succeeded so well in these two operations, about a week afterwards I was induced to proceed further, and to castrate an entire animal. I had again recourse to the vapour of æther, but its action was not so rapid in this case as the other, it being six or eight minutes

before the animal fell on his hind quarters; nor did he appear to be so completely under the influence of the æther as in my former experiments. In this state I commenced the operation of castration, he being in no way confined, except that the uppermost hind leg was held up by an assistant for the convenience of the operation. In a very short time the operation was over, and the donkey did not make any attempt at resistance, or seem to suffer the least pain. The caustic clams were resorted to for the operation.

From what I have seen of the effects of æther, I feel very much gratified, not only from the relief it affords to the patient during a severe operation, but on account of the safety of the practitioner. How very commonly do we find it to be the case in private practice that we have a very restive animal to deal with, and, in many cases, very dangerous to approach without our running the risk of being knocked down with his fore feet, or kicked out of the stable with his hind ones. Many gentlemen, too, having a very valuable or favourite horse that requires an operation to be performed, have the strongest objection to his being cast: in such cases as these we may have recourse to our new friend; and I have no doubt but it will soon come into general practice among us, if so be our employers do not object to the price of the æther. I hope soon to see you have some apparatus made that will be adapted for the use of the veterinary surgeon.

I am, dear Sirs,

Your's obliged,

EDWIN TAYLOR.

We also venture to append the following, extracted from the journals of the day. Mr. Lucas was, we believe, the first person to place on record an operation performed on the lower animals while under the influence of the vapour of æther:—

"Mr. Lucas, a veterinary surgeon, of Liverpool, has removed a large tumour from a Newfoundland dog while the animal was under the influence of æther vapour. The head of the dog was introduced into a jar containing sulphuric æther, and the operation was performed without any sign of pain."—*Times*.

Mr. Henry Taylor, of Market-street, veterinary surgeon, has performed two operations on horses in which neither hobbles nor any other means of restraint were used, but insensibility was produced by the inhalation of æther. In the first case, that of nicking, the effect was produced in twenty-three minutes, and the animal fell as if dead; but in both cases there was a slight movement of the legs, from which it may be inferred that the state of insensibility was not complete. The æther was of the best kind, obtained expressly for the purpose from Mr. Hooper, of Pall Mall East, London; but the inhaling apparatus at present in use for veterinary purposes is ill-contrived, and one of a better description is much needed. The cost of the æther in one of the cases was seven shillings.—*Sheffield Times.*

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Mr. Editor:—If my recollection does not deceive me, I lately read in your paper some sceptical remarks* on the efficacy of the newly discovered ætherial agent: it is probable that many of your readers may be interested in the following statement of what, by the kindness of Professor Spooner, I witnessed at the Royal Veterinary College to-day; and at all events it may tend to restore the confidence which the observations of your correspondent were calculated to shake.

Three patients were subjected to the inhaling process previously to operating. The first was a lively, powerful pony, about thirteen hands high, or rather less, and five years old: he was castrated: he inhaled the æther for five minutes, four ounces being used: his pulse was under forty at the commencement; it rose under the process, but I did not hear to what extent. At the end of five minutes he fell; but though the intoxication was not complete, he was placed under little or no restraint, and was clearly all but insensible to the pain. There was a very trifling degree of movement in the limbs, but not such as in any degree to impede the operator. After the operation he rose rather unsteadily, as if still suffering from giddiness; but in about three minutes he seemed perfectly recovered, and walked away as cheerfully as he had

* We have no recollection of sceptical remarks on this subject in *Bell's Life*. Sir George may have read such elsewhere. Doubts are now at an end. —Ed.

entered. I am satisfied that he was scarcely conscious of pain at any time.

The second patient was a young mare, about fifteen hands and an inch, and three years old; she, like the pony, was in full health, lively, and vigorous. She inhaled six ounces of æther, and the process occupied ten minutes: I doubt if she was even then more than half intoxicated. She struggled and reeled about a great deal, and her legs became very tremulous; but she did not fall unaided, nor did she exhibit any decided symptoms of insensibility. Her pulse was thirty-six before the inhaling, and rose rather suddenly to sixty. She was hobbled in the usual manner for the operation (nicking); and I am compelled to acknowledge that the process failed in this case, though I am doubtful whether she did not derive some mitigation of pain from it.

The third patient was an aged horse. He inhaled for six minutes, consuming four ounces of æther; and, unlike the two former patients, he appeared not to dislike the process. Cæsar himself could not have fallen with more decorum, or more graceful composure of his limbs. He required no restraint, and submitted to the very painful operation of nerving, scarcely moving a muscle. In his case the intoxication and the insensibility were complete. His restoration was more tardy; perhaps five minutes or more elapsed before he entirely rallied. He then raised himself as if from a comfortable nap, and, after stretching and yawning a little, walked off as if nothing particular had occurred. I had no opportunity of informing myself of the state of his pulse. He was a full-sized horse, and apparently, either from age or nature, of a very quiet disposition. Immediately after this the same operation of nerving was performed on another patient *without any inhalation;* and the violent struggles of the animal, *malgré* his hobbles, sufficiently proved the severity of the pain.

The process of inhaling is effected by a simple contrivance. A sort of nosebag is fastened round the jaws: it has two tubes inserted in it at the lower extremity; in each of these tubes is a valve, the action of one valve being outwards, the other inwards. The expiration of the breath opens the valve opening outwardly, and the inspiration opens the other, admitting the æther.

I am disposed to think that the same varieties may occur in the effects of intoxication on the animal that we see in human nature.

Some men are excited to a state of madness by inebriety; others settle down into a state of coma, or, as it is commonly termed, are "dead drunk;" and this variety of effect from the same cause is probably occasioned by peculiarities of the nervous system, or some structural difference in the brain itself. In the case of the mare there was extreme excitement: in the pony there was a considerable degree of it, but not more than the novelty of his position might account for: in the old horse there was a total absence of it; he got drunk as soberly as a hackney-coachman in a snow-storm. I cannot say with certainty that the inhalation was equally complete in each instance, but I have no reason to doubt it; for from the construction of the apparatus it seemed impossible that it should be otherwise; and in the case of the mare, where alone it could be said to have failed, six ounces of æther were used instead of four, and the process occupied double the time. I infer that we are not to conclude that two or even ten successive failures are decisive against the efficiency of the agent; and also, which is of far more moment, that, in operations on the human subject, the peculiar character of the susceptibility ought first to be ascertained by one or two previous inhalations; for I can easily conceive that an agent of such extraordinary power, and acting immediately on the brain, may prove dangerous, where it is not very cautiously employed, and sometimes, perhaps, notwithstanding all caution.

I ought to add, that in the two first cases the insensibility scarcely continued for two minutes after the operations were completed: in the last, as I have already observed, I think that more than five minutes elapsed.

It is unnecessary for me to testify to the well-known skill of Mr. Spooner, or to mention the calm and quiet rapidity with which he operates; but I should be very ungrateful not to acknowledge publicly the courtesy and intelligence with which he gave me every explanation which my somewhat abundant curiosity requested; an obligation under which I have, for many years, felt to Professor Sewell on similar occasions. I was glad to meet him, too, there in health, and to receive from him the same instructive assistance that I have often enjoyed before.

I have the honour to be, your very obedient servant,

*Bell's Life in London.* GEORGE STEPHEN.

P.S.—A doubt certainly crossed my mind whether the inhaling might not have been safely prolonged in the case of the mare, so as to produce a comatose state; but she seemed to be valuable, and valuable animals must not be experimented on. It may be worth trying whether every animal, however much excited in the first stages of intoxication, may not be reduced to actual insensibility without ulterior mischief. If one may judge from the effect of drinking on man, danger arises exactly in proportion to the rapidity with which inebriety affects the brain; but it remains to be proved whether the cases are parallel.

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Since the above was sent to press, other forms of æther inhaling apparatus have been tried at the College, and with results more or less favourable. Professor Sewell has been very successful in the use of a small bladder for containing the æther, which he has surmounted with the inverted top of a bottle of gum-elastic. This he merely places over one nostril of the horse, ox, sheep, or pig, the bladder being dipped into hot water, and the animal allowed to inhale and exhale freely by the other nostril. A few minutes sufficed to render all these animals insensible; and they remained in that state, without the least restraint, a sufficiently long time for all the ordinary operations to be performed on them.

We are, nevertheless, convinced that some means must be devised to determine the mode of falling of the horse, so as to prevent any accident occurring; and we wish our friends would suggest a plan that could be adopted practically, simplicity and effectiveness being indispensable requisites. We have thought a modified form of the windlass and pulleys, with a broad belly-band to pass around the animal, so as to lay him down while under the influence of the hypnotic, might answer the purpose; but such an apparatus fails to impress our minds at the present moment with the idea of portability, which is most desirable.

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We have received from a friend in America the *Boston Daily Advertiser*, and we extract an article from it on this subject, which was read before the American Academy of Arts and Sciences by Dr. C. T. Jackson, with whom originated ætherial inhalation.

Mr. President,—In reply to numerous inquiries which have been addressed to me from scientific gentlemen in various parts of the country, I beg leave to submit to the Academy the following communication :—

Although it will be impossible for me to condense all I may have to say upon this subject within the limits of this paper, I shall endeavour to state those points that are most interesting.

I have long been impressed with the importance of medical chemistry, and being both a chemist and physician, it is natural that I should seek among the resources of the laboratory the means of alleviating suffering. I was early impressed with the remarks of Davy concerning the remedial agency of gaseous matters, and felt disappointed to find so few practical results growing out of his medico-chemical experiments. It seemed to me quite strange that no adequate researches had been made on the inhalation of vapours, especially the vapours of such volatile and peculiar matters as the æthers, and thus I was induced to institute the experiments which led to my discovery.

We are aware that æther ranks in the pharmaceutic books and dispensatories as a diffusible stimulant, and that its fumes or vapour produce intoxication of short duration; but it was unknown, until my experiments were performed, that it rendered the body insensible to pain, and threw the mind into a pleasant reverie or dream, so as to disregard the tortures of the knife and cautery. Inasmuch that so far from recommending its inhalation, all the authorities strenuously advised against breathing it, as "fraught with danger." Perhaps there may be danger in the prolonged inhalation of the ordinary æthers of pharmacy, which are liable to be impure. We know that commercial æthers may contain sulphurous acid gas, acetic, formic, and aldehydic acids, the three latter being produced by absorption of oxygen from the air.

The presence of a considerable proportion of alcohol in these æthers causes them to produce mere intoxication, followed by headache and prostration of nervous energy.

Although others may have experienced these effects, still the higher stage, viz. perfect insensibility and unconsciousness of pain was never reached, and the thin veil which concealed this

discovery from the world had not been raised until my experiments were instituted.

A short description of the best processes for preparing æther to produce the effects which I proposed to attain will not be irrelevant.

The basis of all the æthers is a hypothetic radical, called Æthule, which is represented by the formula C4 H5 and symbol Ae. Pure sulphuric æther is regarded as an oxide of æthule, and is represented by the formula C4 H5 O, its symbol is, therefore, Ae O. It is prepared by decomposing highly rectified alcohol by means of sulphuric acid, or oil of vitriol. Five parts of alcohol of 90 per cent. are mixed with 9 parts of oil of vitriol in a vessel of copper or iron, placed in cold water, so as to cool the mixture. The action of sulphuric acid on alcohol is catalytic, bisulphate of oxide of æthule is formed, which by elevation of the temperature and brisk ebullition is decomposed, and the oxide of æthule passes over in vapour; the sulphuric acid remaining with a portion of undecomposed alcohol, the water which passes over in vapour no longer uniting with the æther. Alcohol is repeatedly added to the sulphuric acid, which would decompose an indefinite quantity of it, were it not diluted by the water introduced; 10 per cent. of which is conveyed to it by common alcohol.

The distilled liquid is next to be treated with an alcoholic solution of potash, to neutralize the acids, and to render it slightly alkaline. It should then be re-distilled in a water bath, and the operation is to be arrested as soon as the æther has attained a specific gravity of 0·72 at 80° F. The specific gravity may be still farther reduced by allowing it to stand for some days over dry chloride of calcium, and then re-distilling it in contact with that hygrometric substance. Its boiling point is 96° F. It has a penetrating aromatic odour, and is highly inflammable. It should not change the colour of blue litmus paper.

The pure vapour of æther as thus produced will not support respiration, and by excluding air from the lungs would produce complete asphyxia. Therefore, I inspired it in such a manner, that there was mixed with the vapour a sufficient quantity of common air to enable the lungs to perform their usual functions, but slightly disturbed by the ætherial vapour; and I would caution

all who may administer it in future, carefully to fulfil this important condition, so essential to success. In cases where alarming symptoms of asphyxia may occur from the accidents of improper administration, or from impurities of the æther employed, and in those persons of high nervous susceptibility, or of determination of blood to the brain, and pulmonary diseases (though in the latter cases it may have been improper to administer it), I have prescribed the inhalation of pure oxygen gas, which, acting on the blood, immediately renders it arterial, and this gas should be kept in readiness to meet any such emergency. It may be preserved in a gasometer, and be drawn off in a large India-rubber bag for use at any moment. The administration of the æther, with all the above-mentioned precautions, will produce the kind of insensibility required. Its production is immediate, of short duration, and the effect passes off in a very short time.

In my first successful experiment the conditions as stated above were fulfilled, though the mode of administration was of the simplest kind, it is true, but yet efficient. A folded cloth saturated with the highly rectified æther was placed over the mouth, the air being drawn freely through it, and the inhalation was continued until I lost all power over myself and sank back in my chair in a state of peculiar sleep or reverie. I experienced at first a sense of coolness, then of exhilaration and warmth, followed by loss of consciousness. But it was not until a subsequent trial that I became aware that this loss of consciousness was accompanied by insensibility to pain; and a severe bronchial irritation, produced by the inspiration of a large quantity of chlorine gas was for the moment relieved, and the peculiar distress occasioned by that gas was not felt, so long as I was under the influence of æther, though as that passed off it returned. I had several times occasion to mention these facts to my friends; and it is now a year since I urgently advised Mr. J. Peabody, who was associated with me as a pupil in chemistry, to inhale the æther vapour as a means of preventing pain, which would arise from the extraction of two of his teeth. He consented to try the experiment, and was preparing some æther for the purpose; but on consulting the works in which the effects of æther are mentioned, he found all the authorities arrayed in opposition to my views, and that they warned against

its inhalation, as I have before stated, and he therefore did not complete the experiment.

About the last of September or early in October last, I communicated my discovery to Dr. W. T. G. Morton, an enterprising and skilful dentist of this city, whom I occasionally advised, and who called at my laboratory to borrow an India-rubber bag, which he said he intended to fill with atmospheric air, and to cause a refractory patient to breathe it, hoping to act on her imagination, and induce her to allow him to extract a tooth. I dissuaded him from this attempt, and explained to him that I had discovered a process by which real insensibility to pain might be produced. I showed him sulphuric æther, and described the method of administering it, and also its effects on the system, assuring him, that if my directions were carefully followed no danger would ensue. I advised him to try its effects on himself, in order that he might better understand its mode of operation. He followed my instructions, and was successful in the first trials, in the extraction of teeth unattended with pain, the results proving exactly as I had predicted. I also furnished him with a large glass flask with a bent glass tube as an extempore inhaling apparatus. I then proposed to him the trial of the æther in a surgical operation at the Massachusetts General Hospital, where it was administered by Dr. Morton, and it proved successful; but some persons who witnessed the first operation doubted the entire freedom from pain, since the patient said "he felt a scraping." I was therefore desirous of testing it in a capital operation, the severity of the shock being the best test with regard to the degree of insensibility. Dr. J. C. Warren politely consented to have the trial made, and its results proved entirely satisfactory, an amputation having been performed under the influence of ætherial vapour without giving any pain to the patient. Drs. J. C. Warren, Hayward, Townsend, and J. M. Warren performed the first successful operations that are recorded. Since then the most eminent surgeons in Europe, and others in this country, have confirmed by numerous trials the reality of the discovery. Occasional failures were to be expected; but they mostly have arisen from imperfect modes of administration, though some may be attributed to indiosyncrasies. Medical, as well as surgical science, will probably derive advantage from this

new practice. It may be worthy of trial in tetanus and other spasmodic diseases. Intermittent headache I believe already to have been relieved by it, and the chills of intermittent fever may possibly be broken. The relaxation of the muscles effected by free inhalation of æther vapour may enable the surgeon to reduce dislocations, and dispense with the powerful force of pullies and other violent means of extension. Already it has found its way into the Royal Veterinary Colleges of Alfort in France, and Camden Town in England, where severe operations have been performed on horses, sheep, and dogs, without the manifestation of any pain or struggles in these animals. Even division of nerves has been performed on a horse to which the æther had been administered, and although the animal was in no way restrained, not a struggle was made, or any sign of pain perceived. This precludes the idea of the effect being due to the imagination.

How far this new practice may extend is yet unknown; but there cannot be any reason to believe that the limits of its application have been conceived.

CHARLES T. JACKSON.

## COMMUNICATIONS AND EXTRACTS.

### SINGULAR INSTANCE OF ONE DOG KILLING AND EATING ANOTHER.

*By Mr.* WARNE RADDALL, *M.R.C.V.S.*

*To the Editors of* THE VETERINARY RECORD.

Dear Sirs, 4, *Russell-street, Manchester, March* 10, 1847.

I FORWARD to you the following strange and to me novel case; and if you think it of sufficient interest to the profession, I shall be glad if you will give it a place in your valuable Periodical. Ere long I hope to forward you some cases of more importance, as they will be on practical subjects. In the month of May, 1838, I was sent for by C .Tolcher, Esq., who then resided about one mile

from Plymouth, Devon, requesting my immediate attendance at his house, to make a post-mortem examination of a pointer dog of his, that had that morning died under, as he thought, somewhat suspicious circumstances. On my arrival, he informed me that two favourite spaniels and a pointer had had, during the preceding night, a desperate quarrel with each other, although they had been kept kennelled together for a considerable time. On going to the kennel, I found the spaniels perfectly quiet and at peace, although presenting sad appearances of punishment, particularly about the head, eyes, &c. On looking at the dead pointer, I was at once struck with the immensely distended state of the abdomen: the body seemed as if death had taken place some days since, and decomposition was going on. Expressing my surprise, Mr. T. stated that a little pet spaniel of his daughter's, of King Charles' breed, had that morning only disappeared under very peculiar circumstances. It slept in the dwelling-house at night, and in the morning, when the groom opened the hall-door, he saw the little animal run out before him, and go in the direction of the stable-yard. On the groom arriving at the stable-yard, the dogs were making a horrible barking noise, and he called out to them in order to quiet them; having accomplished which, he proceeded to the stable to do his usual work. He had not long been at his work, before his attention was again directed to the noise made by one of the dogs; he therefore now opened the kennel door, and was surprised to find all three of the dogs presenting appearances of having been fighting, and the pointer lying on the floor, moaning as if in great pain, and shortly after he died. The groom lost no time in apprising his master of what had occurred, who, fearing hydrophobia (that disease being at the time very prevalent in the neighbourhood), immediately sent for me, in order to decide, by a post-mortem examination, if such was the cause of death in this case or not. If it were so, there was but one course to pursue with the other two dogs. While I was making preparations for the examination of the body, Mr. T. told me the groom had stated to him, that he really believed the pointer dog had killed and eaten the little King Charles' spaniel which had so suddenly disappeared, which statement I confess I thought little of, stating that there was a common adage, that "dog did not eat dog"; also remarking that, if it had been so, we

should certainly have seen traces of blood, &c. on the floor. I now proceeded with my examination, and first observed a deep lacerated wound on the left side of the face, inflicted doubtlessly by one of the spaniels. The large branch of the fifth pair of nerves supplying the lip had by the laceration been torn very considerably. Proceeding with my dissection, I found nothing in the fauces, or upper portions of the air-passages, that indicated canine madness; but on laying open the cavity of the abdomen, I perceived the stomach to be ruptured to two-thirds of the extent of the greater curvature, which was, of course, the obvious cause of death. The whole of the other viscera, both abdominal and thoracic, were perfectly normal. On examining the contents of the stomach, to my utter astonishment and disgust, I there found the entire remains of the little spaniel, and, as I believe, every particle of him: the bones, even of the cranium, were ground down to pieces, and swallowed. And even now, after having had ocular demonstration of the one dog having killed and eaten the other, on minutely examining the floor of the kennel, which was kept remarkably clean and in excellent condition, we could not discover a stain of blood, or a particle of skin, bone, intestine, or any other relic of the little favourite.

I at once gave it as my opinion that there was no cause to apprehend or fear the existence of hydrophobia in the spaniels; and that the cause of death in the pointer was the sudden distention of the stomach, which led to its mechanical rupture by such an unnatural act as that of killing and eating one of his own species, and that this arose from the state of phrensy or delirium under which he laboured, which was produced by the laceration of the large facial nerve. The brain, as well as its meninges, was perfectly normal. A sufficient time, I apprehend, had not elapsed after the infliction of the injury, prior to death taking place, for any structural derangement to present itself in this organ, although it was impaired functionally. I have already made my communication on this subject longer than I intended, or I would have touched on the nature of hydrophobia; my views relating to this disease, at least as to its origin, being somewhat at variance to those generally entertained respecting it.

I am, your obedient servant.

[Almost a parallel to this strange case occurred under the notice of Mr. Spooner. A Newfoundland bitch had pupped about a month or six weeks, when a half-famished sheep-dog entered the kennel during the absence of the mother, killed the five puppies, and had eaten two of them before he was detected. The dog was immediately shot while still in the kennel, and the remains of the puppies were found in his stomach; but no lesion nor a trace of disease in any of the tissues or viscera was detectable on a post-mortem examination being made.

A short time since, Mr. Varnell observed a large half-starved dog voraciously eating something he had taken out of a ditch, which proved to be the hind leg of a dead dog; so that the saying "Dog does not eat dog," is not literally true: nevertheless, these cases are but the exceptions to the general law.]

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## On the Inhalation of Chlorine Gas in Cases of Nasal Gleet.

*By Mr.* W. G. Taylor, *M.R.C.V.S.*

*Nottingham, Dec.* 23, 1846.

Dear Sir,

Observing in the January Number of The Record a successful case of chronic nasal gleet, recorded by Mr. W. Kent, in which the inhalation of chlorine gas appears to me to have been the therapeutic employed with the most beneficial results, I am induced to send you a few lines relative to a similar case, although it was not so severe in the general symptoms. I regret that I did not at the time take more copious notes; I am, therefore, obliged to trust to my memory for a few of the facts.

*To Professor Morton.* I am truly your's.

The horse was an aged animal, belonging to an officer in the 5th Dragoon Guards, then stationed at Nottingham. He was not allowed to remain in the barracks, on account of the suspicious symptoms shewn, the Colonel being fearful that glanders might be the result. There was a slight but continuous discharge from

the near nostril of a very unhealthy character, being yellow in appearance and gluey. It had existed for some months, gradually increasing in quantity, and was accompanied with enlargement of the submaxillary glands, but there was no tendency to ulceration of the septum nasi. Beyond this I cannot call to mind the particular symptoms of the case; it must, therefore, suffice to say, that I first gave him the diniodide of copper, and then the sulphate, in increasing doses for some time, without any improvement whatever. The frontal sinus was next trephined, and injections of the solution of alum with sulphate of copper thrown up, and afterwards chlorinated lime. These were persevered in, without the least diminution of the nasal discharge. I then determined to try the action of chlorine in its gaseous state in the manner recommended by you in your lectures, when I was attending the College, namely, by using a Florence flask, and obtaining chlorine by the action of hydrochloric acid upon the per-oxide of manganese, making use of a candle instead of a spirit-lamp. After the application of it for a few days, the discharge began to diminish, and assumed a more healthy character. This treatment proving so far successful, we followed it up every day, then every two or three days, as the animal got better, until there was no further use for it, the secretion having altogether ceased. I cannot refrain from expressing my conviction that chlorine is a most valuable adjunct to the veterinary surgeon in these troublesome cases. Perhaps it will be as well for me to state, that, by inhaling the gas during the time I was shut up in the box with the horse, a very sore throat and cough were brought on, with much irritation of the eyes. Being thus annoyed, I devised a plan to obviate this, by using a retort, passing the end of it through a hole in the stable door, and thus I escaped the unpleasant part of the operation.

I consider great credit is due to you for having, in your able lectures, so strongly advocated its use; and I hope that the two cases, Mr. Kent's and my own, may be a stimulus to you to persevere in your discoveries and advance the science of veterinary medicine. I have only to add, that the case I have thus imperfectly related occurred in the early part of last year.

## Cases of Dilatation of the Heart of the Horse.

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

Dear Sirs, *Jersey, Jan.* 13, 1847.

Having witnessed a few cases of dilatation of the heart within the last twelve months, I take the earliest opportunity that has presented itself of making known to you the particulars of the same, for insertion in The Veterinary Record.

### Case 1.

The subject of the present case was a well-bred mare, nine years old, whose history was as follows:—About the month of September of last year this mare was in good working condition, with plenty of flesh, and supposed to be in foal. She continued in this state for nearly two months, when she was suddenly taken ill. The symptoms then present, as near as I could collect at the time I was informed of it, which was in November following, were these,—she lost her appetite, wasted in flesh, and the legs became swollen. The owner (a poor man) was induced to call in a self-dubbed veterinary practitioner, who designated the case one of rheumatism. His treatment was principally directed to the legs, all of which he blistered, and at the same time he introduced a seton in the chest to draw off, as he said, "the humours." What his prescriptions otherwise were, I know not; suffice it to say, when I was first shewn the case, the animal was in a meadow in the open air; she was lying on the ground as if dead, and indeed I could scarcely detect any respiration going on. When the eye was touched, only a slight movement of that organ took place: the pulse felt at the jaw was beating between 40 and 50 in the minute, with intermissions about every six beats, and very feeble indeed. The heart was next examined, and I found that I could feel its action better on the *right* than on the *left* side. The blood in the jugular veins was propelled through them in a jerking manner, which was seen chiefly at the bottom of the neck, close to the chest. The whole surface of the body was warm.

The mare being so much exhausted, in the absence of more prominent symptoms, I ventured to offer as my diagnosis that she

was labouring under some disease of the heart or large blood-vessels. She was destroyed in my presence, and I had permission of the owner to examine her. The result of that examination was, first, dilatation of the right ventricle of the heart, the structure of which was easily broken down with the finger; its fibres were pale, and flabby to the touch. The pericardial sac was healthy; lungs also healthy; liver softened and easily torn. The intestines contained a large quantity of fluid, which I considered chiefly bile, as it was soapy to the touch, and possessed a slightly bitter taste.

The uterus had nothing in it but about a quart of yellowish matter, which was something similar to urine after standing for some days in the open air.

The above is not a very instructive case, because I had not an opportunity of seeing the animal early; in short, I merely saw her in the meadow, and that almost out of curiosity, when, seeing not the least hope of cure, I advised the owner to destroy her; but, it being the first case of the kind I have met with, I place it first.

### Case 2.

The following case came under my immediate treatment only two days after that just related. My patient was a well-bred grey gelding, six years old, in good condition, and labouring under the prevailing epizootic. The symptoms when I first saw him were as follow:—Mucous membranes highly vascular; air passages inflamed, shewing at one view that general inflammation had set in about the head and chest; pulse 70, and full; breathing much quicker than natural; mouth and breath hot; ears and legs moderately warm—which was the case with almost all the horses that suffered from this disease—a cough, which may be described to be hard and laboured; sometimes however it was short, and seemed to produce great soreness; discharge of mucus from the nose and eyes; the mucous *râle* distinctly heard on both sides of the chest; legs more or less puffed; fæces hard, but not covered with mucus; urine increased in quantity, and of a thick whitish appearance; skin dry, and coat staring; horse standing ever since he was attacked; appetite bad.

The treatment first adopted was venesection, until the pulse was influenced by it, which required about five or six quarts to effect that purpose. A seton was introduced under the throat, and another in front of the chest, and febrifuge medicines were administered in the form of ball. This treatment, in the course of a few hours, seemed to have given relief. The medicine was continued daily, and the bleeding was had recourse to a second time. The sides were stimulated with a mustard embrocation, which acted well, and this was repeated when deemed necessary; and the animal appeared to be going on well, with the exception of the pulse, which ranged from 60 to 70 beats in the minute, but was weak and irregular; the heart's action was also better heard on the right than on the left side. After a few days I felt convinced that all the inflammatory symptoms had disappeared, but that something worse had taken place, namely, *structural disease*, of which I had proof in the mucous discharge of the bronchial tubes changing to thick offensive pus. I now set to work to support my patient with nourishing but not stimulating diet, such as gruel, &c.; and gave pot. iodid. cum hyd. chlor. et pulv. opii, combining calcis chlorinat., which seemed to have an admirable effect in removing the fœtor present. At this time, about ten days from the commencement of the attack, the discharge from the lungs measured nearly two quarts daily. The pulse continued about 64, and was irregular; the respiration 24, but regular; the legs still swollen; the standing posture maintained; fæces generally were soft; urine voided in moderate quantities, and dark-coloured; ears and legs sometimes hot, sometimes cold; appetite very capricious. I stimulated the sides occasionally so as to keep up a degree of external irritation, which I thought would tend to check any disposition to inflammation internally; the horse, however, never gained flesh.

All seemed to be going on favourably as far as the lungs were concerned: the quantity of matter discharged was lessened in the course of three weeks from two quarts daily to about an ounce, and this having no smell. Still there were a few symptoms present I did not like; these were—the pulse remaining at 64; the legs continuing swollen; and the animal maintaining the standing position. I, of course, ordered him very gentle walking exercise at such times and places as seemed to offer peculiar advantage to a horse

labouring under such a disease, so that he stood no chance of being excited in any way.

For some days past I had favoured the idea of the heart being now the principal seat of the affection, as I firmly believed the diseased lung had become solidified, and that, in all probability, the animal, should he recover, would be enabled to perform slow work, which was all the owner desired. About six weeks from the first attack, in the evening I was sent for in a hurry to see my patient, when I perceived the following violent and painful symptoms to be present:—He was down for the first time, and kicking; breathing very hurried and laboured; pulse 100, but small and irregular; and cold sweats bedewing the body. These violent symptoms would last only a few minutes, when he would become tranquil, which enabled me to take the pulse at the heart. On the *left* side, but not on the *right*, could I detect its pulsation. The jugular veins throbbed violently from the top to the bottom of the neck. I gave an anodyne draught, although I considered all treatment would prove useless, and left my patient until the following morning, he being in the country. When I called the next morning, I found him down, and struggling violently, apparently making his last efforts. To put an end to his sufferings, I advised his owner to have him destroyed, which was at once acceded to, a labourer shooting him through the head with a ball.

The post-mortem appearances were these:—The lungs were perfectly white and solidified; here and there only was a small tubercle to be found. The right ventricle of the heart was dilated to treble its usual size, and was soft and flabby;—the other portions were as in health, but somewhat paler in colour. All the other viscera were normal.

### Case 3.

The subject was a grey mare, about fifteen years old. I was requested in the month of October last to bleed and physic her, which I did, she being in a too plethoric state, as the owner supposed, and always subject to a cough.

In the course of a fortnight she was attacked with the prevailing bronchitic disease, and I was requested to see her. The usual symptoms were present, except that the pulse was not more than

48 in the minute, but full, and having a peculiar irregular beat. Nor was there so much discharge from the nostrils as in the generality of cases; but there appeared at times a *jerking expiration*, as if the mare was broken-winded, and a double action of the abdominal muscles. The legs were œdematous, and so were some parts of the belly; the ears and legs were warm, varying, however, as in most cases.

In this case, as in the others I have witnessed, that obstinate standing position was at all times and under all circumstances maintained, also the peculiar irregularity of pulse, although the pulse of this patient never under ordinary circumstances rose to more than 48 beats in the minute, which I think will be accounted for in the sequel. This case went on for three weeks, sometimes a little better and then worse, until the 13th of November, when I was called into the country in a hurry to see my patient, as she was purging violently.

Before I proceed further in my description of the case, it may be as well to state that I thought hydrothorax had set in, of which I had acquainted my employer, and expressed a desire to operate for that affection: I did so on the right side; but no fluid escaped. I next tried the left side, whence about a half pint of serum mingled with blood flowed. I now had her moved a few yards, which caused her to respire laboriously. After many auscultations of the chest, and comparing the present with other cases that had fallen under my care, I came to the conclusion that she also was affected with disease of the heart, and probably, as in the others, "dilatation." Although many of the symptoms were different, yet the principal ones were the same.

I now gave up my patient as being beyond all hope of cure. She was lying down upon her side, sometimes struggling, at others getting up and looking towards her flanks, both of which she never had done before: her pulse was 94, small and irregular, not truly intermitting, but it would beat sometimes quicker than at others; respiration very quick; mucous membrane vascular; tenderness upon pressure on the region of the liver; belly tucked up; and the legs, which were previously increased to four times their natural size, were now as fine as a colt's. I administered opium, &c. with port wine; but she died in three hours without a struggle.

The following morning I examined the heart, the right ventricle

of which was dilated considerably, and the right auricle was also somewhat larger and thicker than in health. The pericardial sac was likewise a little thickened, the lungs were slightly emphysematous, the liver was softened and pale, and all the other viscera healthy.

The symptoms which have been of use to me in my subsequent practice as observed in the above cases are, 1st. The peculiar irregular pulse: 2d. The difference in the sound of the heart on the two sides; 3d. The maintained standing position; 4th. Loss of condition and swelling of the legs; and, 5th. When the patient is caused to move, it appears that one leg can scarcely be got before the other without threatened suffocation; and, lastly, the flow of blood through the jugular veins.

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## Case of Open Knee Joint-successfully treated with the Bichloride of Mercury, &c.

*By the same.*

On the 10th of June last I was called to see a bay horse, aged ten years, belonging to a livery stable-keeper, which had fallen down and broken his knees; and a most pitiable object he appeared, so severely was the near knee contused and lacerated, and the synovia from which was running down the leg in a stream. After carefully fomenting the part, and washing off the dirt, &c. from out the wound, I had him quietly removed to a convenient stall, where I intended he should remain while under treatment, which it was thought would be for two months or thereabouts, if ever he were again rendered serviceable.

My first step was directed to the sealing up of the wound, if possible, under which was a lump of tumefied integument, &c. as large as my fist. This I thought of excising at once, but on reflection determined to let it remain till some future time. My applications were as follow:—I mixed together pulv. hyd. bichlor. ʒij, farina alba ʒss, cum bol. armen. q. s., and carefully sprinkled about a fourth part of it over the wound. Then I applied some very fine tow, over which I placed more of the powder; on this more tow, which had been dipped in beer-grounds and flour, and

laid it on the part. My next step was to take some of the beer grounds with calcis chlorinata, and make a good thick paste, which I spread over the knee; upon which I placed some more tow, deeming this better than brown paper, as some have advocated. After nicely adjusting all these applications, I rolled round the leg, beginning from the fetlock and continuing up to within three inches of the elbow, a narrow calico bandage, which measured six yards in length: when this first bandage is applied, care must be taken that it is not placed too tightly round the limb, or considerable swelling will be the consequence, when you will be required to slit up some portion of it, so as to give the animal ease. After the first bandage was properly put on, I placed another pledget of dry tow around the knee, and rolled on another narrow calico bandage, fastening it with a piece of tape. These directions I shall always for the future endeavour to attend to, as the result of this particular case warrants my continuing the plan.

These dressings remained on a week, the whole of which time I had the horse kept upon bran-mashes and hay, occasionally giving some cooling medicine, avoiding active purgatives, as these would tend to render the horse uncomfortable: I also kept him *standing* the whole time. Slinging in these cases, unless you have every convenience for that purpose, I have found to be rather detrimental than otherwise; therefore my plan has been hitherto to keep horses standing with open knee-joint, also with simple broken knee, which I think facilitates the healing or sealing up of the wound. At the end of the period alluded to I was desirous of seeing how the case was progressing, and I proceeded to undo the dressings, which required much care and patience to accomplish, and, to my great disappointment, synovia was still escaping from the wound. After carefully washing the surrounding parts only, I proceeded to dress the knee again as before described, and, to make "assurance doubly sure," I now left the dressings on until the limb got so small that the bandages were coming off by themselves, which was in about sixteen days from the second time of applying them. When they were removed, I had the satisfaction of finding the joint had closed, and granulations were filling up the wound. The parts then were slightly stimulated by the ordinary agents, and from time to time a caustic applied to reduce luxuriant granulations. All went on well until

the 7th day of July following, when for the first time the poor animal was by his owner considered to be in a fit state to run in a carriage to our races, it being a few miles only. This I protested against, but, finding he was determined to do so, I threw off all responsibility, as I feared the consequences of such a step, although the healing of the knee was perfect, except that the very tedious process which nature has to perform was not yet accomplished, viz., that of forming new skin.

This is the fourth case of open knee-joint I have treated in this way, and they have all yielded to my entire satisfaction; therefore, feeling convinced that the agent I have thus employed is of value, I shall most certainly continue to use it, until it fails to afford the like results.

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## Strangulation of the Ilium of a Horse.

*By the same.*

On January 5th, 1847, I was requested to see a bay gelding rising five years old, which was said to have an attack of colic. When I went into the large loose box in which the animal was, I beheld a man leading a poor brute of a horse about, and another person with a long-handled whip in his hand using it, *in riding-school style*, to cause him to trot around the box. This I immediately put a stop to, wishing to examine the patient, which even then I could not do for more than a quarter of an hour, his struggles were so violent. One minute he would be up, in another down, kicking, rolling upon his back, and indeed he got into every position unfavourable for examination. At length I felt his pulse, and watching my opportunity, opened the jugular vein; but this was not done for half an hour from the time I first saw him. As soon as I had obtained about four pounds of blood, the animal fell down, and when in that position I continued to abstract as much blood as I thought the case demanded, since to take the pulse accurately was impossible under all the circumstances.

As I before observed, the horse was struggling violently,—his pulse ranged from 70 to 90, and was hard and wiry—the ears and legs were cold—he sweated profusely—the eyes looking wild—the superficial bloodvessels were full of blood—the rectum hot, but

no fæces within it—the bladder full of urine. I considered it to be a case of enteritis; and having bled freely, I gave ol. lini cum pulv. opii, and ordered rugs to be dipped in very hot water and kept constantly applied to the belly, and enemas of warm water to be thrown up every half hour. Two hours after, namely, 4 P.M., on seeing my patient again, and perceiving no abatement of the symptoms, I repeated the opiate draught.

6, P.M.—The horse was down, lying stretched out as if dead. This was, no doubt, the effect of the opium: still nothing in the rectum. He has staled once since I last saw him.

10, P.M.—Pulse quick and weak. The horse is very violent at intervals: in fact, so much so, that every person was afraid to go within ten yards of him. Pulse 80.

2, A.M. of the 6th.—The horse still lying down, apparently easy for a few minutes, when he would struggle most violently, and afterwards again remain quiet. This he would do for hours. I gave him two drachms more of pulv. opii in warm water, and left him for the night, his pulse being 90, but very weak. Two men staid up with him all night, whom I ordered to call me if the animal appeared worse.

9, A.M.—If possible, the animal was now in even greater agony than he had been: he would suddenly rise and fall down, and then raise himself upon his haunches, and stretch himself as a dog is seen to do after sleeping. This symptom I considered extremely unfavourable, and ventured to inform my employers that I thought the case hopeless: adding, as my opinion, that either strangulation or rupture of the intestines had taken place. The pulse at this time was more than 100.

11, A.M.—I visited my patient again: the pulse was now 126, and, as I fully anticipated, within half an hour after, he died while I was standing in the box. I requested to be permitted to examine him at once, which was assented to. On the abdominal muscles being removed, the whole of the intestines were found to be intensely inflamed. I drew aside the cæcum and the colon, and perceived the ilium to be formed into a hoop, about a yard of it having been thus entangled. The omentum was ruptured into shreds, some of which were twisted round the intestine, thus completely closing the intestinal tube. The portion strangulated was perfectly black.

## An unusual tubercular Disease in a young Cow.

*By Mr.* George Varnell, *M.R.C.V.S.*

On June 9th, 1846, I was requested to see a heifer belonging to a farmer, respecting a lump, as he described it, on her right fore leg. On examination, I found a tumour as large as a man's fist situated on the outside of the arm, just below the elbow, the base of which was large and firmly adhering to the faschia and tendons of the muscles. The skin for some little way around the base of the tumour was in a thickened state, and on the summit of the tumour it was ulcerated, and fungoid excrescences were springing up around. Immediately in front of the point of the shoulder was another large tumour, as large again as the first. This tumour was hard, but moveable under the skin. The skin covering this was not at all diseased, and, judging from its situation, it was connected with the lymphatics of the axilla. No other tumours could at this time be detected. I proposed to remove them at once, which was consented to by the proprietor, and I extirpated the one on the arm the next day by dissecting it out. The other I intended to do the same to as soon as the wound caused by the removal of the first should have become nearly well. But a few days after the operation, I found other tumours making their appearance on various parts of the body, and especially around the situation of that I had removed. The one at the point of the shoulder had also much increased in size. Ten days after the removal of the first one so many others had made their appearance, and some were so large, that I communicated as my opinion to the owner, that it would be useless to do any thing more for her, as I thought most of the glandular structures in the body were involved. She was, however, kept until the 25th of June, when her breathing having become much affected, and much flesh lost, she was slaughtered.

*Post-mortem appearances.*—On the conjunctival membrane of each eye were several tumours the size of the end of the finger. The parotid and sub-maxillary glands were much enlarged, and when cut into presented a firm gray fibrous appearance. The sublingual gland, as well as the lymphatic ganglia, situated in the submaxillary space, were also very much enlarged. The off fore leg, the one from which I had taken the tumour, from the shoulder to

the knee, was as large again as the other, in consequence of the diseased and thickened state of the skin. In fact, the whole surface of the body was more or less covered with tumours, especially around the udder, vulva, anus, and even to the end of the tail. On making a section through the linea alba, and removing the omentum, I found the whole surface of the rumen and reticulum also covered with them: some were not larger than marbles, others much larger. The pancreas was slightly affected; the liver and spleen healthy; the intestines altogether free from them; the kidneys were covered with them, about the size of marbles. Dissecting through them, I also found some in the pelvis of this gland. The neck of the bladder was considerably thickened, and the owner said he had observed that for some days she had much difficulty in urinating. The whole surface of the vagina was thickly studded. The mesenteric glands were much increased in size, and discoloured, being very dark in the centre, and easily broken down by pressure. In some I found pus. Examining the mouth, I found several small ones on the dorsum of the tongue, and also on the velum palati, which, containing much glandular structure, was thickened to a considerable extent. The heart and lungs were free from them: the thymus gland was very much enlarged; the axillary lymphatic glands on the right side were so much increased in size as to cause the off fore leg to be abducted in her walk. On dividing them, I found them to contain dark pus. The difference in appearance of the diseased glands was as follows:—The parotid, submaxillary, sublingual, thymus, and pancreas were of a gray fibrous structure, and very hard. The mesenteric and other lymphatic ganglia were much softened, and darker in colour than natural, and some of them contained pus of a thin dark colour.

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## Editorial Corrections.

We were not correct in our last Number, when we stated that Mr. W. Cox was the only person who had recorded a case of "Osseous Tumours within the thorax of a cow," as the following letter will shew:—

*Stratford-on-Avon, Jan.* 22, 1847.

Dear Sirs,

I PERCEIVE in THE VETERINARY RECORD for this month "a case of osseous tumours within the thorax of a cow, by Mr. W. Cox," and by him forwarded to you. In your observations on the same you state that you "believe the above to be the only case of the kind recorded." Now, if you will refer to "The Abstract of the Proceedings of the Veterinary Medical Association" for November 1840, you will see that I recorded a very similar case. In mine, the excrescences strangled the œsophagus, which Mr. Cox's did not; but that, of course, depended entirely on their situation.

There is nothing particularly novel in these cases. The most remarkable feature in them is the absence of symptoms that would lead to a discovery of the affection. These grapes, or excrescences, are often found in the chests of fat animals when slaughtered, and they certainly, sometimes, impede the fattening process. I have a bunch of these cysts, exactly like grapes, suspended in my pharmacy, which I took from the thorax of a cow twelve years ago. She was killed in consequence of being "unthrifty." The covering membrane is still perfect, and the cysts contain an earthy deposit.

I am, dear Sirs,
Your's truly,

*To the Editors, &c.* JOHN TOMBS, V.S.

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OSSIFIC GRANULAR DEPOSITS ON THE SEROUS MEMBRANES LINING BOTH THE THORACIC AND ABDOMINAL CAVITIES OF A COW.

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

My dear Sir,

I HAVE forwarded to you a morbid specimen of the same kind as that referred to in the last Number of THE VETERINARY RECORD by Mr. W. Cox. The history of the case whence it was taken is as follows:—

I was desired by Mr. M——, of Stainton, near Lincoln, to attend a six years' old cow on the 12th of December, 1846. She was very low in condition, suffering from a severe cough, and pre-

sented the usual symptoms of chronic disease of the lungs; moreover, she had been under the care of an empiric for a long time. I employed externally extensive setons, and dressed them with the ung. helleb. nig. comp. Internally I gave laxatives, combined with tonics, both mineral and vegetable, conjoining a liberal diet. I continued this treatment until the end of the month, when the cough was much relieved, and the animal had gained a *little* in condition. I recommended the owner to continue to feed her well, and he did so, but when the medicine was discontinued no further improvement was manifested. The owner, tired of keeping such an animal any longer, on the 2d instant sent her to Lincoln to be destroyed, and I saw her opened.

As soon as the abdominal cavity was laid open, the morbid growths (of which I have sent you a specimen) were seen deposited on every portion of the peritoneum, whether that covering the stomach, intestines, kidneys, liver, spleen, bladder, uterus, diaphragm, or the parietes of the abdomen. The chest, on being opened, also presented the same appearance. No spot of pleura, *however small*, could be detected on which these morbid growths were not. The lungs, likewise, shewed patches of hepatization, but not, I think, at all sufficient to account for the low condition of the animal. The serous membrane lining the inner side of the pericardium and covering the ventricles of the heart was healthy; but the membrane covering the auricles of the heart was just beginning to shew the same diseased action. The morbid growths I have sent you were removed from the superior part of the rumen.

I have now given you a simple description of the case, but I will not venture to offer any comments on it: this I leave for others abler than myself.

I am, my dear Sir,

*To Professor Morton.* Your's most respectfully.

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### Empiricism—Earth-Baths.

A little omission also occurred in our last Number. When speaking of the various empirical means resorted to, the result of caprice or fashion, it will be remembered that Professor Sewell enu-

merated "earth-balls." To these should have been added "earth-*baths*," which had also during his remembrance been used.

It was then the custom of the older members of the medical profession to wear enormous wigs, highly pomatumed and powdered; and the zealous advocate for the use of these baths, a Dr. G——, was wont to enter one he had made in his garden, burying himself in it up to his neck; so that to the passer-by or occasional visitant his head appeared, in the distance, like a large cauliflower!

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## Case of Congenital Hydrocephalus in a Dog.

*By Mr.* W. H. Kent, *M.R.C.V.S.*

Dear Sir, *London, 6th December*, 1846.

I have forwarded to you by Parcel Mail, this day, the cerebral portion of the head of a dog. The case is one not of every-day occurrence, and your pupils will recollect seeing the patient a short time since, when I brought him to the College.

The history of the case is as follows:—

On the 29th of October last I was requested to see the dog, which was a small French poodle, having a long white coat, and about three months old. I found him lying on his side, frequently making ineffectual efforts to rise, and in doing so striking his head against the ground. Getting him on his legs, he ran, with his head down, crossing his legs as he went, and, reeling to and fro, he at last fell. I ordered him to be placed in a warm bath twice a-day; applied the lin. sapon. compos. along the spine, and gave aloes and calomel in the form of pill. I made inquiries if he had received a blow at any time either on the head or back, and was answered in the negative; and was further informed that he had been so ever since his birth, but had grown worse lately.

Finding no improvement to take place from the treatment adopted by me, was the reason why, on the 4th ult., I solicited your advice.

You recommended a seton to be placed behind the ears, and to give argent. nit. in grain doses night and morning, preceding the

use of this with a dose of the castor oil mixture. His appetite had always been ravenous, and whenever he had any thing put into his mouth he would grind his teeth most painfully.

On the 17th, from the symptoms having become more urgent, and having carefully observed my patient, I informed the owner that I believed that either a tumour existed on the brain, or effusion had taken place. Being still anxious to save the "pet," if it were possible, I was desired to continue my treatment, especially as some improvement had shewn itself, and he could manage to walk tolerably well. Every day now shewed more clearly to my mind that the diagnosis was a correct one. He never lifted his head; but when he attempted to look up, the eyes were rolled upwards by the action of the oblique muscles. The special senses were not affected, as he would bark at strangers, could smell his food, and feel a puncture in any part of the body, also recognise his companions. I now informed the owner that all that could be done would in the end prove useless, and again advised that he should be destroyed. Some delay in complying with my wishes occurred, and the poor animal was allowed to drag out a pitiable existence until the 5th of December, when he was brought to my infirmary to be destroyed. I gave a few drops of hydrocyanic acid, which caused death in two or three minutes, without a cry, and only a very feeble struggle.

*Post-mortem examination.*—On opening the cranial cavity, from two to two-and-a-half ounces of serum of a light straw colour escaped. There was general inflammation of the meninges of the brain, and a peculiar state of the inner surface of the bone. What renders this case more interesting is the fact that the mother had three puppies, and all of them are labouring under a similar affection, but the symptoms are less severe.

Perhaps you may deem this history not unworthy of a place in your valuable periodical, THE VETERINARY RECORD; if so, it is at your service.

I am, Sir,

Your's respectfully.

*To Professor Simonds.*

[This case is a valuable addition to the pathology of the lower animals, and distinctly proves that the dog is not exempt from that form of dropsy which so frequently occurs during the early period of human infancy, and which is dependent on peculiar constitutional diathesis. Mr. Youatt, in his work on "The Dog," makes no mention of this disease. Mr. Blaine speaks of the infrequency of "hydrocephalus internus," but observes, "that morbid anatomy has shewn a diseased increase of the serous fluid of the cerebral cavity to be no uncommon circumstance;" he, however, is altogether silent on the subject of congenital hydrocephalus. The history of this case, together with the fact of the other puppies shewing similar symptoms, but in a less aggravated form, plainly indicates the hereditary nature of the malady; and it is also worthy of notice, that, although a gradual increase in the severity of the symptoms took place, still the functions of the cerebrum were less interfered with than those of the cerebellum, notwithstanding the whole substance of the brain was much diminished in size from absorption. The frequent falling, the total inability to rise, the peculiar gait, the drooping head, and the almost insatiable appetite, clearly pointed out the cerebellum to be principally affected, especially as these peculiarities were accompanied with a retention of all the special senses. When we saw the patient, there was no increased heat about the head, nor any enlargement, nor a yielding of the bones of the skull on communicating pressure: the pulse was slow, the bowels torpid, and the eyes free from all appearance of amaurosis; nevertheless, the general symptoms plainly pointed to the seat of the malady being the brain; yet the diagnosis was a difficult one.

Medical treatment of any kind can be little depended on in these cases; and, even had we convincing evidence of the presence of fluid being effused between the meninges of the brain, still its removal by an operation would not, in such a case as this, have been of any real benefit to the patient. Its existence was referrible to special causes, and, had it been removed, a re-accumulation of it was almost certain to take place.

We have seen similar instances in the colt, the calf, and the lamb; and not unfrequently have been called to protracted cases of parturition in animals, where the labour could not be effected naturally in consequence of the greatly increased size of the head

of the fœtus. An instance of this was forwarded to the Association by Mr. Dickins, V.S., Kimbolton, in the year 1844, and will be found in the first volume of THE VETERINARY RECORD.]

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*To the Editors of "The Veterinary Record."*

Dear Sirs,

I AM requested by the Committee to ask you, should space permit, to be pleased to give insertion to the following in the pages of your Journal for the coming quarter.

I am your's very obediently,

B. CARTLEDGE, *Hon. Sec.*

"Sincerum est nisi vas, quodcunque infundis acescit."—HORACE, Ep. 2, lib. 1.

The pupils of Professor Morton's Private Class met on Thursday evening, the 11th March, for the purpose of presenting to that gentleman a Silver Vase, in acknowledgment of the exertions made by him to promote their advancement in that branch of their studies in which it is his province to instruct them.

The honour of presentation devolved upon Mr. W. Geo. Reeve, who performed his task to the entire satisfaction of all present.

After a few prefatory observations, he delivered the following address:—

*To Professor Morton, &c.,*

Sir,—Your pupils, viewing with pleasure the zeal displayed by you in the discharge of your duties as their Preceptor, and feeling desirous of marking their sense of your merits, have unanimously resolved to testify the same in a manner which, they trust, will be both gratifying to you, and expressive of the sentiments they entertain towards you: accordingly, the honour of your presence has been solicited this evening, to receive from the pupils now assembled this public demonstration of their respect.

The object of the meeting having originated with the members of your Private Class, we have to regret that such an arrangement precluded its extension to the body of pupils generally, inasmuch as many have since been desirous of uniting with us in this memento. Such unity of sentiment, however, cannot fail to be gratifying to you; and the only alloy to the pleasure we feel

is, that the originally private nature of our testimonial should have precluded any change; nevertheless, we cordially hail the good feeling which exists, and participate in the sentiment so congenially displayed.

Such a demonstration would, doubtless, have been more flattering had it been received from the class as a body, since a more suitable acknowledgment to you could have been made, while your zeal deserves a far more diffuse eulogium than our private expression can give. But whilst we thus testify our sense of your urbanity and kindness during the many familiar demonstrations we have listened to, we do not pretend to mark the extent of general approbation which attends the sessional course of your practical and highly scientific lectures. For it must be obvious, that comparatively a small part only of the *matter* diffused through them could have been condensed into the short space of time occupied in our private meetings; so that, whilst we leave to the general body of veterinary students the expression of their public approbation, we feel desirous of referring more particularly to those hours in which our studies have been so much aided by your personal assistance.

To say that from your exertions we have derived most valuable information would be very inadequate to express the obligation we feel; and not only have you merited our thanks for this, but as a teacher, whose precept and example correspond, you have ably, zealously, and unceasingly, laboured in the cause.

For punctuality in the discharge of your duties it would be superfluous for us to vouch, since the identity of this with yourself is proverbial; and the salutary effect of that trait becomes apparent to the most superficial observer.

We have also with great satisfaction marked your untiring perseverance in collecting each novelty as it has arisen, with an apparent determination of letting nothing pass necessary to enable the veterinary profession to keep pace with the rapid strides made by other divisions of science. This laudable object every teacher should have in view, and not be content to rest satisfied with the researches of his predecessors, or his own early acquisitions.

We are made aware, by the result of your industry, that such a sentiment has always animated you, and that the incentive to

your exertions has been an unwillingness that the veterinary profession should be found in the rear of the other sciences.

This is a laudable spirit, and commendable in any professor, but much more so in one who has already attained the distinction you have, and whose harvest of renown has long been reaped. It is this which especially calls forth our approbation. For, how often does apathy succeed the attainment of eminence? Had the height of your ambition but been commensurate with an exalted position, it would long ago have reached the summit of your wishes. But no! The aspirations of the Professor were interwoven with the interests of his cause, and the same indefatigable spirit still leads him on in the great march of improvement.

To such a spirit the profession of human medicine owes its rise, and not to a relaxation of energies when competence had been attained. Its present exalted position was not acquired by reclining indolently upon the mere threshold of knowledge. Men of active, searching, and persevering minds pioneered the way, and, as new difficulties arose, they pressed forward with an ardour which a love of science could alone inspire. Truly they had strong incentives, and were engaged in a noble cause,—the alleviation of a fellow-creature's sufferings; for which they received the applause, the honours, and the gratitude of mankind; the proud ambition of superior power (for knowledge is power), and, in these the rude periods of science, the almost veneration of the uninformed. But the primæval state of that profession was high above our own. Sunk to the very bathos of ignorance, the farrier's art was inhumanity. No such laudable incentives stimulated the zeal of its followers; for who valued the feelings of the horse, or thought any thing of the animal beyond that of his services? If, then, credit be due to the human practitioner with all his incentives to action, how much more deserving of commendation are those men who have so successfully volunteered in the cause of the brute!

Among the many contributions made by you, Sir, to veterinary science, none have been more intrinsically valuable than your "Manual of Pharmacy."

The touch of a master hand has there resolved the former chaos into order. The student of veterinary medicine acknowledges it

as a boon of inestimable value to him: and your pupils cannot allow this opportunity to pass without expressing the pride they feel in recognising in the author of so valuable a work their esteemed and respected Preceptor.

The advantages resulting from a knowledge of the principles of chemical laws are rendered so obvious by your happy illustrations, that its addition to the routine of their studies is hailed as an assistance of no ordinary merit; whilst of its practical utility the veterinary surgeon becomes apprised at every step he takes in his professional career. To be convinced of the great benefit that arises from the combination of this with the other branches of veterinary science, we need but glance over the prescriptions of the ablest veterinarians before this division became a prominent part of our curriculum. We there find men of high standing prescribing such incompatibles as therapeutic compounds, that the very tyro of the present day can immediately detect the errors.

This is not its sole advantage. The study of the science of chemistry must naturally induce the habit of reflection. It is an exercise of the mind; and the enjoyment of intellectual pursuits once experienced, gives an impulse to the inclination: refined pleasures occupy the place of grosser ones, the taste is improved, and the moral as well as the physical character becomes exalted.

But as the purest spring is influenced by the mineral over which it flows, and the crystal stream becomes salutary or impure according to its impregnation, so is knowledge influenced by the medium through which it is derived.

Much depends upon first impressions, and not a little tact is called for to render the elements of knowledge pleasing as well as instructive. Much, too, depends upon the inculcation of correct principles, and to the judicious direction given to the expanding mind; and the preceptor who can render the path to the temple of science less rugged, by pointing out to the aspirant the beauties of the way, does much to assist him in his onward progress and in the attainment of his end. Whilst he who is assiduous to inculcate right and unerring motives, and supports them by his own example, often stamps the character of the future man, becomes a blessing to society, and deserves the unceasing gratitude of the youth he has taught. Such an aim it has been our pleasure to perceive actuates you; such true principles, we feel convinced,

have influenced your actions; and, we trust, these your exertions will continue to exist, and also to receive the applause and commendation they so justly merit.

It is, therefore, Sir, with feelings of gratitude for your assiduity, admiration of your talents so usefully employed, satisfaction arising from the able performance of your arduous duties, and a desire of testifying our most unqualified respect, that your private Pupils present to you this Silver Vase, accompanied with their best wishes for the continuance of your professional success.

*Committee.*

EDWARD CRUNDALL, Chairman.

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| THOMAS JAMES MERRICK | FREDERICK CHAMBERLAIN |
| T. W. GOWING | G. A. STATHAM |
| C. TWIST | DANIEL R. FOY. |

*Treasurer,* W. GEO. REEVE.

*Honorary Secretary,* B. CARTLEDGE.

Mr. Reeve then politely tendered to Professor Morton, in the name and on the behalf of his Pupils, the Vase with the preceding address elegantly and ornamentally transcribed.

In the Vase was placed a handsome bouquet of choice flowers, and the principal shield bore the following inscription:—

PRESENTED TO
PROFESSOR W. J. T. MORTON;
BY
HIS PRIVATE CLASS PUPILS,
SESSION 1846-7,
IN ADMIRATION OF HIS TALENTS;
AS A TOKEN OF THEIR GRATITUDE
FOR HIS UNWEARIED ASSIDUITY;
AND AS A MARK OF THEIR
UNQUALIFIED ESTEEM AND RESPECT.
1847.

Professor Morton, in returning his acknowledgments for this handsome proof of "esteem and respect" on the part of his Pupils, confessed it to be as unexpected by him as he feared it was undeserved; nevertheless, he accepted it with feelings of unalloyed pleasure and sincere gratitude. It had been his good fortune to receive several similar testimonials, but there was not one that he esteemed more highly than the elegant and chaste Vase before him. Looking at it, he was induced to ask himself what he had done to merit it, and he was compelled to admit he was unable to answer the question to his satisfaction. He could, he hoped, lay claim to honest intentions, sincere desires, and some little zeal, and that was all. But, in the exuberance of their kindly feelings towards him they had been pleased to consider the attempt as the full performance of the act. They had, however, enjoined on him fresh exertions, and he hoped he should merit the high enco-

miums which had been paid him in the eloquent address he had listened to with so much pleasure. It was well when the small still voice of conscience whispered not of duties neglected; but the feeling of mental satisfaction was heightened when he was assured that his efforts to perform his duty, even if unsuccessful, were nevertheless appreciated by those for whose advancement he had exerted himself; yet he could with truth assert, that, at the close of each returning day, he felt that something had been omitted, and much that was done might have been better done. He heartily concurred with all Mr. Reeve had so well expressed in reference to science. When rightly used, it ennobles man, and cannot fail to direct the mind upwards to the Fountain of all Good.

The object he had principally in view in the "demonstrations" he had from time to time given to his private class, was to render the student *practically* familiar with the subject-matter of his lectures. He, in common with every other teacher in his division of science, was obliged to prepare the gases, &c. prior to his entering the lecture-room, and there merely to describe the mode of obtaining them to the pupils as a body. He thought that if students witnessed the manipulatory processes, and occasionally took part in them, they would become more intimately acquainted with the changes that occur, and better able themselves to work if called upon to do so. To these demonstrations he had conjoined examinations, and he had also been anxious to divest them of all formality; and he could not be otherwise than extremely glad to know that such a plan had received their approval.

Mr. Morton then reviewed the manner of his appointment as a teacher of chemistry and materia medica at the Royal Veterinary College, he being the first person on whom this honour has been conferred. He had long seen the necessity of such an appointment, and was anxious to obtain it; and he related some of the opposing difficulties that had presented themselves, which, he stated, were greater than he at first anticipated, since musty records were brought forth which had lain dormant for fifty years, to be used for "good or ill," and not to be again referred to. Nevertheless, they were all now surmounted; and it only remained for him, by continued and increased industry, to obtain that which his pupils and friends so generously wished him the possession of. Many of those difficulties very probably originated in the un-

worthiness of the instrument. Be it so: it was not for him to say it was otherwise. His successor, however, would doubtlessly possess advantages he did not, and also effect more good than he could ever hope to do. It was a noble field, meriting the richest cultivation, and would amply reward the labourer.

It was to him, moreover, very gratifying to know that his literary attempts were approved of, for the selfish and narrow-minded had condemned him for giving publicity to matters connected with his avocation. He could only say, of which abundant proof he felt assured had been already given, that secresy in connexion with medicine found no lurking-place in him. Any little discoveries he had been fortunate enough to make had never been to him sources of emolument, but the reverse. Quackery he believed to be subversive of science, and by a teacher, above all others, it should be discountenanced. He closed a long reply, by again acknowledging his great obligations for the honour conferred on him, and likewise the handsome manner in which it had been conferred; and concluded by saying, that while the choice and beautiful flowers with which the Vase was filled resembled the proceedings of that evening, being both highly pleasing and grateful to the senses, yet they must fade and pass away; but his gratitude should be as the Vase itself,—enduring as time.

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A late number of the *British and Foreign Review* contains a lengthened analysis of a work, by M. PORTA, on the

### LIGATURE AND TORSION OF ARTERIES.

THE most interesting facts are those which relate to the successful application of torsion, particularly in cases of divided arteries. The results are far more satisfactory than they have been found by other surgeons; indeed, so favourable as to justify a substitution of this process for that of the ligature, more particularly in cases where the smaller arteries have been divided, and the securing of which is a source of painful delay in operations.

"From the beginning I kept an exact register to the number of four hundred; then I neglected to record the daily cases in hospital and private practice in which torsion was applied, except in cases of amputation. It was applied to the occipitals, temporals, maxillary, superior thyroids, some branches of the subclavian, the

thoracic, external pudic, spermatic, &c., and to the digitals; so that there is no artery of the fourth or fifth order upon the surface of the human body that has not been repeatedly twisted, after accidental wounds or cutting operations; and the result of so much practice, during nine years, has been fortunate beyond every expectation. I well remember, in some cases, to have been obliged to repeat the twisting two or three times; but I do not remember that the ligature was ever necessary on account of torsion having failed. Thus I have ceased to employ the ligature for wounded arteries of moderate size, and now employ torsion only. As to the advantages of simplicity and celerity, it unites others, as it may be done without assistance, and does not leave foreign bodies in the wound.

"With regard to the large arteries of the extremities, I have already applied torsion in sixty-five cases, after amputations and disarticulations, principally performed in the Clinique, and some in private practice. Although the operation in these cases has not succeeded so fully and securely as in the preceding, yet in the majority it has answered; for the arteries of the fore-arm and leg, radial, ulnar, tibial, interosseal, torsion, either simple or after separation of the end of the artery, has constantly succeeded, except in two cases, in one of which, the anterior tibial, and in the other, posterior tibial, gave way, and the ligature was required. On the brachial it has always succeeded; and of twenty-three operations on the femoral and popliteal it has failed in four cases, two already mentioned, the twisted portion having given way, and ligature being necessary. I know that, with some surgeons of my acquaintance, laceration and hæmorrhage have been more frequent; but that may depend upon error in method or management. Fricke has enjoyed very good fortune, having only one case of hæmorrhage in thirteen torsions of the brachial, femoral, popliteal, and tibial arteries. He, however, has no bounds to his enthusiasm, and prefers the new operation in all cases, and twists with success even ossified arteries, which are not susceptible of torsion. On the other hand, the cases of Delpech and Textor are inconclusive, and of no more weight against this operation than the first unfortunate trials of the Hunterian operation in France by Desault and Deschamps."

The author goes on to argue, that ill success is more frequently

to be attributed to incapacity in the operator than to the condition of the vessel. If not twisted enough, the current of blood will re-open it; if too much, the coats give way. He continues: "The results of practical surgery correspond with, and are even more favourable than, the results of zootomy."

The conclusions are, that in wounds of arteries only can torsion take the place of the ligature; and as it is perfectly safe and secure when practised on the smaller arteries, it ought to be performed when those arteries are divided. The question with regard to the larger arteries is not yet settled; but it would appear that, although torsion answers in the majority of cases, still the ligature affords greater security against secondary hæmorrhage.

*The Lancet.*

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## The Contents of the Fœtal Stomach.

In the *Edinburgh Monthly Journal*, Dr. G. Robinson details a series of experiments performed on different animals, which appear, so far as can be judged without repeating them, to support the following conclusions:—

"1. That the stomach of the fœtus, during the latter period of its uterine existence, invariably contains a peculiar substance, differing from the liquor amnii, and generally of a nutritious nature.

"2. That in its physical and chemical properties this substance varies very much in different animals, being in no two species precisely similar.

"3. That in each fœtal animal the contents of the stomach vary much at different periods; in the earlier stages of its development consisting chiefly of liquor amnii, to which the other peculiar matters are gradually added.

"4. That the liquor amnii continues to be swallowed by the fœtus up to the time of birth; and, consequently, after the formation of those matters and their appearance in the stomach.

"5. That the mixture of this more solid and nutritious substance with the liquor amnii constitutes the material submitted to the process of chymification in the fœtal intestines.

"The opinion that the fœtal chyle is principally formed from these matters, however, by no means implies a supposition that the nutrition of the fœtus is thus accomplished. For the actions which

proceed in the chylopoïetic viscera of the fœtus are, I imagine, chiefly useful from their gradually preparing the different organs for the important functions assigned to them in the economy of the mature animal; whereas the nutrition of the fœtus is undoubtedly effected by its placental vessels, the venous capillaries of which (or, to speak more correctly, the streams traversing them) possess an absorbing power precisely similar to that of the mesenteric veins. And as a portion of the fœtal blood, charged with the albuminous substance there absorbed, after passing through the umbilical vein, circulates in the bloodvessels of the liver, the presence of an albuminous fluid in the hepatic duct, as noticed by Drs. Lee and Prout, is by no means inexplicable. Viewed in this light, the umbilical vein of the fœtus will answer to the mesenteric veins of the adult; while the ramifications of the hepatic duct, in addition to their ordinary function, may be considered as, to a certain extent, representing the lacteals."

*The Lancet.*

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### Analysis of Lymph.

An analysis of lymph has been recently made by M. Geiger, of Stuttgart. The lymph was clear, transparent, and obtained from the foot of a diseased horse. It gave on analysis—

| | |
|---|---|
| Water . . . . . | 983·7 |
| Fibrine . . . . . | 0·4 |
| Albumen . . . . . | 6·2 |
| Extractive matters . . . . | 2·7 |
| Fixed salts . . . . . | 7·0 |
| Fat and ammoniacal salts . . . | traces |
| | 1000·0 |

This lymph differed from most albuminous fluids in the phenomena produced in it by heat. Instead of the ordinary coagulation of the albumen, it formed pellicles on the surface of the liquid similar to those on boiled milk, and in this respect resembled caseine rather than albumen.

*Medical Times.*

## Modus Operandi of Nitre, Tartar Emetic, and other Remedies, in Thoracic Inflammation. By Dr. Zimmermann.

If the congestion of the lungs is not recent—if effusion have taken place with morbid changes in the blood, in the capillaries, and the organs themselves—bleeding is of secondary value, and other remedies must be adopted. Nitre and tartar emetic are the most generally and successfully adopted in Germany. The result of experiments shew that the action of nitre on blood out of the body is to prevent its coagulation, to diminish the tendency of the blood-vesicles to unite, and to contract the membrane of the latter. Its chemical relations to fibrine as a solvent have been established. When taken into the stomach, it is absorbed into the circulation, and excites both the capillaries and blood-vesicles to contract. It hinders the tendency of the fibrine to coagulate, and, by rendering the effused plasma more soluble, promotes its absorption. It also renders the absorption of oxygen into the blood more active, and so facilitates the decomposition of the "pseudo-plasma," and its excretion by the kidneys and skin, in the form of urate of ammonia, &c. Dr. Zimmermann instituted an experimental inquiry into the comportment of tartar emetic towards the blood when out of the body, and found that two grains added to one thousand of blood rendered the coagulation imperfect; and six grains caused the blood of a patient having the buffy coat to coagulate into a jelly-like mass, without any buff: unlike nitre, it rendered the fibrine less disposed to decompose, and seemed to form with it rather an insoluble chemical compound. Unlike nitre also in its action on the blood-vesicles, it rendered them less contractile; these, when examined under the microscope, appearing large and expanded, the membrane being relaxed, and permitting the colouring matter to permeate it. Its modus operandi is, therefore, opposite to that of nitrate of potass; yet Dr. Zimmermann hesitates not to recommend them in combination. He is of opinion that the administration of tartar emetic alone, without bleeding, in extensive pneumonia and pleuritis, is dangerous.

*Medical Gazette.*

[We have been favoured with the following Communication, and regret it has not a more prominent place.—*Editors.*]

## Novel Mode of Treating Lock-jaw in the Horse, by the Natives of the Western Coast of America.

A letter from Rear Admiral Sir George F. Seymour, Commander in Chief of Her Majesty's Fleet in the Pacific Ocean, addressed to Professor Sewell:—

H.M.S. Collingwood, Mazatlan, Coast of Mexico,
May 5th, 1846.

Dear Sir,—Having observed a singular remedy for a case of decided lock-jaw which occurred to a horse on which a gentleman rode who accompanied me to some silver mines in this quarter, I send you the particulars of the applications which were successfully used, as, although some of them are not much in consonance with our notions in England, the natives accustomed to horses in this country have much confidence in their efficacy, and they may possibly throw some light on the mode of treating the disease, or furnish some interest to those who are more skilful. Our horses had travelled about forty miles, during the last of which Mr. Talbot, the gentleman in question, found his horse, which was usually equal to great fatigue, disposed to flag, and on arriving at the place of our destination and trying to take off the bridle, the bit remained fixed, and the jaw clenched upon it. The muleteers at once said it was lock-jaw produced by a stroke of the sun, which had been intensely hot during part of our ride, and that it was not an uncommon effect with their mules in excessive heat, and was only to be cured with the following remedy, which was immediately tried:—

A quantity of the common green chilies or capsicum, in the pod, were placed in a linen bag and set fire to in a chafing dish, which was placed under the horse's nostrils, and he was made to inhale the smoke. The animal shewed great distress by this time. The action of his heart was loud, with a quick spasmodic pulsation. The veins, particularly those of the head, were turgid and distended,

and the natives said that he would die unless blood flowed from the head. This occurred in about an hour and a half, in a thick but not copious discharge of blood from the nostrils. The jaw then relaxed a little, and the bit fell, and the horse gradually recovered.

He had been previously back-raked; some eggs were introduced in the fundament, and the ears had been rubbed with a liniment. The natives, however, treated these remedies as secondary, and relied on the smoke of the chilies, which they said had in one instance saved a horse after continuing with his jaw locked for upwards of seven hours, but he had then bled, and recovered.

They expressed a disinclination to use the fleam.

I do not think, from the state of suffering in which I saw the horse, that he could have lasted much longer than the time at which he was relieved by the discharge from the nostrils. After it, the man in charge of the horses would not allow his patient to remain quiet, but led him gently up and down the yard the whole of the subsequent night.

At three o'clock in the morning he appeared quite recovered, and was allowed to feed on maize stalks, and to eat mashes made of light farinaceous materials.

I hope this detail from an old subscriber to your valuable Institution may not be entirely uninteresting.

And remain, my dear Sir,

Your very obedient servant,

G. F. Seymour,
*Rear Admiral.*

*To William Sewell, Esq.,*
*The Professor of the*
*Royal Veterinary College,*
*St. Pancras, London.*

## VETERINARY MEDICAL ASSOCIATION.

### The Anatomy of the Hock of the Ox.

*(Continuation of the Prize Thesis, from p. 103.)*

*By Mr.* J. Mannington.

The bones which enter into the composition of the hock of this animal are nine, viz.—The tibia, astragalus, rudimental fibula, calcis, three cuneiform bones, and the large and small metatarsals.

The inferior extremity of the *tibia* is smaller than that of the same bone in the horse: it does not point so much outwards; has two ridges and two sulci which articulate with the astragalus, and an irregular articulation on its outer side with the rudimental fibula.

The inner sulcus is formed by the inner and middle ridge, the outer one by the middle ridge and by the rudimental fibula, being more perpendicular in its outer side, and more sloped from the middle ridge.

The inner ridge is shallow in its middle, prominent anteriorly and posteriorly where it unites with the middle ridge, which is also prominent in front, and fits into a sulcus about the middle of the astragalus, when the leg is in a perfect state of flexion.

The outer part of the inferior surface of the tibia is extremely irregular; convex anteriorly, concave posteriorly, rounded on its outer and straight on its inner border.

The posterior part of the tibia is nearly flattened, sloped slightly inwards and forwards, and having a shallow depression about its middle.

The anterior part of the bone has also a slight depression opposite the inner sulcus.

The outer border has a sulcus about its middle; in front of this is a projection which is the outside of the prominence that fits into the concavity in the superior articular surface of the rudimental fibula.

The *astragalus* is much longer, narrower, and flatter on its sides than the same bone in the horse; it is also convex on its posterior and inferior surfaces, and is not so much twisted, as it faces very slightly to the outer side.

It has anterior, posterior, and lateral surfaces, and superior and inferior extremities, which will be described as part of the anterior surface, they being continuous with it.

The anterior surface has two articulations,—

1. *Superior*, which possesses two convex protuberances divided by a sulcus, which is deeper and flatter inferiorly than superiorly, extending from the superior to the middle part of the bone, and ending in a sulcus or pit. The outer ridge is highest and most prominent anteriorly; the inner is of the greatest extent inferiorly and posteriorly. This surface is bounded inferiorly by a roughened groove to which the capsular ligament is attached. It supports the tibia.

2. *Inferior surface* has two broad convexities divided by a slight concavity, and it extends some distance beyond the point of actual contact with the cuneiform magnum. The outer ridge does not extend far backward, and is bounded by a deep and circumscribed notch; the inner is extended upward to the posterior part of the bone, and terminates in a sort of hollow space which opposes an odontoid process from the inner and posterior part of the cuneiform magnum, receiving great firmness of support from it.

The *posterior surface* is regular and convex, being overhung by the outer ridge of the superior surface. It extends highest on the outside, wider above than below, and has a shallow longitudinal furrow in its middle, and is continuous to the posterior part of the lower surface of the bone. Over it glides the calcis.

The inner surface is non-articular: it has a convex border above and below, and presents an irregular figure of an inverted ω.

The outer surface has three articulations,—

1st, Superiorly, with the rudimental fibula; convex anteriorly and superiorly, pointed and projected posteriorly, and is contiguous with the upper anterior surface. I have seen this divided into two parts, and the lower division of it I have then considered as the second articular surface. It is applied to the calcis.

A broad non-articular surface divides this and the

3d, which is inferiorly placed, and has a flat surface articulating with No. 4 of the os calcis, convex on its lower border, flattened above, and extending to the inferior extremity of the bone.

The articulations of the astragalus are,

1, with the tibia and rudimental fibula
2, ,, cuneiform magnum
3, ,, calcis
4, ,, rudimental fibula
5, 6, ,, calcis.

The *rudimental fibula* is situated between the outer and lower part of the tibia, and outer convex border of the os calcis.

It has superior and inferior articular surfaces, inner and outer borders, and anterior and posterior extremities.

The superior surface is irregular, convex anteriorly and posteriorly, broader and lower behind than in front, and has a remarkable prominence about its middle, at the base of which, on the outside, is a deep sulcus.

The inferior surface is deeply cupped, except at its anterior part, which is flat and slightly inclined upwards.

The inner border consists of a tuberous projection inferiorly, surmounted by an articular surface which opposes No. 4 of the astragalus; and above this, a plain perpendicular surface is continuous round the front of the bone.

The outer border is extremely irregular, having a tuberous projection towards its front for ligamentous attachment.

The anterior extremity is narrow and slightly convex from above downwards; the posterior is blunt, tuberous, and projecting.

Its articulations are, 1, with the tibia
2, ,, calcis
3, ,, astragalus.

The *os calcis* is situated at the posterior and upper part of the hock, and is longer and thinner than in the horse. It has an inferior and superior extremity, external and internal sides, anterior and posterior borders, and infero-internal surface. The inferior extremity comprises the parts below the widest part of the bone. It is triangularly shaped, and at its supero-anterior part is a convex articular surface, sharp on its outer edge, and sloped on its inner: the anterior part is flat, and prevents the too forward motion of the fibula, receiving also by this contrivance much of the weight transmitted from the tibia to the joint. From the anterior part of this convex surface a sharp non-articular border extends

to the lower edge of the bone; the postero-inferior border of this extremity is articular, concave from above downwards and outwards, and rests on the cuneiform magnum. On the infero-internal part, below the convex ridge articulating with the fibula, is a concave articulation, which plays over the outer surface of the astragalus. Sometimes this is divided into two articulations.

The superior extremity is irregular anteriorly, convex, having a lateral ridge extending across it transversely, and the posterior part is smooth and concavo-convex.

The external side is convex, longer posteriorly than anteriorly.

The internal side is smaller, and juts out inferiorly, forming a floor for the perforans tendon.

The posterior border is long, wider above than below, sloped from within outward.

The anterior border is shorter, curved, being concave above, convex in the middle, and again slightly concave. It is, in some degree, twisted inwards.

The infero-internal part is about half articular; that which is not so is posteriorly situated, sloped upwards, convex above, and concave below. The articular surface is for the most part concave, sloped upwards and forwards, gliding over the articular surface of astragalus No. 3.

Its articulations are,—

No. 1, with the fibula and astragalus (being continuous)
2, ,, cuneiform magnum
3, ,, astragalus
4, ,, ditto.

The *Cuneiform Magnum* (generally called the cuneiform cum cuboides, as it resembles these two bones united) is a generic mark of the class ruminantia, all of them possessing this peculiarly shaped bone, except the camel, and this animal also possesses incisor teeth in the inferior maxilla: thus he presents two remarkable peculiarities of structure differing from others of his class.

It has a superior and an inferior surface, and anterior, posterior, and lateral borders.

The superior surface has three articulations:—

The 1st is situated on the inner and front part of the bone, and consists of two concavities divided by a convexity. The inner concavity is much the largest, and extends from the front to the posterior

part of the bone, which latter part of the articulation is formed by the odontoid process limiting the motion of the astragalus. The convexity fits into the concavity of the middle of the astragalus, and the outer concavity is much smaller and lower than the inner, and not extending so far backward. Behind this surface is a roughened part in which are some sulci for the passage of the medullary arteries; and posterior to this is the

2d. A small flat surface, nearly oval in shape, looking forwards and outwards.

3d. Externally, supporting the os calcis, sloping from behind forwards and downwards, convex on its outer side, and flat on its inner side and in front. The inferior surface has two articulations:

1, External, a flattened one, rounded and wide posteriorly, flat on its anterior and lateral border, and resting on the metatarsal bone.

2, Internal, about the same size. It gives to the bone the appearance of being chiselled out: anteriorly it is convex; it then becomes concave, and extends backwards under the odontoid process, surmounting the other two cuneiform bones.

The outer border is convex in shape, deeper behind than in front, and rounded so as to meet the posterior almost imperceptibly.

The inner border is slightly convex, much deeper behind than in front; at the infero-posterior part is a tuberosity, and extending upwards from it is the odontoid process.

The anterior border is flat, deepest on the outside and extending lowest, having the appearance of being notched on the inside.

The posterior border is very irregular, and divided from the inner border by the tuberosity and odontoid, and from the outer by a small tuberosity also. It has an abrupt projection about its middle and upper part.

Its articulations are,—

1, 2, with the astragalus
3, ,, calcis
4, ,, metatarsus magnum
5, ,, cuneiform medium and parvum.

The *Cuneiform Medium* is situated on the infero-internal part of the hock. It has a superior and inferior surface, lateral borders, an anterior and a posterior extremity.

The superior surface is concavo-convex; it is broad in front, flat behind, and depressed most on its middle and outer part.

The inferior surface is convex anteriorly, concave posteriorly, sloping upwards in front, downwards behind, and articulating with the large metatarsus.

The outer border is convex; the inner is projecting in its middle.

The anterior extremity is blunt and pointing inwards; the posterior sharp and looking outwards.

Its articulations are, 1, with the cuneiform magnum.

2, ,, metatarsus magnum.

The *Cuneiform Parvum* is a small oval-shaped bone situated at the inner and back part of the joint, behind the cuneiform medium. It has a superior and inferior articular surface, with anterior and posterior extremities. The superior surface is flat, and assists in supporting the cuneiforma magnum; the inferior is also flattish, and rests on the inner and posterior part of the metatarsus magnum. The anterior extremity is rounded, and is opposed to the posterior part of the cuneiform medium: the posterior has the tendon of the flexor metatarsi externus attached to it.

Its articulations are, 1, with the cuneiform magnum

2, ,, metatarsus magnum.

The upper extremity of the metatarsus magnum is irregular; it has two articulations:—

1. Is six or seven times the extent of the other, and occupies the antero-external part of the surface. It supports the cuneiform medium et magnum; is highest on the outer part, most depressed and concave on the inner. At its postero-external extremity is a small elevated portion sloping outwards and downwards, partially separated from the rest of the surface by a groove formed for the passage of the tendon of the flexor metatarsi externus.

2. Postero-internally situated is a small one, sloping slightly downward and forward, supporting the cuneiform parvum. The anterior and lateral borders of the bone are rounded; the posterior is concave, and has an articulation internally situated with the metatarsus parvum.

Its articulations are, 1, with the cuneiform magnum et medium.

2, ,, cuneiforum parvum.

3, ,, small metatarsus.

The *Small Metatarsus* is a sessamoid bone, situated at the posterior and inner side of the last-named bone. It is convex posteriorly, where it has a synovial articulation with the metatarsus magnum, and concave posteriorly.

### *Ligaments.*

The ligaments of the hock of the ox are not near so powerful as those of the horse, nor so numerous. The terms external and internal apply, as in the horse, to the outer and inner side of the joint.

### *Tibial Ligaments.*

1. The external crucial extends from the lateral parts of the rudimental fibula to the calcis near its inferior part.

2. The internal crucial extends from the anterior part of the inner malleolus to the lower part of the internal extremity of the calcis, where it becomes much widened.

The fibres of each of these ligaments cross each other in a spiral direction.

3. The external oblique passes from the front of the rudimental fibula over the convex articulation of the calcis with that bone, and is attached to the calcis behind this protuberant articulation.

4. The internal oblique runs from the inner malleolus to the inner and upper part of the astragalus.

5. The short ligament attaches the posterior part of the inner malleolus to the side of the convex ridge of the astragalus.

6. The anterior fibular ligament runs from the outer anterior edge of the middle ridge of the tibia to the inner anterior edge of the fibula.

7. The superior fibular ligament is a broad band of fibres, uniting the infero-external part of the tibia with the supero-external part of the rudimental fibula.

8. The posterior fibular ligament extends from the posterior edge of the fibula to the ridge extending posteriorly from the outer convexity of the astragalus (I have considered this ligament here for the sake of uniformity of description).

9. The postero-external arises just above the latter, from the

infero-posterior part of the tibia, and is inserted into the posterior part of the outer convex astragalean ridge.

10. The postero-internal; from the posterior part of the inner malleolus to the inner side of the inner convexity of astragalus.

### *Astragaloid Ligaments.*

1. The external lateral arises from the middle of the edge of the outer border of the astragalus; its fibres diverge, and become implanted into the calcis from its convex articular surface downwards to the inferior part of the bone, or nearly so.

2. The internal lateral runs from the middle of the inner side of the bone to the lateral parts of the cuneiform magnum.

3. The antero-external arises from the middle of the outer edge, between its superior and inferior articulations, and is attached to the outer part of the cuneiform magnum.

4. The antero-mesial arises from the pit in front of the bone, about its middle. It soon bifurcates, the outer division going to the cuneiform magnum, the inner to the cuneiform medium and large metatarsus.

5. The antero-internal runs from the middle of the anterior edge to the inner border, turns inward under the latter, and bifurcates, one division going to the cuneiform magnum, the other to the cuneiform medium and large metatarsal bone.

### *Calcanean Ligaments.*

1. The postero-external runs from the posterior and outer part of the bone, united with the next ligament superiorly. Its attachment is continued all along the outer border of the bone, and is inserted into the cuneiform magnum and large metatarsus on their postero-external part.

2. The postero-internal arises from the upper and inner part of the back of the calcis, and stretches across to the inner edge of the bone, allowing the perforans tendon to pass under it: from this it is continued to the cuneiform magnum, the flexor accessorius here being bound down by it; and it is then carried on to the middle and small cuneiform, and to the large and small metatarsal bones.

3. From its postero-inferior surface to the odontoid process of the cuneiform magnum.

4. The external lateral ligament runs from the infero-lateral part of the bone to the side of the cuneiform magnum.

5. The infero-external runs from the antero-inferior part of the os calcis to the antero-external part of the cuneiform magnum and the large metatarsus.

6. The supero-external runs from the outer edge of the calcis, below its convex articular surface, to the anterior part of the cuneiform magnum, in company with the antero-external astragaloid ligament.

7. The internal lateral runs from the inner edge of the calcaneo-astragaloid articulation, downwards and forwards, over the astragalus under the internal crucial ligament, to the antero-inferior of the tibia. This might be considered (and perhaps more properly) as a tibial ligament; but I have placed it here for convenience of description.

*Ligaments of the Large Cuneiform.*

1. From its postero-internal part to the cuneiform parvum.

2. Several bands proceed downwards to the cuneiform medium: these are strongest posteriorly.

3. Fasciculi to the large metatarsus.

4. A transverse ligament uniting it to the cuneiform medium, situated in the middle and front of the joint.

5. From a rough space at the middle of the posterior part of its lower articular surface to the upper articulation of the large metatarsus (interosseous).

6. From its lower surface on the inside, near its posterior part, to the posterior part of the cuneiform medium (interosseous).

*Ligaments of the Middle Cuneiform.*

1. A transverse one on the inside to the cuneiform parvum.

2. Several bands to the large metatarsus under the flexor medius tendon.

3. From its inner and posterior part to the anterior part of the cuneiform parvum (interrosseous).

4. From the edge of its inner articular surface to the large metatarsus, in union with No. 5 of cuneiform magnum.

### *Ligaments of the Small Cuneiform.*

1. A small band to the small metatarsus. This bone is supported in its situation by means of the postero-internal calcanean ligament, and the one from the cuneiform medium No. 3.

The suspensory ligament arises from the supero-posterior part of the large metatarsus, and from the inside of the small one; also from the long posterior ligament of the calcis.

### Muscles.

I have entered more fully into the description of the muscles of the hock of this animal than I did when describing the hock of the horse, because they are less known, and also more numerous and more complicated in their action.

### *Extensors.*

The crural faschia becomes very firmly implanted into the point of the os calcis, in front of the insertion of the gastrocnemius externus, between which is a bursa. Into this faschia the abductor and adductor muscles of the thigh are attached; and on this attachment depends the great power they have in extending the hock, as well as abducting and adducting it.

1. *Gastrocnemius Externus.* Attachment. Superiorly to the postero-inferior part of the femur and to its outer condyle, and to the supero-interior of the tibia by faschia. It divides into two muscles half way down the tibia, each of which gives off a tendon which is inserted into the point of the os calcis, the inner one being most anteriorly placed at its attachment.

*Its action* is to extend the hock when its superior attachment is fixed; also to extend the femur, and bring it and the tibia into a straight line, when the inferior attachment is rendered fixed.

2. *Gastrocnemius Internus.* Attachment. To a sulcus between the femoral condyles: it becomes wholly tendinous a little lower down than the externus, which it gets behind, and is spread over

the point of the calcis, to which it is attached laterally, but has a synovial membrane situated between it and the greater part of the point of the bone. It then becomes the flexor perforatus, which runs down the back of the leg, attached to the perforans by cellular tissue: just above the fetlock it receives two slips from the suspensory ligament, then, surmounting the tendons of the perforans, it bifurcates, and each division becomes inserted into the posterior part of the os coronæ, first running under two ligaments at the posterior part of the os suffraginis.

*Action.* To act as mechanical means of support in some degree, as it has much tendon entering into its constitution throughout: its chief action is to assist the former muscle in the extension of the hock, as well as the femur, &c., and to flex the pastern.

3. *Plantaris.* Attachment. Superiorly to the outer and upper part of the tibia behind the flexor metatarsi externus. Half way down the tibia it ends in a fine tendon, which blends with the outer division of the gastrocnemius externus tendon, and which it pulls outwards in its action.

4. *Flexor Perforans.* Attachment. Superiorly to the outer and posterior part of the tibia, three-fourths of the way down the bone, by muscular fibres; and it becomes tendinous just above the hock, running over the trochlear surface of the calcis, under the postero-internal ligament, down the back of the leg in front of the perforatus tendon, which it pierces above the fetlock, where it bifurcates, each division being finally inserted into the posterior part of the os pedis.

*Action.* It will slightly assist in the extension of the hock, but its principal use is to flex the pasterns and foot, and adduct the digits.

5. *Flexor Accessorius Internus.* Attachment. Superiorly to the upper and outer part of the tibia between the popliteus and the latter muscle. It winds round to the inner part of the bone, becomes tendinous, and passes through a separate synovial sheath on the inside of the joint; then inclines backwards, and unites with the perforans tendon at the upper part of the large metatarsus.

*Action.* To assist the latter muscle, and to pull it slightly inwards when in action.

6. *Flexor Accessorius Externus.* Attachment. Superiorly to

the outer part of the tibia, above the origin of the perforans, the tendon of which it crosses, and blends with it on the inside just above the hock. It is absent in the horse.

*Action.* To assist the perforans, and to pull it close to the inner edge of the calcanean projection when in action.

### Flexors.

1. *Flexor Metatarsi Medius.* Attachment. Superiorly by a tendon common to it, and the extensores digitorum and digiti internus to the anterior part of the external femoral condyle. It runs under an annular ligament above the hock, immediately after which its tendon is pierced by that of the extensor digiti internus. At the lower part of the joint it bifurcates, one division becoming inserted into the upper part of the large metatarsus rather to the inside, the other into the anterior part of the cuneiform medium.

In some hocks I have found this tendon give off a slip about the middle of the hock to the extensor digitorum, which slip is continued on to become blended with the extensor digiti internus.

*Action.* To flex the hock, and turn the posterior part inwards.

2. *Flexor Metatarsi Externus.* Attachment. Superiorly to the fore and outer part of the tibia, and to the lateral ligament of the stifle joint. Half way down the tibia it ends in a tendon which runs over the outer and anterior part of that bone, crosses the extensor digiti externus, dips under the external lateral calcanean ligament, and pierces the joint between the cuneiform magnum and large metatarsus, running over a groove in the former, crossing towards the posterior part of the joint, and becoming inserted into the posterior of the cuneiform parvum. It is absent in the horse.

*Action.* To assist very materially in the flexion of the hock, and to pull the back of the joint outwards.

3. *Flexor Metatarsi Internus.* Attachment. Superiorly to the outer part of the ridge in front of the tibia, and to the anterior part of that bone. It soon becomes tendinous, and at the front of the hock pierces the tendon of the flexor medius, reappears on the inside, and runs rather suddenly inwards to become attached to the inner and upper part of the large metatarsus, opposite the spot where the flexor externus pierces the joint.

*Action.* To flex the hock, which it performs powerfully in consequence of its pulley-like formation, as it pierces the tendon of the flexor medius. It will also turn the back of the hock inwards, and is the analogue of the perforating portion of the flexor metatarsi of the horse.

4. *Extensor Digiti Externus.* Attachment. Superiorly to the outer and upper part of the tibia, and to the lateral ligament of the stifle joint. It becomes tendinous above the hock, crosses it in a separate synovial sheath, and runs down the fore and outer part of the large metatarsus, becoming attached inferiorly to the suffraginal and coronal bones, and to their capsular ligaments.

*Action.* To assist in the flexion and abduction of the hock, but more especially to extend and abduct the outer digit.

5. *Extensor Digiti Internus.* Attachment. To the tendon of the flexor metatarsi medius. It becomes fleshy, and again tendinous just above the hock, and runs under the same annular ligaments as the flexor medius. Below the hock it crosses to the inside, and is attached to the inner digit in the same manner as the externus is to the outer.

*Action.* To assist, in some degree, in the flexion of the hock, but principally to extend and abduct the inner digit.

6. *Extensor Digitorum.* Attachment. Superiorly to the tendon common to the flexor medius and the latter muscle. It becomes tendinous above the hock, crosses its front, and runs down the anterior of the metatarsus covering the anterior metatarsal artery; it bifurcates at the pastern, and each tendon becomes finally attached to the coronal process of the os pedis.

*Action.* To assist in flexing the hock; but its chief use is to extend and adduct the foot and pasterns.

7. *Extensor Digitorum Inferior,* or *Flexor Metatarsi Inferior.* Attachment. By one tendon from the calcis below its articulation with the fibula, and by another from the middle of the anterior part of the astragalus. These allow of the passage of the anterior metatarsal artery between them, unite, become fleshy, and are attached to the tendon of the extensor digitorum three or four inches below the hock.

*Action.* To assist in the extension of the digits, and to complete the flexion of the cushion bones on the astragalus.

Two ligamentous bands arise just above the origin of the

tendons of this muscle: they unite to form one broad ligament, which is inserted into the fascbia, covering the extensores digitorum and digiti internus.

ARTERIES.

The *anterior tibial artery* occupies the same situation as that of the horse when at the upper part of the thigh. Instead, however, of continuing on the outside of the leg, it gradually crosses to the front, passes under the annular ligament above the hock in company with the extensors, &c.; and then proceeds over the front of the joint, and dips between the heads of the extensor inferior, becoming the *Anterior Metatarsal*. This pursues its way down the front of the metatarsus, lodged in a groove which is situated rather to the side, and is covered by the extensor tendons. At the lower part of this bone it becomes covered by a very dense ligamentous sheath, then dips between the pasterns, and divides about their middles into numerous branches, namely—

*Two anterior*, the largest division of which runs to the anterior parts of the ossa pedis, close to the insertion of the extensor tendons, furnishing interdigital and anterior laminal branches.

*Two posterior:* the inferior one runs backwards and downwards, and divides into two sets of branches which ramify over the heels of each os pedis, furnishing the posterior and lateral laminal, and the arteries of the sole. The superior runs upwards and backwards, gives numerous twigs to the back of the pasterns, a large one of which anastomoses with the last named artery; and is then continued under the theca of the perforatus tendon, being finally spread over the posterior and lateral parts of the fetlock.

*Two lateral*, emerge one on each side from under the anterior part of the flexor tendon just below the fetlock. They give branches to the sides of the pasterns, then ascend and anastomose with the last named artery, and respectively with the internal and external metatarsals. The inner artery is the largest.

A recurrent branch ascends from the parent trunk at the back of the fetlock in front of the sessamoids, emerges between them and the metatarsus, and distributes its branches thereabouts, anastomosing with the metatarsus.

During its course the ANTERIOR TIBIAL gives off,

1. A branch of communication with the posterior tibial.

2. Numerous branches to the fore and lateral parts of the hock; those on the outside being largest, and which form the external metatarsal artery, a slender branch supplying the inner parts of the leg for the most part, and which ends in an anastomosis with the arteries of the fetlock.

3. Numerous twigs to the front of the legs and common integuments as it descends the metatarsus.

4. Three large branches to the anterior and lateral parts of the fetlock.

The *Posterior Tibial Artery* is situated at the back of the perforans tendon just above the hock; it leaves it, however, at the spot where the tendon runs under the ligament at the back of the hock, gets more to the inner part of the joint, and forms the internal metatarsal artery, which continues down the leg just on the edge of the suspensory ligament, and ends in an anastomosis with the arteries of the fetlock.

It gives off, 1. Just above the hock, a branch which runs to the outside of the os calcis.

2. At the hock, a branch which ascends on the inside of the os calcis, and another distributed to the inner part of the joint.

3. Twigs to the back of the hock.

4. A trunk to the inferior and inner part of the hock.

5. Branches to the inside of the leg.

The VEINS passing over the hock are principally continuations of the anterior and posterior metatarsals. The anterior, and some of the lateral laminal, form the anterior plantar veins which run in front of the anterior edges of the pasterns: these unite and form the anterior metatarsal vein, which crosses rather to the outside to receive a large anastomotic branch from the outer metatarsal; after this, it again gradually gains the front of the leg, and at the inferior part of the hock crosses the tendon of the extensor digiti externus. From the front of the hock it receives branches, and also one which originates at the fetlock, and runs up the outside of the anterior tibial artery, and, with two others which originate here, it passes up under the annular ligament, and accompanies the anterior tibial artery up the thigh. The posterior and some of the lateral laminal veins of the outer pedal bone form two

branches which unite at the upper part of the os coronæ, forming one trunk, the *external plantar*, which runs over the fetlock, and is then the *external metatarsal*, just above which it gives a branch to the last named, then turning sharply backward, it receives one from the postero-external part of the fetlock, and gets between the edge of the suspensory ligament and bone, and in this way runs up the metatarsal; at the back it emerges from its shelter, passing over the external and anterior part of the os calcis to the back of the perforans.

The *Internal Plantar* is also formed by the union of the posterior and lateral laminal veins of the inner pedal bone: above the fetlock it becomes the *internal metatarsal*, dips between two divisions of the suspensory ligament, and runs between it and the bone to terminate in the outer vein, which is much increased by this addition.

The NERVES are derived from the anterior and posterior tibial.

The anterior runs down the front of the tibia on the inner edge of the extensor digiti externus and the flexor metatarsi externus. Just above the hock it bifurcates into the external and internal metatarsal nerves.

The external runs down the leg on the inside of the large anterior vein, and just below the hock it gives off a large branch which crosses under the vein, and runs to the external and lateral parts of the pasterns and foot, the main trunk still continuing in apposition with the vein, and at the upper part of the pasterns gives a large and stout branch to the inner division of the anterior tibial, or inner metatarsal, and about an inch from this divides into the two *anterior plantars*, which run to the anterior parts of the ossa pedis, close to the anterior plantar veins.

The *Internal Metatarsal Nerve*, at its origin from the tibial, crosses rather abruptly towards the inside of the hock, running under the annular ligament, and runs down the leg on the inside of the extensor digiti internus. Just below the hock it gives off a branch called the *internal lateral*, which corresponds to the one described as originating from the outer nerve. About two-thirds of the way down the metatarsus it crosses under the extensor internus, and under the inner tendon of the extensor pedis at the fetlock, running between the tendons to the superior part of the interdigital space, where it receives a branch, before described,

from the outer nerve, and a little below this bifurcates, each division running to the middle of the contiguous parts of each os pedis.

The *Posterior Tibial Nerve* runs with the perforans tendon to the inferior part of the tibia, where it bifurcates into the external and internal nerves.

The *internal one* accompanies the inner metatarsal artery over the hock and down the leg, giving off a branch of communication to the outer nerve about half way down the metatarsus, and is then continued to the heels of the inner os pedis.

The *external one*, the smallest, passes with the perforans under the ligament at the back of the hock, being situated on its outer side; it then runs down the outside of the leg at the edge of the suspensory ligament, receiving a branch from the inner nerve two-thirds down the metatarsus, by which it is increased in size, and becomes finally distributed to the heel of the outer os pedis.

It is evident, on account of the number of nerves situated below the hock of the ox, that it would be impossible to perform the operation of neurotomy successfully, unless the hock also were deprived of sensation by dividing the nerves above it. The place to cut down on the posterior tibial nerve would be at the anterior edge of the gastrocnemii tendons, an inch or two above the os calcis; and the anterior one may be exposed by making an incision at the inner border of the extensor digiti externus, an inch above the inferior part of the tibia.

## Physiology of the Hock.

It is evident that the weight received by the hock of the ox is very differently distributed to that received by the same joint in the horse, and this difference principally consists in its being thrown to the outer side. The external convexity of the superior articulation, being raised much the highest, receives a great share of weight from the tibia; its infero-external convexity also extends lower than its fellow, thus distributing a greater part of its weight to the outer concavity of the cuneiform magnum. The external part of this latter bone also rests very firmly on the large metatarsus, extending much lower than the inner half of the inferior surface.

Added to this, the rudimental fibula extends lower than the inner malleolus, resting on the convex articular surface of the os

calcis, and the weight received by this bone is distributed to the outer part of the cuneiform magnum.

FLEXION.—The hock is advanced under the body by the contraction of the flexores metatarsi, aided by the extensores externi et interni and the extensores pedis. By their action they move the cuneiform bones and the calcis (which carry with them the metatarsal and phalangeal bones) on the astragalus; and then the astragalus (which carries with it the lower bones) on the tibia, fibula, and os calcis. This latter action being first perfected, or, in other words, the astragalus is soon flexed to its utmost on those bones, and after this is accomplished, the lower bones are completely flexed on the astragalus by the action of the extensor pedis inferior. During this latter action the os calcis slides over the astragalus in a downward direction, and forward on the cuneiform magnum. The cuneiform parvum is rotated by the flexor metatarsi externus, in a much greater degree than the same bone in the horse; but the other cuneiform bones have very little motion; a slightly gliding action is all that they can possess. The movements may be considered as,

1st. Flexion of the cuneiform magnum and calcis on the astragalus; the calcis rolling slightly under its fibular articulation.

2d. Flexion of the astragalus on the tibia, fibula, and calcis.

3d. Calcis descending in a forward direction on the astragalus and cuneiform magnum.

4th. The cuneiform parvum is rotated, and the other bones glide slightly on each other, which action takes place during the first stage of flexion.

EXTENSION. At the termination of the act of flexion, the foot is placed on the ground, the weight is thrown on the astragalus and calcis from the tibia and fibula, part of that received by the calcis is supported by the tendinous structure of the gastrocnemius internus muscle, and the bands of faschia which are implanted into the os calcis; but the greater share, being received by the cuneiform magnum, is transmitted to the metatarsus, and from it to the pasterns, the suspensory ligaments, the flexor tendons, and their accessory bands.

The opposite leg advancing the contraction of the gastrocnemii muscles rolls the tibia and fibula backwards on the astragalus and os calcis, the foot being made a fixed point. The astragalus next

becomes straightened on the cuneiform magnum, and the gastrocnemii going on contracting, the calcis is slightly raised; then, with assistance of the perforans and its accessory muscles, the body is propelled forwards and the leg is yet more extended, and the foot then becomes raised off the ground and flexed.

The cuneiform parvum rotates to its natural position, whilst the other two bones exert their slightly gliding action during the extension of the leg. When weight is thrown on them, there is a certain amount of yielding, more especially on the inside and back part of the joint. Thus the motions may be classed as

1st. The tibia and fibula on the astragalus and calcis.

2d. The astragalus on the cuneiform magnum and calcis.

3d. The lower bones on the astragalus, and the calcis ascending a little on the astragalus and cuneiform magnum.

4th. The rotation of the small cuneiform, and yielding and gliding of the others.

THE TROT is performed very imperfectly in the ox, as in this pace first one and then the other of the hind legs is called upon to support a very great proportion of the animal's weight; and from the great mobility of the ox's hock, he has not that power of supporting weight which the horse possesses.

The bones move over each other as in the walk, their action being somewhat increased; but there is not so much contrast in the extent of their motion as in the horse.

In a state of nature animals of this tribe are extremely fleet in the gallop, and perform this pace with great ease and freedom of movement; and although the domestic ox, from his habits, very rarely performs this pace, yet we have an instance of the power and elasticity existing in his hocks by the leaps over timber which he sometimes takes. This power is easily accounted for when we consider the extent of motion in this joint, and the great length of the os calcis. The muscles which flex the tibia on the femur are also powerful and quick in their action, and these materially assist in progressive action.

This animal also possesses the power of turning quickly. This may be partially attributable to his length of loins, and shortness of rib; and, as stated by some, it may be aided by a synovial joint which is situated in his sternum, and not possessed by the horse; although I do not attach much importance to this, but would rather

refer it to his hocks possessing so much motion, and, more than this, to the great peculiarity of the attachment and course inferiorly of the flexor metatarsi externus. The ease also with which he lies down and rises, using his hind quarters first in rising, may be in a great degree attributable to the elasticity of this joint.

His peculiar gait, viz. turning the posterior part of the hocks inwards when in action, I do not consider to be referrible to the formation of the hock, but would rather refer it to the shape of the tibia, which is bent inwards, likewise to the low attachment of the biceps abductor, and, more than all, to the want of development of the outer condyle of the femur, which allows the patella to be pulled outward and with it the head of the tibia; and, the foot being fixed in the first instance, the posterior part of the hock is twisted inward. I am led to this conclusion as to the cause of this peculiar action by a comparison of the gait of the pig with that of the ox, than which nothing can be more dissimilar; yet we find the structure of their hocks differs but little. On looking to the femur, however, we find the inner and outer condyle of that bone in the pig of nearly the same size, thus presenting a great contrast to the same bone in the ox. The same remark will apply to the hock of the sheep, which resembles that of the ox; a difference is, however, observable in the form of the inferior part of the femur, and the tibia is comparatively straight.

[To be continued.]

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[Superabundance of matter precluding its insertion in THE RECORD of last year, we are now compelled to revert to the Abstract of the Proceedings of the Association for the past Session, which we shall be obliged considerably to curtail.]

TUESDAY, JANUARY 27th, 1846.

The PRESIDENT in the Chair.

*Mr. Fishwick* directed the attention of the members of the Association to the œsophagus of a cow which had been lacerated in the endeavours made to force down a piece of turnip that had become fixed in that tube. The instrument used in this case was the handle of a stable fork, and the operator the usual attendant

on the animal. The result was extensive laceration of the œsophagus, and the death of the animal. As to the particular symptoms evinced, he could not speak, as he had not seen the animal while alive, the morbid specimen having been transmitted to him by his brother. He would, however, remark, that the obstructing piece of turnip was, from its half-rounded shape, very likely to allow of the passage even of the proper probang over its rounded portion, and therefore would not be so easily forced down as a body of a more flattened form.

An Essay on Laminitis, by Mr. Rose, was then read.

*Mr. Varnell* thought it extremely desirable that, in taking off the shoes in cases of laminitis, very great care should be exercised. Each clench should be properly cut off, and the nails drawn one by one, the shoes not being removed as they generally are in the healthy horse.

*The President* coincided with Mr. Varnell, and moreover said that greater care should always be manifested than is generally done by smiths in the removal of shoes from horses' feet, whether they were in health or in disease; and certainly the ordinary habit of forcibly wrenching off shoes with all the nails in at once was highly reprehensible, and frequently gave rise to injuries.

*Mr. Rose* said that he should not remove the shoes from flat feet, but in all other cases he would have them taken off.

*Mr. Mannington* disagreed with Mr. Rose. He would advise their removal in all cases, because he thought it was evident that the sole was intended by nature to bear some portion of the animal's weight; he would, therefore, cause the animal to stand without shoes, since by so doing the laminæ would, in a great degree, be relieved from tension and pressure. Nor could he agree with the author of the essay as to rest being a frequent cause of this disease. In Mr. Castley's cases, referred to by him, he did not think this argument applied, for it was stated that the horses had to swim from the ship to the shore: he would, therefore, rather consider the immersion of the feet in the water as the exciting cause of the disease, for he had known hunters to be often attacked with laminitis after having swam rivers while hunting, congestion of the bloodvessels being thus induced, which was followed by inflammatory action.

As to treatment, he agreed generally with Mr. Rose. Slinging

the animal, he thought, would often be beneficial; and so also, he believed, would Mr. Gabriel's plan of inserting setons through the frog; but of this last he could not speak practically, as he had not had recourse to them.

After an acute attack of laminitis he would apply pressure to the sole, in order to support it and prevent it sinking or becoming convex. Rarely had he seen a case of acute laminitis terminate without a greater or a less amount of structural alteration.

*Mr. Burrowes* recommended slinging of the patient, having seen it give considerable relief; and if there were no means of slinging, he would cast the animal with the hobbles, in order to relieve the sensitive parts of the foot from the great pressure and consequent pain when in state of inflammation, caused by the weight of the animal when standing.

*Mr. Fishwick* generally removed the shoes and thinned the quarters by rasping, to favour elasticity.

*Mr. Bass* said that, physiologically speaking, he could not see the utility of rasping the walls; but as to the removal of the shoes there ought not to be two opinions. They should be removed in every case, and more especially in flat feet, in which, from their general structure, the laminæ were less able of themselves to support the weight of the animal. He believed that all the secretive structures were implicated in this disease. It was often observed, that some animals evinced a remarkable obstinacy in standing; and as standing aggravates the pain, &c., he would advise casting, and instanced cases where the pain was instantly relieved, and constitutional irritation abated immediately after the animal had been cast. As to treatment, as the constitutional irritation was very great, he would bleed largely from the jugular vein, and, after a little time, he would likewise bleed locally. He would also give calomel in conjunction with aloes, so as quickly to excite the bowels into action.

*Mr. Rose*, in reply to a member, said that he had known a case where the whole four feet were affected at the same time. It was a hunter, and he had heard of many other similar cases.

*Mr. Thacker* said, that horses in high condition were those he had seen most commonly attacked, and the reason he assigned was, that in those horses whose condition was good, the lungs were not so likely to become congested or inflamed from exertion: ani-

mals in this state, therefore, are enabled to bear great exertion of the respiratory apparatus without any injury; but the feet often became inflamed from the great concussion received during a hard day's work.

*Mr. Fishwick* thought cart-horses were most commonly the subjects of those attacks; and Mr. Burrowes was of the same opinion; while Mr. Yeomans, and several other members, considered that coach or post-horses were more frequently affected.

*Mr. G. Hayden* had observed, that there was generally a peculiarity of form of the feet in those cases which occurred among hunters, the feet being rather flat in the sole, with low broad heels; such feet he considered particularly liable to this disease, no matter what was the breed of the horse.

*The President* concurred with those who believed that animals in good working condition were more liable, after long and rapidly performed journies, to be attacked with laminitis than dealers' horses, which, although fed high, yet not having sufficient exercise to render the respiratory organs fit for great exertion, are more liable to inflammation of the lungs under the same circumstances. A balance of power between the respiratory and circulatory systems being established in the former, which is not the case with dealers' horses, or those fed and pampered up for sale, or merely to please the eye.

It is a fact with reference to acute inflammation in very vascular structures, and particularly that of the sensitive parts of the foot, that it rarely terminates in perfect resolution. On the contrary, structural alteration almost invariably takes place as a consequence. And as it regards the changes that occur in the foot of the horse affected with laminitis, he could not let that opportunity pass without remarking on the similarity of pathological phenomena observable between the nail of the human hand and the horse's foot. His attention had been directed more particularly to this similarity through an accident that happened to himself, and which he would relate. Some time since a question arose as to the age of a race horse called the Queen of Cypress, and in examining her mouth she bit his thumb; congestion immediately followed, and ecchymosis or extravasation of blood under the nail took place, and the pain became very acute. Having tried immersion in both hot and cold water for some hours,

but without any benefit, he thought of cutting down upon the nail; and having determined on doing so, with a razor he thinned down the nail to the part where the effused blood was confined, and, having reached it, the blood escaped, and the relief afforded was instantaneous.

Now the connexion between the hoof and internal part of the foot of the horse was very analogous to that of the nail; and it occurred to him that the same operation, if tried in laminitis, might also prove beneficial. There was, however, a great obstacle to its performance in the horse, on account of the length of time that would elapse before the reproduction of the wall took place to a sufficient extent so as to again apply a shoe with nails. Still it was of importance to ascertain if we could not give relief to the animal by scoring the wall down to the sensitive laminæ at suitable intervals of space in very severe cases: for his part, he thought the experiment worth a trial, and he would not hesitate to have recourse to it at the first opportunity.

*Mr. Pearson Ferguson* made some remarks, during which he said that he would resort to very active treatment, both constitutionally and locally, in the way of blood-letting. As to the local bleeding, he objected to taking blood from the toe, but would open the coronary veins at the lateral cartilages, and place the foot in warm water to induce the flow of blood, after which he generally slung the animal or threw him down, or, if this was objectionable, he placed him standing in an apartment, the floor of which was covered with a deep bed of wet turf-mould or soft clay. As to medicines, he first gave an active purge, and followed it up with small and often-repeated doses of opium and calomel in combination.

As to the results of laminitis, it rarely happens that this disease subsides without leaving grave structural alterations: the sensitive laminæ pour out, when congested, a matter which separates them from the horny wall, thus they often lose their perfect laminated structure, becoming adherent to each other in many places in consequence of the inflammation, and never after do they present the same mode of union with the wall as in the healthy foot. Under such instances, the animal gets a kind of club-foot, it being exceedingly irregular in shape. In other, and more frequent instances, we observe the sole to sink anterior to the point of the frog,

and this is the result of the recession of the internal parts of the foot from the anterior wall, the toe of which in such cases seems like an appendix to the rest of the hoof. This alteration in the hoof is owing to the os pedis being partially revolved on its transverse axis, the toe being, by this partial revolution, placed more perpendicularly to the ground, so that, in fact, the posterior part of the bone is thus removed farther from the ground, and the poor animal walks on the *toe* of the pedal-bone, instead of the sole. Now he would ask, is there any remedial measure that can be adopted to alleviate the sufferings of the animal in this case? Yes: and what we must do is exceedingly simple, and carries conviction as to its utility with it. What he proposed to do was to cut off the protruding part of the toe of the wall, and thin it generally at its anterior part, leaving the quarters strong in order to support the animal's weight, and then to cut down the heels, so that by this operation the foot would be placed more favourably at its solar surface, and, as regards its bones, present a wider base of support, and thus be easier to the animal than if he continued to walk upon his toe. This mode of treatment in this particular morbid condition of the foot had been followed with marked benefit in his practice, and he therefore recommended its trial to his confrères.

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FEBRUARY 3d, 1846.

The PRESIDENT in the Chair.

*Mr. Burrowes* presented a pair of forceps for castrating lambs, which were invented and had been for many years successfully used by his brother. In shape they resemble somewhat the ordinary bone forceps, but the blades are longer and more curved, forming a semicircle, in the centre of which an open space of about a quarter of an inch in length is left, so that undue pressure may not be communicated to the cord.

Mr. Burrowes said, that since his brother had used this instrument for emasculating lambs he had not been so unfortunate in death taking place after the operation as when he was in the habit

of having them castrated in the usual disgusting way by tearing out the testicles with the teeth, which he believed was still the usual practice in most sheep-feeding districts.

*Mr. Simonds* approved of the instrument, and thought its general adoption would soon take place, since by it a firmer hold could be taken than with the teeth; whilst it also had the advantage of being more surgical.

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## On some of the Diseases peculiar to the Horse in America.

*By Mr.* G. W. Varnell.

I have often regretted that we are not better acquainted with the diseases to which horses of different countries are liable; for it appears to me that the influence of climate, of food, and the treatment of those animals generally, if carefully noted, would enable us to arrive at some important pathological conclusions. In endeavouring to fill up this hiatus I also regret that it is in my power to supply but very little information on this so interesting a subject; for when in America, although I pursued my professional vocation there, nevertheless I did it without for a moment contemplating the possibility of ever using the information I had gained for the purpose of an essay. It is true, I took notes of many cases I was called on to attend; but these notes were taken rather to refresh my own memory with certain facts than to convey to others any idea of the diseases on which they were made. On this account, then, it will be understood by you that the observations contained in the present paper are to be regarded as nothing more than the recollections of one who has seen but who never particularly recorded the facts related.

I have endeavoured to be correct, and neither to mistake, undervalue, or over-rate incidental or other circumstances; yet I cannot hope that I have, to the full satisfaction of those I address, attained my end.

There are, doubtless, many points open to objection; for it is hardly possible but that an individual writing, almost solely from memory, and that after the lapse of some years, must confuse some circumstances, overlook others, and unintentionally misre-

present many of, perhaps, material consequence. On these grounds I feel confident that I shall obtain your indulgence. Still I must, at the same time, entreat you to remember, that my observations do not relate to America at the present period, for the new world is characterised by nothing so much as its rapid advance in the arts and sciences; so that, without exaggeration, I may assert, the progress which in Europe seems to have been the labour of an age, in America appears to be but the work of a single year. The diseases incidental to the horse, and which are not met with in England that I am aware of, are two. One has received the name of "Big Head," and the other is called "The Black Tongue."

Big Head is a disease peculiar to some of the western states, such as a part of Pennsylvania, Ohio, Indiana, &c. In the year 1832, when living in Cincinnati, a city in the state of Ohio, I had an opportunity of seeing several cases of this disease. It seems to be confined to horses that are low-bred and ill-formed, having naturally large heads and small eyes. From what I could learn, the disease first shews itself between the ages of two-and-a-half and five years. If the animal escapes the disease till he arrives at the adult period, he is then exempt from an attack of it. The malady consists in an enlargement of the face from below the orbit to the point of the nose. This enlargement is at first yielding to the touch, but it soon takes on the ossific inflammation, and the deposition of bone continues to go on to such an extent that the head, just above the false nostrils, is sometimes half as large again as it would be in a natural state. The nasal chambers, also, become gradually obliterated, and, in some cases, death takes place from suffocation. In many instances, however, there seems to be a limit to the deposition of bony matter, and the horse may continue to work for many years afterwards with only an unsightly "big head." The bony deposits are larger in some places than in others, and the surface is, necessarily, by no means smooth or even. The farmers and farriers, when they attempt a cure, which is often the case, commence by dividing the skin on the inferior part of the tumour, and then bore into it with a red-hot iron. They have informed me that if the sloughing process is extensively set up, a check is put to any further deposition of bone, and sometimes through this they effect what they call a cure.

I have observed that ophthalmia prevails much more extensively

in this locality than in any other part of the United States or Canada that I am acquainted with. But the same horse seldom is the subject of both affections; for if my memory serves me right, I never saw a horse with ophthalmia that had "big-head," or this disease of the facial bones called by that name; notwithstanding horses affected with these abnormal deposits of ossific matter have small or pig-eyes.

I will venture to offer an opinion as to the cause of the disease designated "big-head." There is, perhaps, more Indian corn or maize grown and sold at a cheaper rate in the States where this disease prevails than in any other parts of the Union. Such, at least, was the case in 1833 and 1834. Now, as soon as the foal is taken from its dam, or at any rate, from the first winter of its existence, the food is Indian corn; and often the fodder consists of the corn blades which have been stripped off the stalks while green, and preserved after the manner of hay. The corn, not being ground or softened before giving it to horses and colts, is very hard and resisting, and the corn blades being also very hard, the force necessary to masticate such kinds of food at the period of dentition induces inflammation, which, commencing in the parts contiguous to the fang of the tooth, is speedily succeeded by tumefaction, followed by a deposition of ossific matter. This I consider to be one of the causes in operation. But from the information I could obtain respecting the disease, I have reason to believe that a susceptibility to it is in some degree hereditary. I have also been informed that it is more prevalent in some settlements, where they "breed in-and-in," as it is called, than it is in those where the breed is crossed by importations from England and other countries. To the neglect of the rules observed by breeders in England it is that I attribute the predisposition among the horses of certain parts of America to be affected with either "big-head" or ophthalmia. Thus we have similar causes for both diseases, the effect varying; for when we have the disease called "big-head" the eyes are not affected, and *vice versâ*.

In the New England or Eastern States, I have frequently asked the proprietors if they had a disease among their horses called "big-head," and in reply I was informed that "big-head" was confined to some of the Western States. I then inquired if they fed their colts on Indian corn or maize, and learned that the

ordinary food was hay and grass, with sometimes a little wheat bran, until the animal began to work hard at five or six years old. The comparatively few cases of ophthalmia which I also met with in the Eastern States I attribute to the absence of that hereditary predisposition resulting from an injudicious mode of breeding, and to the inflammatory disposition not being excited during the period of dentition by feeding the colt so much upon hard and dry food.

A disease that affected the mouth and feet of horses called the "BLACK TONGUE," which in all its stages bore a close resemblance to the vesicular epizootic of Europe, prevailed in most parts of the Union and Upper Canada, particularly in the eastern, western, and middle states, in the years 1832-33-34. It then became milder in its character, and gradually disappeared altogether, excepting a few cases in which its ravages were confined to the feet. I introduce this disease believing it to be almost, if not altogether, unknown as attacking the horse in this country: at any rate, I have not either read or heard of such being the case. In the years 1833 and 1834, I lived in the western parts of Pennsylvania, and from what I remember, I should think that one-fourth of the horses were thus affected, and some died. In Ohio it raged with more intensity, and hundreds of horses perished, the disease in that state being confined principally to the mouth. In New York and the eastern states the feet were more particularly affected; and here also many animals were lost. The disease rarely attacked both the mouth and the feet at the same time, although a few cases of this kind were witnessed by me; and if one organ was severely attacked, then the other was but slightly, so that there appeared to be no certainty from the primary symptoms which would be the seat of the malady. In the eastern states it first shewed itself, and there the feet were most affected. In the western states, however, its ravages were confined to the mouth; but in neither locality were the feet or the mouth entirely exempt. Sometimes it would first shew itself in the mouth, and appear to be rapidly progressing, when suddenly the feet would take on the disease, and the original seat—the mouth—would soon get well.

Having by me a memorandum of the disease as it existed at the time, I will from it describe its symptoms and terminations.

First, the lips and buccal membrane appeared a little swollen; then a peculiar champing and grinding of the teeth was heard, with a dribbling of saliva from the mouth; vesicles on the tongue and lips next made their appearance, and the animal was off his feed. The vesicles now quickly coalesced, the parts became more swollen, and the discharge of saliva copious. If the disease by the timely use of remedies was not checked, the swelling extended to the pharynx and glottal opening, and death took place from suffocation. In a short time after the vesicles had run into each other the smell became exceedingly offensive, and the tongue of a dark purple colour.

If the vesicles were lanced, or if they broke in the early stages of the disease, the fluid contents were limpid, and the tongue of a red appearance. If the disease shewed itself in the feet, the first symptoms resembled those of laminitis. On the next day, perhaps, small vesicles were observed round the coronet, just at the termination of the hair, more particularly on the inside and round the heel to the frog. The disease soon extended itself to the lamine, and in a short time the hoof was thrown off. The fore feet were most commonly attacked, but I have seen all the feet affected, and the horse lying on his side altogether unable to stand. In the majority of instances, if the hind feet became affected, the fore ones were immediately relieved.

The treatment I adopted, when the disease first made its appearance in the country, consisted of blood-letting and the exhibition of purgative medicines. Bleeding I was soon obliged to leave off, and instead of purgatives I merely gave laxatives, consisting of linseed oil, the action of which was aided by back-raking and clysters. The vesicles on the tongue were lanced, and the mouth washed several times in the day with a solution of borax in an infusion of sage or of alum. Sometimes I contented myself by simply washing the mouth several times a-day with warm water, which gave relief by acting as a fomentation to the parts. When the disease attacked the feet, I also gave laxative medicines, and applied warm bran poultices, opening the vesicles, and frequently dressing the parts with a decoction of oak-bark, taking care to use no caustic preparation of any kind. This treatment I found did very well in the early stages, and also during slight attacks; but if the disease had been neglected, and extended itself to the

laminæ, it required more active treatment, and then seldom terminated in a restoration to perfect health. The feet, after an attack of this kind, presented a similar appearance to those that have been the subject of acute and neglected laminitis. A member of this College, living in Albany, in the State of New York, informed me that his treatment of those attacked in the feet was, first to bleed copiously, then give purgative medicine, and poultice the feet. Separation of the horn he found quickly to take place to a greater or less degree; and in all cases he removed the detached horn, and dressed the exposed parts with the compound tincture of myrrh. Following up this plan of treatment, he informed me he succeeded in patching the horses up, thus rendering them useful for many purposes, but few of them ever after became sound.

Though I consider this disease the same as we have had in England among our domestic stock, nevertheless it called for more active treatment; and if the treatment were judicious, few cases were lost. Cases in which the feet were the principal seat of the disease were not, generally speaking, successfully treated; but the attack, when confined to the mouth, was subdued with comparative certainty, and also ease. The manner in which I account for the horse being more frequently attacked in the feet in the eastern and northern states than in others, is this. There might be the same amount of predisposition existent among animals in one part of the country as in the other, but in the north and east the roads are much better and harder. Horses, too, are driven much faster, and the pace acting as an exciting cause, would be more favourable to the development of the disease in the feet than in the mouth; for I have said that both the feet and the mouth are seldom severely affected at the same time.

Almost all the other diseases to which the horses of England are subject are also met with in America, and those diseases may be said to be identical. There is no difference in the nature of inflammation or of the structure involved. Nevertheless, there are some circumstances connected with acute laminitis in America which appear to me worthy of a passing observation. When conversing in Philadelphia with a member of the profession, and commenting on the frequent occurrence of laminitis in America, he said, he considered the pace at which the horses are made to travel, combined with long journies and bad shoeing, to be powerful causes.

These certainly may predispose the foot to become thus affected, although I have not observed this affection immediately consequent on long exertion. The Americans seem to classify this disease somewhat differently to what we do. They have what they call "Water Founder," "Corn Founder," and "Chest Founder," and connected with this last mentioned founder they have a disease they designate "Sweeny," which consists in a wasting away of the postea and antea-spinatus muscles, more particularly of the antea-spinatus. Their method of treating this atrophied state of the muscles is to lubricate the parts with some stimulating agents, and occasionally apply active blisters; and I think I have seen good result from this plan of treatment. During the existence of "sweeny" the hoof will become much contracted, from the atrophy of the muscles throwing the foot out of use.

What the Americans call "water founder" is acute laminitis, occurring at any time of the year, but particularly in the summer season, if immediately after severe exertion the horse is allowed to drink cold water. In about twelve hours the symptoms of the disease shew themselves. In many of the cities and towns in the interior of the United States great numbers of saddle horses are kept for hire, and, on account of the roads in the country not being very good, this kind of saddle horse is much used; and it is not uncommon in large stables, where from thirty to forty horses are kept, to find in one morning one or two cases of acute laminitis. I am not aware that any English author speaks of founder arising immediately from this cause. The Americans so frequently meeting with cases of acute laminitis seem to test the ability of the practitioner by his power over this disease. They commonly inquire, Can such a one cure founder? and if the answer be in the affirmative, he is considered a clever fellow. They certainly are very successful in the treatment of this disease; and I thought, too, that I was successful; but I never saw a foot after an attack of acute laminitis on which the sequelæ of the disease, such as the ribbed appearance of the wall of the foot, &c., were not apparent.

Corn-founder is considered in England to be laminitis resulting from the horse eating wheat; but in America horses become affected with the disease from eating Indian corn or maize, and likewise from oats and rye. This peculiarity of the horses in America to be so affected I am at a loss to account for; but there

is, I feel convinced, a greater disposition among the horses there to become the subjects of laminitis than in England.

As a general rule, the Americans are not so careful of their horses on their return from journies as we are. They commonly wash their feet afterwards with cold water, and leave them wet; and often allow them to go to the water-trough and drink their fill of cold water while in a state of profuse perspiration: these things we wisely avoid.

Having thus spoken of some of the diseases to which the feet are liable, and in some measure attributed them to the manner in which the horses of the country are shod, it may not, perhaps, be out of place if I make a few brief observations on the system of shoeing adopted in America. First, I will speak of some of the large cities, such as New York, Boston, Philadelphia, &c. The shoeing in New York, at the time I was there, was not what is generally denominated good. There was an attempt at neatness, such as fullering the shoe close to the outer edge, having it narrow in the web, &c.; but they nailed it too far round the inside quarter, and that in a manner not at all adapted for city or road work.

In Boston the practice was only better in one respect. The shoes are made wider in the web, otherwise they retain the faults of fullering too close, and nailing too near the heels. In Philadelphia the shoeing is better than I observed it in any part of the country. In the interior of the country the shoeing is decidedly bad: a horseshoe there consists of nothing more than a bent piece of iron turned downwards at the heels and toes so as to form three high caulkings, and nailed to the horse's foot with coarse large nails. Among the country horses ringbones are commonly met with. These result in a great measure, I believe, from the general use of caulkings, which are retained all the year round. The uneven tread thus induced produces inflammation of the ligaments of the foot and pastern joint, and the termination is in osseous deposition. In the north and eastern parts of the country the shoe used for travelling on the ice is the common shoe with sharp steel caulkings. I have travelled many miles on the smooth ice with horses shod in this way, and have always found them to go very safely. Racing and trotting matches are very common on the ice, and I never saw any accidents occur from slipping. Mr. Youatt, in his work on the Horse, speaking of the Canadian horses, observes that in the winter

season the Canadians use steel caulkings screwed into the shoe. All I can say is, that I have never seen such a thing on a Canadian horseshoe, and I have seen a great many horses brought from Canada to the United States for sale in the winter season, and have always found the shoeing to be of the very worst description. Still there may be in Montreal or Quebec a chance horse shod in this way; but this is not the rule of the country. I have observed more horses coming from Lower Canada affected with ringbones than in any other part of the country; which result I suppose to be consequent upon the foot balling up with snow during the winter's journey; the ligaments of the foot and pastern being thus continually put on the strain.

Thus, Gentlemen, I have endeavoured to communicate to you impressions retained by me rather than to give you an accurate and particular account of the diseases incidental to horses distributed over a tract of country far too large for a single individual to describe. I know that I have omitted much, and it may be as it regards some things I am in error: if so, I can only assert that whatever I have stated I believe to be correct, and it is therefore altogether unintentional. In what degree my opinions may be modified by future observations, of course I am unable to say. The country presents a fine field for inquiry; and I trust it will not be long before we are better acquainted with a subject which is full of matter of the highest interest to every member of our profession.

I have the honour to be, your's, &c.

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## MISCELLANEA.

### Horse Burking.

[From the Essex Herald.]

Edward Bentley, aged 24, described in the calendar as a dealer in marine stores, was indicted for feloniously, unlawfully, and maliciously killing a bay gelding, the property of Thomas Stock, of East Hanningfield. The prisoner challenged five or six of the jurymen who reside in the neighbourhood where the

alleged offence was perpetrated, and amongst them was the foreman, Mr. Cleave.

Mr. Rodwell was counsel for the prosecution; and Mr. Ryland, with Mr. Chambers, defended the prisoner.

In opening the case for the prosecution, Mr. Rodwell called upon the jury to dismiss from their minds all that they might previously have heard of the circumstances of this case, which, from its atrocity and novelty, had excited considerable sensation in the neighbourhood, and solely to apply their minds to the facts which would be laid before them in evidence. The learned gentleman then stated the case, and called

Thomas Stock, who said—I am a farmer at East Hanningfield; I have an off-hand farm there. On the 4th of January I had a bay gelding; in the night I was called up by James Mason, and I went to the farm and found a horse dead in the shed; they told me it was then quite warm; I had seen it in the afternoon about four o'clock quite well. I saw four scuds of hay near the horse's nose, and a halter with them; I left the horse where it was; it was not my halter. I know the prisoner—he is a knacker; I have sold him dead horses; he lives about two miles and a half from me: he had no business upon my premises that night.

Cross-examined by Mr. Ryland. No other persons are interested in the off-hand farm besides me; Mason sees after the business; he has no interest in the farm: I never saw a halter like that on my farm. I have known the prisoner five or six years, and his family also,

Re-examined.—Mason lived at the farm; he had no property in the horse.

James Mason examined.—On the 4th of January I was in the service of Mr. Stock, and lived at the off-hand farm; recollect the night of the 4th; returned from my club at Baddow just before twelve o'clock. I was sober; I had walked four miles. Just before I got to the gate I heard a groaning noise; I went into the yard on my way home; when I got into the yard I saw a horse lying in the open shed, and prisoner kneeling down against its head; it was a very bright moonlight night. Have known the prisoner seven or eight years; I asked him what business he had there? I was not more than half a rod from him; he got up and went away as quickly as he could, and went to the gate; I fol-

lowed him to the gate, and struck at and hit him on the head with a small stick as he was getting over; then I got a light from my house, and on my return to the shed found the wisps of hay and the halter produced. The horse was then dead, but it was not dead when I first got into the yard; the halter does not belong to the prosecutor, we do not use hempen halters. I called Thomas Hurrell up, and gave information to my master, and afterwards to the police; I mentioned the name of the person I had seen; I went with the policeman to the prisoner's house, at Runwell; we both went in. May said he wanted him to go a little way with him; prisoner went up stairs and dressed himself; we got back to my master's about six o'clock. I then said that was the man I saw in the yard; prisoner said I was mistaken. The next day, when prisoner was before the magistrates, he had a black eye. The horse was shewn to Mr. Harvey, the veterinary surgeon; it was afterwards seen by Mr. Samuel Baker; the horse was left in the same position as when I first found it.

Cross-examined by Mr. Ryland.—I am right in saying it was a bright night; the nearest I was to him was not more than half a rod. As soon as the man saw me he ran off; I fully believe him to be the man; he had an oldish hat upon his head, and wore a fustian coat and dark trousers; I did not follow him more than two rods; we got to his house about four in the morning: he came down in his shirt to let us in. The prisoner is a single man.

Re-examined.—He lives with a woman named Key; I saw no one but the prisoner that night; the house stands by itself.

Thomas Hurrell deposed—I live at East Hanningfield; on the night of the 4th of January was called up by Mason, and I went with him and the policeman to take the prisoner. I saw the horse and the halter, and the hay lying near it.

Richard Myhill said—I recollect being called up on the night of the 4th of January, and received information from Mason. It was so light that a person could be distinguished some yards off, and there was snow on the ground. I picked up the halter and the wisps of hay, and gave them to Mr. Stock.

[The hay and halter were produced.]

Cross-examined.—It was before one o'clock that I picked up these things; Mr. Stock put them into his pocket, and took them

home. I was not before the magistrates, nor before the grand jury; this is my first appearance.

Re-examined.—I was at the magistrates' office, ready to be called.

The prosecutor here identified the halter and the wisps of hay given to him by the last witness; and James Mason, being re-called, said the halter was not his master's.

James May, police-constable at Woodham Ferris, produced the halter and the hay wisps, which he said he received from the prosecutor. Witness went to prisoner's house with Mason; he looked after no other person than him: when he got to the house prisoner shewed himself at the window; witness asked if his name was Bentley, and he said yes; witness told him to come down, as he wished to speak with him; he came down in his shirt, but afterwards dressed himself. When he came down the second time, witness asked him if he was not at Hanningfield the previous night; he said he was not: witness said he should take him into custody for killing Mr. Stock's horse; he said he was willing to go, but he was not there. When they got to Mr. Stock's, Mason said, "Master, this is the man who killed your horse." Bentley said, "You are mistaken, I was not there." At daylight witness observed he had a black eye, and the left eyelid was slightly grazed. Prisoner said he had not a black eye; it was a wound which a small stick would occasion.

William Benson, of Rettendon, said—I saw the prisoner on the 4th of January in the evening; he then had no black eye or mark on his face; I was with him an hour and a half. The widow Key lives with the prisoner.

Cross-examined.—I was not before the magistrates or the grand jury.

Samuel Green deposed—I live at Rettendon, and know the prisoner: I recollect my master, Mr. Taylor, losing a horse.

Mr. Ryland took the opinion of the Court as to whether this was evidence.

Mr. Rodwell said the witness's evidence bore upon the case.

Mr. Ryland said it had no bearing upon the issue before the jury.

The Chairman (Mr. Barnardiston) said there must be nothing irregular.

The witness then further stated.—The prisoner bought my master's dead horse; he brought a halter with him; this is the one; I know it from having a piece of string round it, which hurt my hand when I used it to put it on the horse.

Cross-examined. I don't know what time of the year this was; I can't say in what month; I did not go before the magistrates, but was before the grand jury yesterday. Mr. Taylor was present when the horse was taken away.

Re-examined. As near as I can tell, it was three weeks or a fortnight previous to Mr. Stock's affair.

Mr. Charles Harvey deposed.—I am a veterinary surgeon at Chelmsford. I was called in to examine a horse belonging to the prosecutor; it was a bay gelding; I examined it externally at first; I saw no marks of violence. I examined its head and jaws externally, but saw no marks; I afterwards examined the head internally; the brain was healthy, but there was a bruise occasioned, perhaps, by falling against the brick-work; there was blood and mucus in the trachea, and from that circumstance, and the state of the lungs, I believe death to have been occasioned by suffocation; the other viscera were in a perfect healthy state. I have examined many horses, but I never before witnessed such symptoms.

Cross-examined. I have been a veterinary surgeon ten or twelve years; I never saw a case like this before; I have heard of horses dying suddenly without any previous illness, but it has been when over-worked; the symptoms of a horse dying from apoplexy would be a congestion of the brain; I have never heard of horses dying of apoplexy; I think the symptoms in this horse were not those of apoplexy, there would not be blood in the trachea.

Re-examined. I have seen horses that have died of megrims and stoppage of the blood, but have not examined them.

Samuel Baker, veterinary surgeon, of Chelmsford, stated he examined the prosecutor's horse minutely: there was no disease in the head and brain, which were altogether healthy. Horses which have died suddenly would not present those appearances: there was great extravasation in the vessels of the windpipe, caused by rupture of the small vessels. I attribute the death of the horse to suffocation, and the ruptures to have been occasioned by violent efforts for respiration. I never saw the same appearance in any

other horse. Wisps of hay bound over the nostrils would suffocate a horse; if the cord was taken off before the horse was dead it would leave no mark. I should think one man could kill a horse in that way.

Cross-examined.—I know of no other cause of suffocation than stoppage of breath. I adhere to my opinion, that death was caused by the stoppage of the nostrils alone: the horse does not breathe through the mouth.

Cross-examined.—I can safely say it was not a natural death.

Police-constable May being re-called, said he found a piece of cord on the prisoner.

The case for the prosecution being now closed,

Mr. Ryland proceeded to address the Jury for the prisoner in a speech of great force and eloquence. The learned gentleman addressed himself at considerable length to the question of identity, which he contended had been very insufficiently made out; also to the possibility of the animal having died of some disease, and not by violence at all; the absence of all proof of malice—and several other points; and concluded his speech by thanking the Jury for the patience with which they had listened to him; and reminding them that, though they were the guardians of public justice on the one hand, they were no less the guardians of the liberty, the character, and the interests of every prisoner who came before them.

The Jury, after a short deliberation, returned a verdict of Guilty; and the Court passed upon the prisoner the sentence of 15 years' transportation.

The Court was much crowded during the trial.

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We have inserted the whole of the Report of this singular trial, believing the like atrocious act is both unprecedented and unrecorded in the annals of veterinary medicine.

It has been since stated, that "the discovery of this case unravelled the mystery connected with the deaths of no less than 23 horses previously in the same neighbourhood, and which, there no longer exists a doubt, were wilfully caused by the prisoner, who, we believe, in every instance purchased the carcasses, and upon some of them realized a profit of £1 or £2." The estimated value of these animals has been calculated to be not less than £379.

## A Centenary Ass.

The public prints stating that a donkey had died at Brighton having attained the great age of one hundred years, we were induced to write to the owner for the purpose of ascertaining the truth of the statement, and we have been favoured with the following answer:—

Sir, *Brighton, Feb.* 11, 1847.

In reply to your letter addressed to me respecting a donkey that lately died in my possession, I beg to say that I had her thirty years, and a countrywoman of mine thirty-five years, which together make sixty-five.

Old Gipsy Lee died on Lewes race-course ten years since, aged eighty-five years. He declared to me that the same "old crop donkey," which was the name she went by on account of her ears being cut close to her head, was the property of his father when he was born; that he had ridden many a mile on it when he was a boy; and there was not one of the gipsy tribe that came to Brighton but declared she was the older of the two, and according to this statement she was more than ninety-five years old. She was completely worn out with old age, and for a long time past was nursed by me as a child; but poor old Crop could weather the storm no longer, being unable at last to eat any thing whatever.

I am getting the hoofs cleaned and polished, and should one of them be of any service to you, I shall have much pleasure in forwarding it.

I remain, Sir,

Your obedient Servant,

*To Professor Spooner.* C. Gandey.

*** The foot has been received, and deposited in the College Museum.

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## Opinions of the Native East Indians on Diseases of Cattle.

The theory of the cattle attendants regarding disease has at least the recommendation of simplicity. They consider all diseases to arise either from a superabundance of heat in the animal's

system, or from a deficiency of temperature,—accordingly in the treatment of disease, the practice of the Mahouts is directed to one of two objects, either to restore heat or withdraw it. Depressed temperature, however, is considered by far the most fruitful source of disease, and accordingly what are considered to be the stimulating medicines are much more frequently exhibited than those of the opposite character. It is fortunate, however, that their theory and their practice do not always harmonize, otherwise their interference would, in many instances, be attended with much mischief. Thus they consider inflammation of the brain "Bhao ka murz," a disease to arise from cold, and accordingly give what they consider heating medicines, which indeed they are not.

In severe ailments, as all those of the inflammatory class, the native practice may be said to be always inert, and in some instances hurtful. They have no idea of the powerfully curative effects of bleeding or purgation in inflammatory disease; indeed, frequently in such cases they employ stimulants, so their advice in this class of diseases is to be for the most part discarded. But an opposite estimate is to be taken of their treatment of chronic disease, particularly of the digestive organs: here their Mussallas appear in many cases to be useful.

*Gilchrist on the Diseases of the Elephant.*

We subjoin a native receipt:—

MUSSALLAS FOR ZAARBADH IN THE ELEPHANT.

*(Effusion into the spinal sheath, with glandular swelling.)*

| | | |
|---|---|---|
| Take of—Urthal (*yellow orpiment*) | . | 2 gold pag. weight. |
| Maindook or frogs | . . | No. 4. |
| Datoorah-ka-russ (*thorn apple*) | | 16 ounces. |

Take out the entrails of the frogs, cut off their legs and forearms, and put one-fourth part of the urthal into the abdomen of each frog, and to be secured by rolling thread round; grind the frogs and urthal in the juice of the black strammonium, till the whole forms a mass of solid, though soft consistency, and make into pills, each of the size of a Bengal pea; one to be given every morning, continued for twelve days if necessary.

THE

# VETERINARY RECORD, &c.

VOL. III.] JULY 1847. [No. 12.

## PRESENTATION OF A TESTIMONIAL TO PROFESSOR J. B. SIMONDS BY THE STUDENTS OF THE ROYAL VETERINARY COLLEGE.

THE students of the Royal Veterinary College being desirous of testifying their obligations to Professor Simonds for the very valuable lectures delivered by him during the session, met on Wednesday, 31st March last, in the theatre of that Institution, for the purpose of presenting to him a "VOTE OF THANKS."

Mr. G. T. Brown was selected by the committee to express the sentiments of the body of the students, which he did in the following Address:—

"Gentlemen,—When the committee in whom you have reposed your confidence, and by whom your intentions have been so nobly carried out, conferred on me the high honour of presenting in your name a TESTIMONIAL of RESPECT and GRATITUDE to Professor Simonds, I at first instinctively shrunk from the task, conscious of my inability to do it common justice; but, reflecting that the same indulgence would be extended to me as had been to others similarly situated, I became emboldened, and I now appear before you to tell little more than a "plain, unvarnished tale;" and if I fail in my attempt to express your feelings in the way and manner I ought to do, and which the occasion so justly merits, I trust you will let the faults of the speaker be forgotten in his intentions; in other words, that you will accept the willingness on his part for the performance of the deed.

"In reverting to days long since buried in the lapse of time, we find the diseases of that noble animal, the horse, met with in-

vestigators among some of the ablest writers of antiquity, who, with all their thirst for fame and love of grandeur, thought it not beneath them to consider this important subject: but how few of them make even a cursory allusion to our other domesticated animals, namely, the ox, the sheep, the dog, &c., except during the existence of some fatal and ill-understood epidemic, which when devastating their flocks and herds it formed a theme for the poet's song, descriptive of the anger of the gods! As science marched onwards, this division received a certain amount of attention; but to know how little this was, I need only refer you to the list of veterinary writers in all ages, even up to our own times. There is, I think, but one exception,—the writings of a gentleman who has passed "to that bourne whence no traveller returns."

"Now, it must necessarily happen that when men's minds are first directed to a certain object, prone as we are to judge from first impressions, and to ground our opinions on them, that those opinions must, in some measure, be removed from the truth, or be in some degree erroneous: such is the fact with reference to the valuable writings to which I have alluded. Amidst the amount of useful information these contain, there occur many positions calculated to lead to error, and which have been proved to be so by the investigations of Professor Simonds. But, fortunately, he has not left us here. If he has pulled down a building rendered venerable by the iron hand of Time, he has replaced it by another, having its foundation in more careful researches, and resting on the broad basis of truth.

"And for what purpose, may we ask, did our Professor spend his time and his talents in the investigation of this important, this long-neglected subject? Was it that he wished to raise himself high in the opinion of his fellow-men, and to attain an elevated station in society? Certainly not, since such a position had long been attained by him. Was it that it promised large pecuniary recompence for his exertions? This question is answered at once by observing that such proceedings would necessarily involve a large outlay. No, gentlemen; a motive far higher than any of these animated our teacher;—it was, that others might profit by his labours, and that we might go forth to the world with correct ideas to guide us in our future professional career. And now

comes the question, and it is an important one—How have we received the instructions he has imparted to us? How have we appropriated the information he has communicated to us? Have we given it that attention which its importance so justly merits? I unhesitatingly answer, we have not. That we have acquired much, is indisputably true; but that we might have acquired more, will be equally evident on the slightest consideration on our parts. But is it, I would ask, any argument against the excellence of our Professor's knowledge, that we have failed to apply that which he has communicated to us?—any proof of his incapability of teaching, because we have not availed ourselves of the advantages presented? Most certainly not. But it unfortunately is the case, that there exists an immense difficulty in recollecting the symptoms and the nature of diseases we have never seen, and in this particular Professor Simonds labours under a great disadvantage. Our other teachers (whom I have the pleasure to see before me this evening), in their divisions, can second their valuable observations by ocular and demonstrative proof. Professor Morton, when directing our attention to the laws that govern matter, leading us into Nature's deepest secrets, stamps them on our minds by numerous and striking experiments. Professor Spooner can from this table, with that happy flow of language, that clearness and precision which it would be supererogatory, nay insulting, on my part to attempt to comment on, speak of the phenomena attendant on disease, and, when we leave the theatre, can give us practical proof of the correctness of his observations, by referring to patients in the Infirmary. But these advantages are denied to the gentleman we have assembled this evening to honour. Besides, we are located in a part of the country in which cattle, of every description, are comparatively few in number. But the very fact of the difficulty under which our teacher labours would be sufficient of itself to claim our gratitude to him for surmounting it: how much more so, then, when he boldly combats with all obstacles, and carries on his investigations, relying on his practical experience (which fortunately is of no mean character or of small amount) for our instruction? Who among us is not fully impressed with the sincere endeavours on his part, on all occasions, to render his instruction as clear as possible?

Yea, even at the risk of being charged with tautology, will he essay to make the most obscure positions so plain that the dullest intellect cannot fail readily to comprehend their meaning. Lastly, gentlemen, let us reflect that the path he follows is one in which few have gone before him. He is engaged in the culture of a field whose soil is exceedingly good, it is most true, but the surface is o'erspread with such a mass of high and rankling weeds, that it would seem to require an effort almost superhuman to remove the heap of useless matter. But let us not despair: our Professor will continue nobly to pursue the course he has chosen, overcoming difficulty after difficulty with the same indefatigable perseverance which has characterised his previous investigations; and when he pauses for a moment from his labours, when he looks back on the ground he has trodden, and sees flowers fair and numerous blooming where only weeds at one time grew, he will then have an incentive to still further exertions, arising from the pleasing reflection that he has done his duty. Moreover, I trust the community at large will soon have a proof, more tangible than words of mine, that his exertions have been attended with at least some little benefit; and that 'his labour has not been in vain.'

"Gentlemen, I feel I have but imperfectly described to you our teacher's talents, with a few of the many difficulties under which he labours, and some of the advantages we derive from his instructions; but were I to detain you for hours, and had I the eloquence of a Cicero or the tongue of a Demosthenes, I could only say what I have already said, except that I might clothe it in language more forcible, and present the same truths to you in another and a better form.

"And now, Sir, Professor Simonds, as the representative of the body of Veterinary Students—a situation which, to me, is highly flattering—in their name, I most respectfully beg your acceptance of this slight but honest testimonial of our respect and gratitude. In a pecuniary point of view, Sir, it may be nearly valueless: perhaps it is well that it is so, since, in the eyes of the world, we shall be excused;—you, Sir, in receiving, and we in presenting it, from motives of a mercenary character: but we feel assured, Sir, that when you peruse those few sincere and

unostentatious words with which we have endeavoured to express our feelings, you will value it higher, far higher, than the most elaborate piece of mechanism the art of man could form, or his ingenuity devise."

Mr. Brown then presented to Professor Simonds the following "VOTE OF THANKS," which was elegantly written on vellum, and richly enframed :—

"ROYAL VETERINARY COLLEGE,

London, March 31st, 1847.

"TO PROFESSOR J. B. SIMONDS, &c. &c.

"SIR,

"*The reward of merit is not more grateful to him that receives it, than to those who present it.*

"It is, therefore, with unfeigned sincerity that your Pupils express to you their THANKS for the information they have derived from your instructions during the present session. Your's was altogether a new division of science, and the labour of surmounting its difficulties has consequently been great; yet you have nobly accomplished your task, and by industry and careful research developed to the inquiring mind those truths on which the principles of science must ever be founded.

"Our fervent wishes are for your long continuance in the performance of the duties assigned to you; and, again gratefully acknowledging our obligations, we beg to subscribe ourselves, on behalf of the Pupils of the College,

"G. T. BROWN, *Chairman.*

| | |
|---|---|
| "W. GEO. REEVE | G. A. STATHAM |
| W. BIRD | T. J. MERRICK |
| C. N. CARTER | RICHARD SKELTON. |

"DANIEL R. FOY, *Treasurer.*

"B. CARTLEDGE, *Hon. Secretary.*"

PROFESSOR SIMONDS, in acknowledgment, observed that, in accepting this manifestation of the kindness of his pupils, he felt himself quite unable to express his feelings in the few remarks he should have to offer to them. He was as much unprepared for

this token of their esteem, as he feared it was unmerited by him; nevertheless, it awakened in his breast the noblest of all sentiments—gratitude, and he trusted it would prove an incentive to still further exertions; so that, in after-life, it might be shewn he had, at least in part, deserved the high opinion they had been pleased to entertain of his endeavours to advance the science of veterinary medicine.

As it respects the advantages derivable from a division of labour, there could not be two opinions held; they were, in fact, too obvious to need comment. His had been altogether a new appointment, and well did he know the feebleness of the instrument with which so mighty a work was to be achieved; yet he had brought to the task a mind devoted to this division of science. From early life a love of it had been instilled, and with growing years it had increased. It is most true that he was not actuated by mercenary motives, nor had he thrust himself into the field. Notoriety has often urged a man to the adoption of a particular course in life; but, the object once gained, ambition no longer acts as a stimulus, and he ceases to exert himself to maintain the position arrived at, or to benefit others by the continued employment of his talents.

Having asserted that he had not thrust himself into the situation he now filled, he might be permitted briefly to allude to the manner of his appointment, and his previous professional education. In 1829 he obtained the diploma of the College; after which he was engaged in active practice for the period of thirteen years, chiefly in the agricultural counties of Norfolk and Suffolk; thence he removed to the more immediate neighbourhood of London. Here he might have been contented to remain; but he trusted that a laudable desire had been awakened in his mind by intercourse with and communications from some whom the veterinary profession had long regarded as its brightest ornaments. Among these was the late Mr. Youatt, who had endeavoured to bring about an extended system of the education of the student of veterinary medicine, and, by his literary labours, had proved his zeal in the cause. As allusion had been made to Mr. Youatt in the admirable address they had just heard, he begged permission to read a letter received from him some years since:—

"My dear Simonds,

"I HAVE thought a great deal of our late conversation, and the result is, the deep impression that I should act most unwisely if I made my appearance once more as a lecturer. I feel most grateful for your kind hint. I shall be able, I trust, to be not quite unuseful in my study for a few years to come, although I am too often and too painfully reminded, by the recollection of other times, that even there I am not what I was; but to occupy again a lecturer's chair would be folly and madness. I can scarcely conceive of the circumstances which would justify it for a moment.

"And now let me say a word to you. We must not expect any considerable change at present at head-quarters; a year or two, *not more*, will elapse ere then. Steal a couple of hours every day from your business, and you will be perfectly prepared to occupy with honour to yourself the Pathological Chair of Cattle. I have often been looking around me to guess on whom the crown will fall, and on you I have always fixed. Shew us that you have nerve enough to stand a certain period of honest hard work. Keep yourself before the public in the Association and 'The Veterinarian,' and you are the man against the world. I am interrupted, or I should say more. "Ever faithfully your's,

"*February 4th*, 1840." "W. YOUATT.

In the year 1842 an advertisement appeared in the public prints, the result of a wise and laudable determination on the part of the Governors of this Institution to appoint a teacher on the anatomy and pathology of those animals hitherto not embraced in the curriculum of the veterinary student. It was then that he ventured to offer himself as a candidate; and it could not be otherwise than extremely gratifying to him to know that the testimonials he held in his hand, amounting to upwards of one hundred, were of such a character as to obtain for him the unanimous approval of the Governors of the College, and who at once placed him in the situation he had now the honour to hold. Among the testimonials were several from those who held high offices in the councils of the nation, others from members of the medical profession, and not a few from agriculturists who had been his employers; nor should he have had any difficulty in con-

siderably increasing the number, had it been necessary. He would, however, content himself by selecting one only on the present occasion, and that, too, was from him to whom reference had been before made.

"1, *Osnaburgh-place, New-road,*
*June 6th*, 1842.

"My dear Simonds,

"I AM exceedingly glad to find that the Governors of the Royal Veterinary College have at length determined to effect that which should have been accomplished long ago, namely, the establishment of a Professorship of Cattle Anatomy and Surgery; and I truly rejoice that you have determined to offer yourself as a candidate for this honourable situation.

"Most readily do I send you the enclosed testimonial, and I do hope and trust that I shall soon hear of your appointment, for I know not any one more worthy to fill it.

"I am, my dear Simonds,
"Faithfully your's,
"W. YOUATT."

"TESTIMONIAL.

"I hereby certify, that during the session 1828-29, Mr. James Beart Simonds was an attendant on a course of lectures which I was then delivering, on the dog principally, but incidentally on all other animals, except the horse. I was much pleased with the uniform and close attention which he paid to the subjects that were brought before him. During the last six years I have had opportunities to observe, on repeated occasions, his treatment of cattle; and I do not hesitate to recommend him as fully qualified to discharge the duties which may devolve upon him as a teacher, with regard to the diseases and treatment of cattle, sheep, dogs, and all other domesticated animals.

"*June 6th*, 1842." "W. YOUATT.

Great as was the gratification he then experienced, it had been exceeded by the proceedings of this evening; for if there be one event in the life of a teacher more cheering than another, it is when those he has taught appear as a body to acknowledge that they have been benefitted by his instructions. This becomes to him a

fresh stimulus to exertion, and the mind, forgetful of its anxious toils, is indeed solaced by the reflection that the "labour has not been in vain." It was true, difficulties had presented themselves, and it was to be regretted that more frequent opportunities did not offer for the student to become practically conversant with the diseases of cattle within the walls of this institution; but he sincerely hoped that, by the combined influence of the Royal Agricultural Society of England and the Governors of the College, the school would ultimately obtain this long wished for, this in every respect desirable, object. On his part, the most strenuous efforts would continue to be made, satisfied if he were only instrumental in laying a solid basis on which the superstructure might hereafter be raised by others. Knowledge is truly power; yet all knowledge is only progressive; hence the necessity of the foundation being firmly laid, or the building will be insecure.

Again expressing his thanks for the high honour conferred on him, Mr. Simonds said, the handsome manner in which Mr. Brown had been pleased to convey to him the feelings of the class, was extremely gratifying; the chastely enriched testimonial embodying these sentiments would be prized by him beyond all price, since by it he should always be reminded of their kindness and the appreciation of his humble efforts, and he accepted it with sincere gratitude.

Mr. Cartledge, the Honorary Secretary, then presented a separate Address to Professor Simonds, containing the sentiments of the above Testimonial, to which the names of nearly all the pupils were attached. After the eloquent addresses to which they had listened with so much pleasure, any remarks of his, he said, were altogether uncalled-for. If any honour had been conferred, they had participated in it. They had only given expression to their feelings, humbly it may be, yet in sincerity; and it afforded him the highest gratification to be enabled to bear testimony to the noble spirit which had actuated the class as a body, seventy-three pupils out of less than eighty in attendance having readily affixed their signatures to the Vote of Thanks.

## COMMUNICATIONS AND EXTRACTS.

Mr. Jackson presents his compliments to the Editors of The Veterinary Record, and would esteem it a favour if they will permit the enclosed to appear in their columns.

*April* 12*th*, 1847.

### A New Arrangement of the Bloodvessels.

By John Jackson, Esq., Surgeon.

| First, or Hepatic Vascular System. | Second, or Pulmonic Vascular System. | Third, or Systemic Vascular System. |
|---|---|---|
| 1. *Hepatic Afferent Vessel:* — The venous portion of the spleen, and the splenic and portal vein, and its ramifications in the liver. | 1. *Pulmonic Afferent Vessel:*—The right auricle and ventricle, and the pulmonary artery and its ramifications. | 1. *Systemic Afferent Vessel:*—The left auricle and ventricle, and the aorta and its ramifications. |
| 2. *Hepatic Capillaries:* —The minute bloodvessels intermediate between the terminal branches of the hepatic afferent vessel and the primary roots of the hepatic efferent vessels. | 2. *Pulmonic Capillaries:* — The minute bloodvessels intermediate between the terminal branches of the pulmonic afferent vessel, and the primary roots of the pulmonic efferent vessels. | 2. *Systemic Capillaries:* —The minute bloodvessels intermediate (1) between the terminal branches of the splenic artery and the primary roots of the hepatic afferent vessel, and (2) between the terminal branches of the hepatic artery and the terminal branches of the hepatic afferent vessel, and (3) between the terminal branches of the systemic afferent vessel generally and the primary roots of the systemic efferent vessels. |
| 3. *Hepatic Efferent Vessels:*—The hepatic veins. | 3. *Pulmonic Efferent Vessels:* — The pulmonary veins. | 3. *Systemic Efferent Vessels:*—(1) The gastro-intestinal veins (which terminate in the middle of the trunk of the hepatic afferent vessel), and (2) the superior and inferior venæ cavæ and the coronary vein. |

The Hepatic Afferent Vessel consists of a Spleen and Vein; the Pulmonic Afferent Vessel consists of a Heart and Artery; and the Systemic Afferent Vessel also consists of a Heart and Artery.

The pulmonic afferent vessel causes a *constant* and *rapid* motion of the blood through the pulmonic capillaries; and the systemic afferent vessel causes a *constant* and *rapid* motion of the blood through the systemic capillaries. *What kind of motion* of the blood does the hepatic afferent vessel cause through the hepatic capillaries? It must cause *some kind* of motion. It can never be true that of the three afferent vessels two cause motion of blood, and one not. Nor can it be true that an afferent vessel consisting of a *spleen* and *vein* can cause the same kind of motion of blood as an afferent vessel consisting of a *heart* and *artery*. If, then, the hepatic afferent vessel does propel the blood through the hepatic capillaries—and not, as is commonly supposed, the *systematic* (!) afferent vessel—and if it cannot cause either a *constant* or *rapid* motion, it must of necessity cause an *intermittent* and *slow* motion. The question therefore is, whether the hepatic afferent vessel, consisting of a spleen and vein, is as perfectly adapted for effecting an intermittent and slow motion of the blood through the hepatic capillaries as either the pulmonic or systemic afferent vessel, consisting of a heart and artery, is for effecting a constant and rapid motion of the blood through the pulmonic or systemic capillaries? If it is—which we affirm—the enigma is solved; and *heart* and *spleen*, and *artery* and *vein*, are ANATOMICAL ANTITHESES.

But it may be said, it is only the *venous* portion of the spleen which is the root or commencement of the hepatic afferent vessel. What is the *splenic artery* for? and the *splenic capillaries*? The splenic artery, by dividing and subdividing, and ultimately splitting up into hair-like tubes or vessels, *forms* the splenic capillaries; and these splenic capillaries simply furnish points of origin for the roots of the hepatic afferent vessel. These venous roots—which are the true spleen—could not originate from *nothing;* and, moreover, they could not originate from *any thing else* than capillaries: and how could there be any splenic capillaries if there were no splenic artery? *Venous* roots only were wanted; but *capillaries* were necessary for them to originate from; and an *artery* was necessary out of which to make those capillaries. If there were no splenic artery, there could be no splenic capillaries; no splenic capillaries, no splenic veins, or spleen—no roots or commencement of the hepatic afferent vessel; no roots or commencement,

no trunk or branches; no hepatic afferent vessel, no hepatic vascular system; no hepatic vascular system, no pulmonic vascular system; no pulmonic, no systemic; no vascular systems, no motion of blood; no motion of blood, no life! See, then, the utility and importance of the splenic artery! From its capillary terminations springs the hepatic afferent vessel, the first link of the great vascular chain. And why is it so large an artery? Because a large number of venous roots could not originate from a small number of capillaries, nor a large number of capillaries proceed from a small-sized artery. Again; why is it so tortuous? why is not the splenic artery straight, like the renal arteries? Because it is not the *blood* that is wanted, but the *bloodvessel;* and the tortuosity of the artery has the effect of minimising the quantity of blood that passes through it.

Intimately connected with the physiology of the hepatic afferent vessel is the question, What becomes of the food eaten, and the fluids drank, after they have been received by the alimentary tube? In other words, Through what vessels, and into what vessel, do the fluids pass, and likewise the solids after they have undergone fluidification or digestion? Are they both imbibed by the gastro-intestinal capillaries, and then transmitted by the gastro-intestinal veins into the middle of the first or hepatic afferent vessel? Or are they both imbibed by the lacteals, and transmitted by the thoracic duct into the left subclavian vein? Or do the fluids drank take the former course, and the fluidified solids the latter?

If, before birth, the vessel which conveys the *matériel* of nourishment and growth to the fœtus—the umbilical vein—instead of going to the liver and terminating in the hepatic capillaries, like the *permanent* hepatic afferent vessel, had gone behind the liver, and, like the thoracic duct, running along the spine had ultimately terminated in the left subclavian vein; and if, in addition to this, the thoracic duct of the adult, instead of being so much less had been very considerably larger than the umbilical vein of the fœtus, I would not then presume to call in question the truth of the prevailing doctrine, that after birth the lacteals and thoracic duct convey the *matériel* of nourishment and growth from the alimentary tube into the left subclavian vein. But as such is not the anatomical disposition of the umbilical vein and

thoracic duct, I venture to take a totally different view. I maintain that the fluids drank and the solids eaten* are both imbibed, the former rapidly, and the latter slowly—and not until after they have undergone fluidification—by the gastro-intestinal capillaries; that they then pass through the gastro-intestinal veins into the middle of the trunk of the hepatic afferent vessel; and that the hepatic afferent vessel being contractile as well as distensible throughout (*i. e.*, in its roots, trunk, and branches), propels them with an intermittent and slow motion through the hepatic capillaries. I hold, therefore, that the materials of which the blood is formed, or as I may now say the blood itself, passes first through the hepatic system; secondly, through the pulmonic system; and, thirdly, through the systemic system. From the systemic system a small portion finds its way back again into the hepatic afferent vessel, *i. e.*, into its extreme roots by the splenic artery; into its extreme branches by the hepatic artery; and into the middle of its trunk by the gastro-intestinal veins; but by far the larger portion passes by the superior and inferior venæ cavæ again into the pulmonic afferent vessel, and so through the pulmonic and systemic systems alternately, and for an indefinite number of times, that is, until its component particles are either deposited in some tissue or eliminated in some secretion.

*Long Clawson, Melton Mowbray,*
*April* 12, 1847.

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## Case of Paralysis in a Cow, the consequence of Thoracic Disease.

*By Mr.* E. Bean, *M.R.C.V.S.*

Dear Sirs, *Rochester, April 8th,* 1847.

I have sent you a portion of the vertebra of a cow which I was called to attend some weeks since. The symptoms then present were,—appetite good; she gave the usual quantity of milk, and urinated freely; but the pulse was a little accelerated,

* This remark, of course, applies to *medicinal* as well as *alimentary* fluids and solids.

accompanied with shortness of breath, and a cough. I did not bleed, the animal being rather low in condition, but relied on aperient medicine. The symptoms, however, continued with little variation from the early part of March to the 22d, when the man in attendance found her staggering, as he described it, like a drunken man. She fell, and could not get up again; yet her appetite still continued good, even when down. She was, however, perfectly paralysed. I at once advised her owner to have her destroyed, which was done. On examination *post-mortem* I could find no other cause for the paralysis than the spinal marrow being in some degree smaller than natural; and when I sawed through the spine, an escape of colourless fluid, to the amount of half a tea-cup full, took place, which had become effused into the spinal sheath. The first stomach was full of food; the lungs and trachea presented only slight traces of disease; the liver, spleen, and both kidneys were healthy; the brain seemed a little congested; but the animal being slaughtered by a butcher with the poleaxe, the normal appearance of this organ was in a great measure destroyed.

I am, dear Sirs,
Your most obedient Servant.

[Doubtless the diminution in size of the spinal marrow of the lumbar region, arising from effusion within the theca vertebralis, was the immediate cause of the loss of motive power in this animal; and this appears to have been the sequela of some thoracic affection.—*Editors.*]

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## Case of Disease of the Digestive Organs of a Cow, complicated with Pneumonia.

*By the same.*

Dear Sirs, *Rochester, April 13th*, 1847.

On the 22d of February last I was called to see a cow, labouring under disease of the lungs. The pulse was quick, the respiration hurried; she coughed much; staggered in her gait

when walked; but, pressure over the loins producing no pain, I did not think the kidneys were affected. She was bled, and purgatives were given, which acted well. Setons were inserted in the sides and dewlap, which were dressed with black hellebore. These symptoms almost disappeared, and then red or black-water shewed itself. When the bowels were relaxed, her urine was sure to be dark or porter-coloured; when constipated, it appeared of the natural colour. Her appetite increased with mild tonics; but the irritation of the heart and arteries became so considerable, that neither opium, belladonna, nor digitalis would allay it. The bowels, too, became obstinately costive the whole of last week, although she had sulphate magnesia with linseed oil every day, and clysters three or four times a day. The faeces that followed the clysters during the last two or three days were covered with mucus. She died on Sunday morning last, and, being a great distance from me, I did not know she was dead till some time after. On examination, I found the stomach was much inflamed, and part of the small intestines also. The lungs, liver, and kidneys, with part of the brain, are sent for your examination. If there be any thing to be gathered from this case, and it is worthy of a place in your "Transactions," I shall feel obliged by your insertion of it. I am, Sirs,

Your obedient Servant.

[The state of decomposition in which the morbid parts arrived precluded our making a minute examination of them, and, consequently, of arriving at any thing definite respecting the immediate cause of this attack. The condition of the liver would lead to the inference that the alteration in colour of the urine arose from an admixture of bile of an impure character with it, and which seems to have produced, from time to time, excited and altered action of both the intestines and kidneys.—*Editors.*]

## Case of Melanotic Tumours on the Lungs, &c., of a Horse.

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

*(Illustrated with a Lithographic Drawing.)*

Dear Sirs, *Amersham, Dec. 30th*, 1846.

I have forwarded to you an extraordinary specimen of melanotic tumour, or rather tumours, for there are many, attached to the anterior part of the lungs and pericardium of a horse, which I think cannot fail to afford some degree of interest to the readers of The Veterinary Record. I will at once proceed to give you a brief history of the case.

The subject from which the morbid growths or deposits were taken was an aged grey horse, the property of Mr. Holmes, a farmer, of this neighbourhood. I was requested to attend him some short time since, on account of anasarcous swellings of the fore legs, and which occupied the whole of the pectoral region, extending considerably up the neck, and gravitating along the abdomen. On examining him, I was struck with the extreme distention of the veins of the head and neck. The jugulars were distended almost to bursting; but the venous system of the posterior parts of the body presented no unnatural distention. I therefore inferred that the anterior vena cava could not empty itself into the auricle, and this impediment depended upon some structural derangement at or near the base of the heart.

I told the owner it was a very clear case of some disease of the heart, and that of a chronic nature, and according to my belief, there was no hope of cure. But as the horse was a favourite animal, and in good condition, he would not consent to have him destroyed. I was therefore compelled to place him under treatment.

He was subjected to a course of iodine with mercury from the 16th of November to the 4th of December, when, finding the disease to increase, I discontinued all medicaments. The owner, nevertheless, allowed him to live till yesterday, when he was destroyed in my presence.

I may observe, that the animal's general health did not at first seem to suffer; his pulse was natural, and appetite good; the respiration was not disturbed at the onset, but ultimately it became so, and he also breathed with a little noise in the nasal cavities, which I attributed to the state of the lining membrane, this being, in common with every other part of the head and neck, congested.

*Post-mortem examination.*—On exposing the abdominal viscera, nothing very particular presented itself to my notice, except that the liver was very dark in colour and tuberculated, and the membrane covering the intestines was unusually tinged with bile. The diaphragm could be seen projecting considerably, as if bolstered by something firm on the thoracic side and all around its margin, and which turned out to be the case. I now removed the sternum by dividing the ribs on each side sufficiently low down (the horse lying on his back) so as to expose to view the whole of the thoracic viscera; when, to my astonishment, appeared the mass of disease I have sent you, the whole of which was black as jet, staining my fingers like charcoal. The whole of the inner parietes of the thorax were also studded with jet black tumours, of precisely the same character as the specimen I have sent you, and especially the margin of the diaphragm. The chest contained a quantity of serum, but the pericardium none. You will observe that the anterior part of the tumour corresponds exactly with the cavity which contained it, and the smooth appearance of that part of it shews the close impactment against the ribs, but it was not adherent to them. The pressure of this mass, too, against the vena cava, will explain the symptoms I have before described. I have avoided dissecting any part of it, in order to send you the entire specimen.

I must tell you, that several tumours of the same character were discovered in the external parts of the body, as under the scapulæ, &c.

Believe me to remain, dear Sirs,

Your's sincerely.

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## Cases of Disease of the Heart in Cows.

*By the same.*

Dear Sirs, *Amersham, Dec. 31st*, 1846.

My letter of yesterday was rather a hurried one, for business prevented my beginning in proper time for the post. The specimen of melanosis is now on the road for London; and I hope it will reach you in good condition, and afford you sufficient interest, so as to repay you for the trouble of sending to the carrier's for it.

Melanosis is said to be of more frequent occurrence in the horse than in man; but, as this is the first case of the kind I have met with, notwithstanding I have been actively engaged in practice for nearly twenty years, and I never neglect morbid dissections, at least as far as practicable, and especially in all cases likely to lead to any beneficial result, I infer it is not of frequent occurrence even in that animal. Dr. Good's account of melanosis, I think, might be perused by the student of veterinary medicine with much profit*. I have no doubt but that many more deposits of the same nature might have been found in the intermuscular cellular membrane, if searched for: as it was, many were accidentally met with.

I have, within this last year, met with two cases of disease of the heart in the cow. In the one case, anasarca of the fore legs and breast was a prominent symptom, with cough, accelerated breathing, and extreme distention of the venous system of the head and neck. It was a clear case of heart affection; and, being in good condition, she was sold, by my directions, to the butcher. In this instance the heart was enveloped in an enormous indurated tumour, in which the pericardium was implicated, and which was two inches thick. Both the pleural and pericardiac cavities contained a quantity of serum, and the anterior lobe of the lungs was quite consolidated.

In the other case, anasarca of the fore legs and chest, with extreme distention of the venous system of the anterior part of the body, were the only symptoms present. Her general health seemed unaffected; the breathing was natural; no cough, no fever, and

* John Mason Good's Study of Medicine. Edited by Samuel Cooper. "Melanosis," vol. iii, p. 330, third edition.

appetite good. She was, too, in fair condition, and a good milker. I told the owner it was a case of heart affection, and, probably, of such a nature as to defy remedial measures. The owner, however, compelled me to do what I could. I therefore gave her iodine for a week or two, and kept her in to prevent her hanging down her head while grazing, and the anasarca completely disappeared; but the distended jugulars continued the same. The proprietor kept her on, as she was an excellent business cow, and in a few weeks the anasarcous swellings appeared again as extensive as ever. Iodine was again given, and again the anasarca disappeared; but the venous distention remained still the same. She, however, kept up her condition, and was afterwards sold to a contractor to be slaughtered. The proprietor, at my solicitation, ascertained that a morbid growth of considerable magnitude had taken place at the base of the heart.

I remain, dear Sirs,

Your's very faithfully.

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## Malignant Sore Throat prevailing as an Enzootic.

*By Mr.* W. Wright. *M.R.C.V.S.*

*Burnham Overy, March* 31, 1847.

Dear Sir,

I am sorry to say that the epizootic, pleuro-pneumonia, is raging among cattle as bad as ever in many parts of this county; but the object I have more especially in view now is, to inform you of the existence of a malady, the nature of which I confess I do not understand, that has broken out in my more immediate neighbourhood, and which has proved singularly fatal. I have been in practice thirty-five years, and certainly never saw so many deaths among colts as have occurred within the last few days. Pigs, too, have been destroyed by the same disease—at least I suppose it is—in great numbers. In them it presents the character of quinsy, and I have just left a yard where several have died of it.

But to the subject mattter of my letter. Mr. J. Dodman, of Thornham, requested my immediate attendance the other morning to his colts and fillies. On my arrival, I was informed by him that he had one four-years-old colt, two three-years-old colts, two two-years-old fillies, and one yearling, making in all six. They had been kept in the same yard all the winter, on plenty of good hay, and were well watered every day. The first I examined was a two-years-old filly. Mr. D. and myself were about five yards from her, when he put the question, "What is her disease?" I had just time to say that she was, like the pigs, labouring under quinsy, when she fell, and died suffocated. Now, this mare was dead in five hours after she was first seen to be unwell, she, in common with all the others, being healthy when fed the night before. The swelling extended from the superior part of her throat down to the sternum, and quickly ran on to a state of gangrene. As we proceeded to examine the others, we found that there were more in the same state, and some of them were also dead in a few hours. I was pained to see four fine young animals thus lay dead. Although obliged to do something to them previous to death, I at the first told him I could do no good: they were too far gone. Their pulse was frequent and small—the bowels relaxed—the feces covered with lymph, and very offensive, and nothing could be given them on account of the soreness of their throats. I scarified the covering integument, put rowels in front of their chests, and had only just time to dress the rowels and get home, before they were dead.

This morning I was sent for to two more that were attacked. One the owner has been offered £85 for, but he prices him at £100. I have bled these to the amount of four quarts, rowelled and blistered the chest, and given him antim. tart. et potass. nitras. The other, his pulse being so weak, I merely placed two rowels in the chest, and blistered with the liniment of cantharides, giving no medicine.

Here are four fine young horses dead from a malignant affection, and the others will follow, if the disease cannot be put a stop to. In the next place, what name am I to give it? Am I to call it a malignant epizootic, or is it the quinsy? This, however, is a matter of comparatively little moment, since I feel assured it

will prove neither very pleasant nor very profitable to either young or old practitioners. You will oblige by your opinion by return of post.

*To Professor Spooner.* I am, your's respectfully.

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Dear Sir, *Tuesday, April 6th*, 1847.

I AM this moment returned from Mr. Dodman's. I have attended there every day since I wrote to you.

With respect to the post-mortem examinations, I am always very careful about them. I think I told you, in my last, that the malady resembled a disease which has destroyed so many pigs, and also dogs, in our neighbourhood during the past two years. Mr. Long, of Stanhoe, requested me to open some pigs and greyhounds that had died in a few hours with the quinsy, as it is called, last year—he being suspicious, like yourself, that they were poisoned; but the same disease shewing itself in many of the yards, has dissipated all doubt. According to his request, I examined them, and found both the dogs' and pigs' throats in a state approaching to mortification; and in less than twenty-four hours I was obliged to send for our surgeon to attend myself, with the worst sore throat I ever had in my life. Being subject to cynanche, I said I never would open another animal that had died so affected. However, I did open the first filly that died, and am satisfied she was not poisoned. A few bots were attached to the villous coat of the stomach, instead of the cuticular, and the portion was slightly inflamed to which they had attached themselves. All other parts appeared healthy. I have poisoned horses with almost every poison you can mention; but I saw no corresponding symptoms in this filly. I am satisfied, if they were poisoned, that it was taken from the air. The four that died were almost in a state of mortification when I first saw them. The front of their throats resembled a dead dog that had lain in water until putrefaction had caused it to float on the surface.

Now for those that were alive when I left them, about twelve o'clock. I told you I had two more taken ill. The one of greater value I had bled to four quarts. In the front of the chest of the other I put two rowels, and blistered freely with the

blistering liniment, but gave no medicine. When I saw him again, I ordered him to have nitre in his water. When I first examined this colt, the pulse was so weak that I dared not bleed him. His respiration was accelerated, and his throat beginning to swell, which was very hot to the hand. The rowels and blisters have done wonders for him: they created so much swelling, that he could hardly walk, but his throat was immediately relieved. His legs also began to swell. The same result took place with the other; and, I am happy to say, they now feed well, and I consider them out of danger.

I shall request Mr. Dodman to send you a few lines. He, like myself, finds that, if taken in the first stage, rowelling, and blistering over the rowels with the liniment of cantharides, and the exhibition of fever medicine, will stay the progress of the disease. The moment the rowels begin to act, relief is afforded. I have been strongly recommended to bleed; but I think the horse we bled will be the longest in getting well.

I remain, dear Sir,

*To Professor Spooner.* Your's respectfully.

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LETTERS FROM MR. DODMAN.

Sir, *Thornham Long, April 8th,* 1847.

I AM requested by Mr. Wright, of Burnham Overy, veterinary surgeon, to give you some account of the colts and fillies attacked, in my yard, with some apparently unknown disease. There were altogether two fillies, two years old; two colts, three years old; one yearling, and one four years old: an aged brood mare, and a pony, six years old, escaped. The disease, in its first stage, commences with drowsiness, and a swelling extending from the roots of the ears down to the chest, and which suffocated four out of the six in a few hours. The other two colts were attacked with a swelling in the middle of the neck, extending upwards, which rowels and blisters removed as soon as they began to act. The horses above mentioned were taken from the yard and put into a large house adjoining the riding-stable,

we having no other place. Two or three days after, a horse five years old, in the riding-stable, value £100, was attacked with an extensive swelling in the middle of the neck. He was bled, rowelled, blistered, and had fever-balls given to him. As soon, however, as the rowels excited some swelling, his throat became better; but his legs then became much swollen. Two mares in the same stable were slightly attacked. To these nothing has been done, except nitre ordered to be given in their water. I hope these five will recover. My opinion is, that, if they are not attended to immediately they are attacked, the inflammation will terminate in mortification in a few hours. All that I have, and that have been attacked with it, were so to all outward appearances; and I have no doubt such was the case.

I am, Sir,

*To Professor Spooner.* Your's, very respectfully.

P.S.—Mr. Wright was here this day, at twelve o'clock. He intended to have sent you the stomach and neck of one of those that died, but found it in too decomposed a state. He has pronounced the other five better, and doing well.

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Sir, *Thornham Long, April 12th*, 1847.

In reply to your's of the 10th inst., I beg to state that the horses in question have all been allowed as much long clover hay as they could eat, and it is of good quality; the water they could go to as they pleased, the pit being situated in the yard. As it regards the weather, it has been variable, the wind shifting from south-west to north-east. The night on which these horses were attacked the wind was at north-west, with a thick atmosphere. The weather, generally speaking, this spring, has not been so cold as the average of years. None of my neighbours' horses have been attacked with the same disease, although inflammatory sore throats are very prevalent all round here, and, in many instances, it has terminated fatally. A friend of mine has lost three valuable cart-horses over six years old. Mr. Wright also informs me that strangles, instead of breaking out in the usual way, shews itself in abscesses situated over different parts of the body, from head to tail, and some burst internally, which gene-

rally proves fatal. In all my horses that are getting better the disease appears to have settled down in the legs, which are swollen very much. I have no more attacked at present.

I am, Sir,

*To Professor Spooner.* Your's, very respectfully.

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ANOTHER LETTER FROM MR. WRIGHT.

*Burnham Overy, April 18th*, 1847.

Dear Sir,

IT gives me great pleasure to inform you that Mr. Dodman's horses are now well. Rowelling and blistering, I think, saved their lives. For rowels I never use any thing but the root of the common dock. I take a piece about four inches in length, and apply over it the oil of cantharides. I have no trouble either in turning or dressing after the first twenty-four hours. I am, however, sorry to say Mr. Dodman's neat cattle go on badly. He found a fine heifer nearly dead in the yard, and he at once cut her throat. Last Friday morning the yard-man called him up to a fat bullock, about half-past five o'clock. He got up immediately, took his fleams to bleed him, as I had ordered they should be bled as soon as there were any symptoms of disease: but before he could get to him he was down, and nearly dead. I saw neither of these animals; but Mr. D. informed me that the bowels were inflamed, and the spleen very much enlarged; I suppose gorged with blood.

This morning I was again sent for to attend immediately on another heifer. When I came to examine her, I found her throat to be very much swollen, extending upwards, the same as the colts and fillies. She was breathing with difficulty; her pulse frequent, and strong. I bled her copiously, gave her a dose of salts and sulphur, and inserted two dock-roots into her dewlap, blistered over them, and left directions for her diet to be attended to.

Mr. Dodman's house, barns, stables, &c., are all built in a dale, and the fields around are higher than the top of his dwelling-house. He has only one pit for water, at the lowest part of the

premises; not supplied by any spring, but with the water that falls from his house, barns, stables, &c. The drains, also, of four yards in which stock are kept run into it, and in a dry summer this filthy pit becomes dry: he is then obliged to send to his neighbours for water for his horses and cows, having no other means to water them. I have attended this farm for twenty-nine years, and have always found it very unhealthy. I have pointed out the pit to him, saying, such water was enough to kill half the stock in the county. His reply is, "What am I to do?—they must drink that or none." I cannot but think it has an injurious effect on healthy cattle. The disease now affecting the bullocks, cows, heifers, &c., is inflammatory fever: that under which the horses laboured I shall consider a malignant epizootic, until I am authorised by you to designate it otherwise.

I remain, your's respectfully.

[The perusal of the first communication from Mr. Wright respecting this extraordinary attack impressed our minds with a suspicion that some poisonous agent had been exhibited, or accidentally partaken of. Being assured by him to the contrary, the nature of the diet, and locality, formed the subject of our next inquiry. To this, if a perfectly satisfactory answer was not obtained, it was, nevertheless, such a one as convinced us that these could not have been the *only* causes in operation. We are, therefore, inclined to view the disease as enzootic in its nature. The rapidity with which it runs its course is singular, as well as the tendency the parts involved have to undergo decomposition. We shall feel obliged, if others in the profession have witnessed the like or a similar affection prevailing in their neighbourhoods, by being informed of it.—*Editors.*]

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## Case of Complicated Tubercular Disease in a Heifer.

*By Mr.* C. Dickens, *M.R.C.V.S.*

*Kimbolton, April 19th,* 1847.

My dear Sir,

Since I had the pleasure of seeing you at the commencement of the past week, the sequel of rather a long-standing case has displayed itself; and, thinking it might probably be interesting to

you, and not uninstructive to your class, I have forwarded per rail to Euston-square Station the morbid parts. The annexed is its history; and should you and your co-editors think it worthy a corner of THE RECORD, you are welcome to it.

*To Professor Simonds.* Your's, very sincerely.

A fine heifer, the property of Mr. A., a small grazier, was placed under my care about six weeks since, with extensive swelling of the pectoral muscles, accompanied with loss of appetite, rigors, dulness, and low fever. The bowels were freely responding to a strong dose of magnes. sulphas, previously administered by the owner. The pulse was feeble, tremulous, and indistinct, both to the finger and by auscultation. The visible mucous membranes were pallid, although the animal as yet was in rather a fleshy state. The owner informed me that one day she would become much relaxed, and on another be as much constipated.

*Diagnosis.*—That there is a disease of the heart, probably pericarditis, and also mesenteric disease; the state of the bowels I have described being an almost unerring symptom of that affection in cattle.

*Treatment.*—On reflection I concluded that nothing would be beneficial to my patient but a strict perseverance in the use of tonic agents. After a few days the owner urged me to bleed her, but, upon my refusing to do so, he had recourse to it himself in my absence. The chest had been fomented frequently, and some strong stimulating liniment rubbed over it twice a-day; a large seton was also introduced, which suppurated copiously. After being in attendance for a fortnight, and with, as I hoped, slight symptoms of amendment, a neighbouring practitioner, unknown to me, was called in, who, as the owner informs me, stated that "there was but little the matter with the animal, and that two or three drenches would set all to rights; that it was the stomachs only that were out of order." At this I was somewhat chagrined, but, feeling confident of the correctness of my opinion, I patiently awaited the result of the case.

A week subsequently I was again requested to look at the animal; but I refused, stating that, as he, the owner, had placed her in another's hands, he had better continue in attendance on the case. After the lapse of several more days, the owner again

urgently begged me to look at the animal; to which I now acceded, and found her in such an emaciated state as to leave all hope of recovery out of the question. She was being supported entirely by linseed gruel, and the owner determined, if she did not die in a few days, to destroy her, which he did yesterday; and I think it will be proved that I was as near the mark, and a little more than my contemporary, in the diagnosis.

I regret that the intestines and the other parts were removed prior to my arrival, except the heart and its appendages, which I have sent you. The stomachs, liver, &c., were all normal in appearance, but the whole length of the spine, on each side, was studded with tumours similar to those forwarded. At about three inches distance, and around the pelvis, were at least fifty, weighing from two to four ounces each; in fact, I think I have not sent half the weight. Two very large ones were situated under each axilla. I have marked the parotid glands as I dissected them out, also the submaxillary and lingual. There were several quarts of fluid in the chest, and at least a pint within the pericardial sac.

I think this case shews how necessary it is for us, when possible, to have recourse to a post-mortem examination; at any rate, it serves to prove to our clients that we are sometimes right, and occasionally it may render us cautious in giving a decided opinion when any doubts exist.

I have now to ask two or three questions upon this case:—Would it have been at all beneficial had tonics been pushed to a greater extent, and the bleeding not resorted to? Would the parotids and the tumours in the chest have then suppurated? Does it not bear some analogy to those cases of suppressed strangles we often see in the horse?

About a fortnight before the animal was taken ill, they endeavoured to take her up out of a large field into a yard; but after driving her about for some hours, which produced great perspiration, she was then allowed to remain out all night, which was the most inclement one we have had this winter; and in the race, in jumping some rails, she fell upon her chest most violently, and this was supposed to be the cause of the swelling on the pectoral muscles, &c., in the first instance.

[We are of opinion that this case is not strictly analogous to suppressed strangles in the horse, but that it is one of tuberculous deposit, arising from constitutional causes, many of the true glands of the body being affected as well as the lymphatics. No indication, however, of this appears to have existed prior to the undue exertion and exposure to which the animal was subjected, which acted as exciting causes for the rapid development of the thoracic affection. Under such a complicated form of disease depletive measures would certainly have proved prejudicial rather than otherwise.

The tumours forwarded varied considerably in size, but all of them presented a similar appearance, both externally and internally: their section shewed a firm consistence, white in colour, with no appearance whatever of any softening leading to the formation of pus. The *thymus gland*, however, was very vascular, and probably would have taken on the suppurative process: this state might have been induced by the injuries she received when jumping over the rails.

A somewhat similar case will be found recorded by Mr. Varnell in the last number of THE RECORD, page 143.—*Editors.*]

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ON THE EFFECTS OF ETHER-VAPOUR ON THE HORSE.—CASES OF CALCULI IN THE ILIUM AND COLON, AND OF CARDITIS IN THE HORSE.

*By Mr.* W. STANLEY, *M.R.C.V.S.*

*Leamington, April 28th*, 1847.

My dear Sir,

I MUST apologise for not writing to thank you for your kind and prompt answer to my letter some time since relative to the effects of ether-vapour. Your account was so clear and satisfactory, that I at once ordered an apparatus from Mr. Arnold. I have tried it on one horse, and it has also been tried on a mare that was restive to shoe, but she was so refractory, that she would not allow the apparatus to be kept on sufficiently long for the vapour to produce its effect. I am, however, fearful it will not be applicable *at present* to veterinary practice. There are many objections to its employment: one is, that many of our patients will not suffer

any thing to be affixed over their nostrils; and in the case of the horse referred to, in which the ether took effect in two minutes, he reeled backwards, in spite of all our efforts to prevent him, for several yards before he fell. He was quite unconscious of his actions, and it was a wonder his brains were not dashed out against a wall. After he fell, I performed the operation of firing his hocks, and unnerving him above the hock afterwards. The firing was performed without any pain or struggle, but on the division of the nerve he experienced a slight shock. He got up after the operation, and in a few minutes appeared as well as usual. Were I to etherize another, I should be inclined to do it in a field, where no trees are, or any obstacle in the way of the animal's reeling and falling.

Having lately had a singular case of carditis, and thinking it would not prove uninteresting to the profession, I have ventured to forward it to you for insertion in THE RECORD; it being the only case of the kind I have ever seen of acute inflammation of the substance of the heart and its cardiac membrane, without any disease or inflammation of the pericardium.

A short time since I met with another instance of calculi in a miller's horse, which died from having one of the concretions wedged in the ilium, causing gangrene and death. There were also three others in the colon; two of them were about the size of the one I sent you a long time ago, and which was found in the duodenum, close to the pyloric orifice. That which was the cause of death in this instance was of large size, and, when divided, had in its centre, for its nucleus, a pin. The composition of them is the same as that you are in possession of, the ammoniomagnesian phosphate, only their surfaces are somewhat rougher.

The case of carditis occurred in a bay gelding seven years old, the property of a sporting gentleman well known on the turf.

About a month since the animal was found, on the arrival of the groom at the stable one Sunday morning, in great pain, sweating profusely, pawing, rolling, and looking back towards his flanks. I was immediately called in to attend him, and observed the above symptoms to be still present, and, on examining his pulse, found it very quick and strong, both at the jaw and heart. I immediately bled him, and during the operation we had great difficulty in keeping the horse on his legs, he being anxious to lie down.

Fearing, from the urgency of the symptoms, that he had been ill the greater part of the night, and that enteritis would take place, I bled him very copiously, keeping my finger on the pulse; and I abstracted blood to the amount of twelve quarts, without making the slightest impression on the heart's action, or there being any sign of syncope. This appeared to me rather an unusual circumstance, and caused me to examine my patient more minutely. I found, in a few moments, that his pulse was of the same character as at first, and could be distinctly felt on placing my hand on any part of his body, when a beating similar to that caused by spasmodic action of the diaphragm was perceptible; but in this case that organ was not at all affected. His breathing was also unaffected, being quite regular, and very little different from what it is in health. From these symptoms I prognosticated an unfavourable termination, and at once made known my opinion to the owner. I thought that there was some enteric disease existent which was the cause of the pain, &c., and that the heart was secondarily attacked; but in that opinion, as the sequel will shew, I was wrong. After bleeding, I gave him antispasmodic and laxative agents combined, and threw up clysters, &c., but no feces were voided, and he continued in pain the whole of the day, Sunday, sometimes pawing, occasionally sitting on his haunches, then lying down and rolling. Towards five o'clock the pulse became very quick and stronger, and the action of the heart audible, shaking every fibre of the horse's frame, and on the right side it was as loud as on the left. The action of the artery at the jaw was synchronous with the heart, and it was the same with every artery that could be felt. The beating of the heart very much resembled loud knocking at a hall-door. I determined on bleeding again, and took twelve quarts more of blood; but, as at first, this made not the slightest impression on the pulse; the animal, however, became more free from abdominal pain. I then commenced giving sedatives, and continued the clysters; still his bowels did not respond. At night, the heart's action again became so very loud and quick, and its beat being 130 in a minute, I thought the animal could not survive long. At eleven o'clock, however, I bled him again, and now took six quarts, and for the first time his pulse became softer. The case was now considered so hopeless, that his owner sold him,

just before the last bleeding, for £5, thinking that he would be dead before the morning. On my visiting him early in the morning, I found my patient apparently better. His pulse was 90, and softer at the jaw, but still the beating of the heart could be felt at any part of the frame. He was altogether free from abdominal pain, had eaten some mash, and drank his gruel; nevertheless, the bowels still remained inactive. I directed the clysters and laxatives to be continued, and the animal remained quite free from pain all the day, and his pulse went down to 80 in the evening. During the three following days there was no abdominal pain, yet he kept obstinately standing in one corner of his box, and never moved; looked anxious and wild; his pulse not varying in quickness, and being still strong but regular, nor was the beating of the heart at all abated. His bowels were acted upon on the Tuesday evening, and he purged a little on the Wednesday, but not much. On Friday he commenced pawing and rolling again, and continued to do so without intermission for thirty-six hours. I gave opiates, combined with ether, and, his pulse becoming again quickened, I once more withdrew blood, which he bore well; still it did not appear to have any marked effect on the general symptoms. On Saturday evening indications of laminitis in all his feet were manifested. The animal was free from abdominal pain, but continued in a standing and restless posture, until he fell and died on Sunday, about twelve o'clock.

Early on the following morning I made a post-mortem examination, and, thinking that there must be some of the abdominal viscera involved, I carefully examined them: but the intestines throughout their whole extent were perfectly free from disease; no spasm, no stricture, nor any inflammation whatever; the liver sound, and also free from all signs of inflammation, as was its peritoneal covering; the diaphragm was likewise healthy. On examination of his chest, the lungs were found free from disease, except one lobe being very slightly congested, which was on the side the horse fell when he died. The pericardium was carefully removed, and that also was healthy, and no effusion had taken place into it. The heart was then examined, and found to be the sole cause of death. It weighed fourteen pounds. The right venticle was very much hypertrophied, which appeared to have taken place recently,

for its muscular fibre was not in the least softened, being firm, but its fibres in several parts were perceived to be striated with black blood. The cardiac membrane of the right ventricle was in a state of gangrene. The left ventricle with its membrane was but slightly affected; thus the disease seemed to be almost entirely confined to the right side of the organ.

I think you will agree with me that this was not an every-day case, and it shews what a train of symptoms of a delusive character often present themselves when the principal organ connected with life is attacked. I consider it a remarkable case, for a more healthy animal prior to this attack could not be seen; and what could cause this affection of the heart, I know not. He was well-bred, and had not been hunted for a fortnight. I am of opinion there was no previous organic disease of the heart, and I can attribute the attack to but one cause, that is, plethora. There was no effusion in any cavity, which is a proof that bleeding was not improper. I administered belladonna every four hours for two days, but so violent was the heart's action, that no medicament appeared to control it. His breathing continued undisturbed during the whole of his illness, and on the day of his death the beatings of the heart could be heard for several yards.

As I find so few similar cases recorded, I am induced to send you this. I ought to have observed that his blood coagulated quickly, free from serum on its surface, and it flowed tardily from the vein.

Believe me, dear Sir.

*To Mr. Morton.* Truly your's.

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## Case of Poisoning by the Compounds of Lead.

*By Mr.* S. Fisher, *M.R.C.V.S.*

*To the Editors of "The Veterinary Record."*

Gentlemen,

If you think the following rather curious case of poisoning by one of the compounds of lead worthy of a corner in The Veterinary Record, insert it. That which appears to me to render it interesting is, the fact of the symptoms being different to

those noticed by Messrs. Bland and Musgrave, and recorded in your Journal.

During the summer of the year 1845, I was requested to attend a cow, the property of a farmer residing a few miles from me, that was labouring under a disease known in this locality by the term "dropping after calving." On my arrival, I found the beast evinced all the symptoms attendant on that disease; but it is not my intention now to comment on that malady, since, at some future period, should opportunity serve, I may perhaps introduce an essay to "The Veterinary Medical Association" on this subject, as the animals I have hitherto been entrusted to treat, while labouring under that disease, I have been singularly successful with.

After attending the cow for some days, I left her, as I thought, out of danger; her appetite being good, rumination natural, mammillary secretion improving, with perfect power over her limbs, lying down and getting up *ad libitum*. Nine days subsequent to this, however, I was again sent for to the same animal, when, to my astonishment, I found her down, foaming at the mouth, abdomen tympanitic, pulse very feeble and rapid, the numerical order not distinguishable at the jaw, eye not sensitive to the impression of light, bowels constipated, extremities cold, limbs paralytic, and, from the unwillingness to move when urged to do so, her brain appeared to me to be affected. I at once saw there was no hope for the case, and attempted no treatment, further than administering a cathartic draught I had with me. I told my employer I could not account for the extraordinary symptoms, except that they arose from her having eaten of some herb of a poisonous nature, which was next to impossible, as the yard where she had been confined contained nothing injurious; nor was there any thing growing within reach; nor had she had any other food than bran-mashes, hay, and oil-cake, with some few carrots. Here the history of the case would in all probability have terminated, had it not been for a significant observation made by the man in attendance on her—"Show got a-legs too soon, mester, to plase everybody: two doctors to one cow is like two wives in one house—too many by one." The remark aroused my suspicions, and also those of my employer. The situa-

tion and circumstances, too, favoured our surmises. It being a lone barn, adjoining a footpath, and not being in very good odour myself with a cowleech in the neighbourhood, we thought it possible there might have been some deleterious ingredient administered maliciously to her; but, as we could have no actual evidence of the fact, we consoled ourselves by a post-mortem examination.

*Necrotomic Appearances.*—Thoracic viscera healthy; brain and spinal marrow much injected, as low down as the third cervical vertebra; the abdominal viscera, with the exception of the stomachs and intestines, normal. These assumed a very peculiar appearance, being spotted all over like the skin of a leopard, but in smaller spots; the follicular and mesenteric glands were saturated with a dark-coloured fluid, which, when impinged by the rays of the sun, reflected a *gros de pigeon* hue. I was struck with the similarity of the colour to the deposit seen on ill-ventilated stable windows, and I imagined it might arise from the union of lead with sulphuretted hydrogen; a surmise which I afterwards found to be correct, from the various tests I used, proving the presence of lead, and that, too, in large quantities.

This case goes to prove that, though some of the compounds of lead may produce death by their irritant powers on the coats of the stomach, others, being more soluble, do so by their effects on the brain, as in this case. The stomachs and the bowels were but very slightly inflamed. The medicament I believe this beast to have had administered to her was, repeated small doses of the acetate of lead. If this case should lead others having had more experience than myself to elucidate this abstruse subject—the effects and symptoms of minerals on the ruminant—it will have answered the expectations of,

Gentlemen,

*Melton Mowbray,*
*May* 5, 1847.

Your very humble servant.

## Amputation of the Uterus, and Dropsy of the Uterus in the Cow; and Milk Fever in the Sow.

*By Mr.* D. Gresswell, *M.R.C.V.S.*

*To the Editors of "The Veterinary Record."*

Gentlemen,

In one of the late numbers of your Journal, I remember reading an account of some cases of amputation of the uterus of the cow, communicated by Mr. G. Baldwin. As such instances are by no means common, perhaps the following will not be deemed by you unworthy of a place in The Record.

I am,

*Louth, April 28th,* 1847. Respectfully your's.

### Case 1.

On April the 17th, 1845, I was requested to see a heifer in the possession of J. K——, Esq. On my arrival, I found the animal lying down, her uterus inverted, and much swollen; and I was informed it had been in this state for nearly twelve hours. A neighbouring farrier had once replaced it, but it quickly returned again. It being requisite to place her on her back for this purpose, ropes were fixed on her hind legs, above her hocks, and then drawn over a beam, so as to keep her in that position. I next proceeded to remove from the uterus all matters adherent to it, by means of warm milk and water; and having done so, I returned it into its natural situation, secured the labia with metallic sutures, and gave a cathartic draught with tincture of opium. It being now twelve o'clock P.M., I left the animal for the night.

Early on the following morning I again saw my patient. The labia were even more swollen, and, in consequence of violent straining, the uterus had become inverted within the pelvic cavity, and the viscus was being pressed forcibly against the labia pudendi: pulse 150, and feeble; extremities and skin deathy cold, muzzle dry, mouth hot, and breathing laborious. These symptoms

told me no time was to be lost: I therefore immediately withdrew the sutures from the labia, when the uterus was forced out, which was in appearance quite black and cold. Not anticipating that it would be retained in this state, I determined at once to amputate the protruded organ; and having applied a strong ligature as high up as I could, I excised that portion of it that was posterior to the ligature. It weighed 52 lbs. The wound was dressed with digestive ointment, and a laxative administered. I ordered a light diet, with infusion of linseed for drink.

*April 19th.*—Pulse 120, and weak; ears and legs cold, and general appearance of the animal unfavourable. On examining the parts, I found the neck of the uterus had become again inverted, protruding two feet or more from the vaginal opening, and this too had become quite black and cold. I at once passed another ligature as close to the vagina as possible, and extirpated this portion, which weighed 22 lbs.; dressed the wounds as before, and gave febrifuge medicine.

*April 20th.*—The animal appears much better; pulse 90; the swelling about the labia has nearly disappeared: the ligature is not perceptible, it having been drawn within the pelvic cavity. The external parts were fomented with tepid water, and dressed as before.

*April 21st.*—My patient is much better; the appetite is returning, and she was observed to ruminate both yesterday and to-day. Pulse 70; legs, ears, &c., warm. The discharge from the vagina is extremely fœtid. Wash with a weak solution of chlorinated lime.

*April 23d.*—Animal rapidly improving, and requires no more attendance. The ligature did not come away till a fortnight afterwards. The heifer continued to feed well, and was sold fat in the summer.

She had calved the day previous to the inversion taking place.

### Case 2.

On the 11th of June, 1846, I was requested to attend an aged cow, belonging to Mr. S——, of B——, labouring under inversion of the uterus. It having been everted for some time, I found it

very much congested, and indicating approaching sphacelus; the neck was much contracted and hard. I deemed amputation necessary, which was performed as in the preceding case. A second amputation was not in this instance called for, and this animal did well afterwards.

She had calved ten days prior to the inversion taking place.

### Case 3.

*February 5th*, 1847.—I was requested to visit a cow, belonging to Mr. R——, of W——. When I arrived I perceived the uterus to be inverted, she having aborted her calf the night previous. The womb was much congested, and, upon endeavouring to return it into its proper position, I found such to be quite impracticable, in consequence of the constricted state of the vagina. I at once proceeded to amputate the organ, first securing the os uteri with a strong ligature. The excised portion weighed 18 lbs., being much smaller than the two previous cases, which was owing to the cow having aborted before the fœtus had become fully developed. The subsequent treatment was similar to that resorted to in the former cases.

On the following day I saw the cow. The pulse was 130. I gave a purgative combined with fever medicine, and dressed the parts with a digestive.

On the 7th, I again visited my patient. Pulse 85, and feeble; respiration less laboured; moaning much diminished; and she had eaten a few turnips. Gave a fever draught.

She continued to improve until the 11th, when I was informed that she had lost her appetite the night before. The pulse was 100, and weak, with laboured respiration, and she was continually moaning; and the extremities were cold, indicative of diseased lungs. On exploring the vagina by the hand, I discovered that the dead portion had sloughed from the living part, and the neck of the uterus was perfectly closed. I applied a mustard cataplasm to the sides, and gave laxatives and febrifuges combined, and repeated the mustard poultice on the following day. In the course of four or five days she became convalescent, and is now doing well.

### Dropsy of the Uterus.

On the 3d of September, 1846, I was requested to attend a heifer in the possession of Mr. R——, of Castle Carlton. I found her straining violently, as if she wanted to expel something from the womb. On examining the uterus per vaginam, I found that viscus to be distended with fluid. I at once introduced a trocar into the uterus, and evacuated two gallons of a fluid resembling starch and water, the odour of which was very fœtid. I gave tonics, combined with mild laxatives, and dressed the puncture with digestive liniment.

On the 21st, I was requested to see the animal again, she being, it was reported, as bad as ever, in consequence of the womb having refilled. I again introduced the trocar, and evacuated two gallons more fluid. The organ, however, filled again, and I tapped her a third time on the 29th, evacuating about one gallon of serous fluid. Even this did not suffice, for on the 5th of October I was obliged again to evacuate the contents of the uterus, which I did with a large trocar made for the purpose, and withdrew three gallons. Since that time she has not shewn any unfavourable symptoms.

Dropsy of the uterus generally arises from putting the cow to the bull too early, and it frequently makes its appearance about a month after copulation having taken place. I had a case which I tapped twice in the year 1845. The first time I withdrew three gallons of fœtid fluid, and about four quarts the last time. The animal completely recovered, and was sold fat last summer to a butcher. In 1844 a case occurred under my care, which I tapped five or six times. She, however, eventually died from inanition, in consequence of the copious secretion going on in the uterus, the walls of which at last gave way, although nothing in the form of stimulants or astringents was injected therein.

## Milk Fever in the Sow.

With respect to the milk fever in the sow, I have seen but three cases of it. The symptoms are much the same as present themselves in the cow. In one of the cases there was an entire loss of voluntary power or motion in the muscles, and likewise a perfect loss of sensation. The mammary glands also ceased to secrete. I stimulated the loins, gave purgatives combined with carminatives, and she recovered. The other two cases likewise did well, but they were not so bad.

Milk fever in the cow arises from the bowels being overloaded at the time of parturition, and occurs most commonly in this county during the months of July and August. Owing to the pastures being very luxuriant, and the weather hot, the elasticity of the arterial tubes is thus lessened; and the act of parturition often ruptures those within the theca vertebralis, giving rise to the paralysis so frequently present.

The disease is generally to be prevented by taking the beast up from grass, allowing good food, but limiting the quantity, and occasionally exhibiting a mild cathartic.

Milk fever, when there is an entire loss of sensation and voluntary motion, proves Sir C. Bell's respiratory motor nerves to be an independent set.

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## Case of Chronic Hoove.

*By Mr.* W. Cox, *M.R.C.V.S.*

*Ashbourne, April 2d,* 1847.

Dear Sir,

I have a cow under my treatment respecting which I should much like to have your opinion, as you may be able to suggest some mode of treatment likely to be of service; the case, possibly, may also be worthy of notice in The Veterinary Record.

On the 14th of April, a farmer in this neighbourhood requested my attendance on a cow that had calved about ten hours.

*Symptoms.*—The pulse very quick, but feeble; respiration much impeded, arising from distention of the rumen with gas. The animal was evidently sinking; but the introduction of the trocar gave immediate relief. On inquiry, I found she had been observed to swell about ten days previous to calving, and had been gradually failing in her appetite until it was now completely gone. As it was thought she had twin calves in her, no medical assistance was sought for until after parturition.

As no constipation of the bowels was present, only a mild saline purge, combined with antacids and carminatives, was administered by me. She drank freely of gruel.

*April 15th.*—The rumen is distended again, like a blown bladder. It was found expedient not only again to introduce the trocar, but to leave the canula constantly in.

From this time it would be tedious to go through the treatment had recourse to day by day. I have tried saline and oleaginous purges, with antacids, tonics, stimulant and anodyne medicines, both in the form of solution and of ball. Recently I have been injecting the aromatic spirit of ammonia and tincture of ginger through the canula into the rumen. In a day or two after the opening was first made in the rumen, and the gas liberated, the animal improved in her appetite, the breathing became natural, and the pulse sank to the healthy standard. But up to the present moment, whenever the canula is stopped, she becomes much hooven. I have seen her this morning, and I perceive her appetite is again failing, and she has become very poor. She has never been observed to ruminate from the first attack. Chlorine has not been tried in any of its forms.

I have met with many cases of chronic hoove, but they have generally been fatal. I remember being successful in one case from the administration of a solution of sulphate of copper, but I have not tried it in this case. I have by me the notes of the post-mortem examination of only one case of chronic hoove, which occurred in a cow belonging to a farmer near Leek. In that instance the canula was kept in the rumen for upwards of a month, and various means were adopted, but followed by no permanent good. Mr. Mayer, V.S., Newcastle, was likewise consulted, and prescribed for her, but she ultimately died. All the internal organs were normal, except that a purplish blush per-

vaded the villous coat of the rumen, and a tumour about the size of a man's head was found attached to the peritoneum covering the rumen, and to the peritoneum covering the wall of the abdomen.

*Mr. J. B. Simonds.* I am, your's, &c.

[It has appeared to us that the loss of function, which seems to be principally confined to the rumen, might arise from some abnormal growth or deposit which has become attached to that viscus, and which, operating mechanically, prevents its contraction. The return of the ingesta up the œsophagus for re-mastication being thus prevented, fermentation is quickly set up in the mass, with its attendant phenomena. Or it may be that a loss of power exists in the œsophagus itself, which would, of course, be followed by the same results.—*Editors.*]

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## Case of complete Depilation in Two Calves.

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

Dear Sir,

Two or three cases of some little interest having fallen under my notice lately, I am induced to forward their histories to you, to dispose of them as you please. Those which have struck me as being the most singular, are two calves that are now completely deprived of their coats. Canker in the tongue of cattle has also been prevalent, and jaundice.

The cases I shall now relate had been under previous treatment for pleuro-pneumonia, by one of the old school, for about fourteen days; they consisted of three cows and a bull. Among these, it will be found, the above cases of depilation occurred.

I am, dear Sir,

*To Mr. Morton.* Very truly, your's.

*Case* 1. *Feb.* 22, 1847.—A cow, six years old, had calved about twenty-one days. She had been bled, still the pulse was 90 and full, and the symptoms generally indicated congestion of the

lungs: the legs were cold; the ears, one hot and the other cold; a large quantity of secretion was on the muzzle; breathing very laboured, accompanied at every inspiration with a grunt; the bowels a little relaxed, apparently from the effect of medicine; the coat staring, and the animal eats, but she seems altogether unconscious of what she is doing.

*Treatment.*—Take three quarts of blood from jugular, place a seton in dewlap, and restrict diet. She seemed a little relieved by the blood-letting.

*Feb.* 23.—The animal much the same as yesterday. Gave digitalis pulv. ʒi, potass. nit. ʒii, ant. pot. tart. ʒi, in draught; gruel three times a-day.

*Feb.* 24.—She partakes of some food, but the pulse keeps up. Repeat the fever draught, and stimulate the sides with pulv. ant. pot. tart. ʒi, sinapii ʒii, ol. terebinth. ʒi, adeps ℥i; misce.

*Feb.* 26.—The bowels being rather costive, I gave an aperient.

*Feb.* 27.—Bowels acted upon more than desirable: she is continually voiding fæces. Administered an astringent with opium.

*March* 1.—It is evident the animal cannot live long; the pulse is 100 in the minute; the legs are deathy cold, the head hanging down, and the mouth half open. She was found dead the next morning. I called on the 3d, and saw the parts after removal. The lungs were highly congested; the rumen very much distended, being full of ingesta, and patches of inflammation existed on its muscular coat. The thoracic cavity was full of blood, and, when found, the animal was lying with her head doubled under her, as if she had suddenly fallen down dead.

*Case* 2.—A cow about the same age had calved about fourteen days. Pulse about 90, and having a wiry feel. In breathing, the muscles of the abdomen are unnaturally called upon: the legs and ears of a natural warmth; muzzle very dry; the appetite good, but the coat stares, and the bowels are rather costive.

*Treatment.*—I withdrew blood till I felt a faltering in the pulse; put a seton in the dewlap, and gave magnes. sulphat. 1 lb., ant. pot. tart. ʒi.

*Feb.* 24.—The bowels are relaxed, and the animal is apparently better. Gave a febrifuge draught.

*Feb.* 26.—The fæces are still soft and have an offensive smell, otherwise the animal seems quite well. *From the calves of these*

*two cows all the hair came off*, of which I have sent you some for inspection. They were attacked, as the man reported, with profuse perspiration, which kept dripping off them for a whole day and a night, and which having dried on them, "*the whole of their coats came off like a shell.*" There was very little inflammation of the skin, nor did the calves appear to be in any way affected by it, as far as their general health was concerned. They were sold in the market, and, as might be supposed, they were a subject of wonderment to many persons.

*Case* 3.—An aged cow had had twin calves about two days, but the placental membranes had not come away, and she was apparently labouring under disease of the liver. The bowels were in a very relaxed state, and you might easily pull the hair off at any part of the body: there was likewise yellowness of the conjunctival membrane; the eyes were sunken in their orbits, and great prostration of strength was present. I administered a tonic draught, and on the 24th she appeared much better, and had "cleansed."

*Feb.* 27.—The animal is worse; pulse about 80, and wiry to the feel: reels when she tries to walk, and the bowels are very costive. Gave a saline purgative.

*March* 1.—Bowels responding, but the animal still reels and then falls: when got up, the pulse was very quick and feeble. Gave a fever draught.

*March* 3.—She seems a little better this morning, but the mammary gland has become hard. Apply the soap liniment freely to it.

*March* 5.—Evidently worse; breathing very laboured, and general symptoms unfavourable. Insert seton in dewlap, and, as the bowels continue to act more than is desirable, administer an astringent in some ale.

*March* 7.—She is much weaker, and unable to walk. The fæces are continually escaping from her, and have an offensive smell. Repeat the draught as before. She died next day, but I had not an opportunity of examining her after death. In this case the calves had no affection of the skin.

*Case* 4.—The bull had been labouring under the disease for a month. He feeds well, but always becomes distended with gas afterwards. He keeps his neck out straight and his mouth half

open, as if something was existing in the œsophagus. A kind of whistling noise is heard at every inspiration, which is spasmodic, and when touched he coughs severely. On putting the ear to the side the respiratory murmur is very indistinct, but the pulse and action of the bowels are natural. I adopted the usual course of treatment, but not until some days after was any change visible, when he appeared much better, but he still kept his neck straight. He has since been killed, as he continued to lose flesh. I did not see him after death; but the butcher told me that the left lobe of the lungs was completely gone.

[The hair Mr. Hazell has sent to us is closely matted together by large scales of desquamated cuticle. The hair-bulbs are evidently much diminished in size, and separated from their secreting follicles.—*Editors*.]

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## Substitute for the Vapour of Ether to annul Sensation during Operations.

We are informed that, in some parts of England, practitioners of the old school are in the habit of putting a piece of sponge up one nostril of the horse, containing *something*—what it is they keep a secret—by means of which the animal becomes insensible to pain during operations.

The following is from the *Journal de Toulouse*, recorded by Dr. Dauriol:—

"At Midsummer, when vegetation is at its height, solanum nigrum, hyoscyamus niger, cicuta minor, datura stramonium, lactuca virosa, are gathered, and a sponge is plunged in their juice freshly expressed. The sponge is then dried in the sun; the process of dipping and drying is repeated two or three times, and the sponge is then laid up in a dry place.

"When the sponge is required for use, it is soaked for a short time in hot water; afterwards it is placed under the nose of the person to be operated upon, who is quickly plunged into sleep, more or less deep, according to the susceptibility of his nervous system. The operation may then be proceeded with, without any fear that the patient has any sensation of pain. He is readily

aroused from the stupor by a rag dipped in vinegar being placed to his nose.

"M. Dauriol records five cases in which he has successfully employed this means of bringing about insensibility during operations." *The Lancet.*

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### Ether Vapour Enemata.

"M. Pirogoff, Professor of Clinical Surgery in St. Petersburg, has been trying some experiments on the effects produced by the injection of ether vapour into the rectum. Having cleared out the rectum by an enema, M. Pirogoff introduces the ether by means of a catheter attached to a syringe, the latter being enclosed in a vessel of water sufficiently heated to convert the ether during its passage into vapour. M. Pirogoff thinks that the narcotizing effects are produced more speedily, and with much less pain and trouble to the patient. It was found that in from two to four minutes the odour of the vapour was perceptible in the breath; and the usual effect is produced on the patient in from three to five minutes. The quantity of ether used in each experiment has varied from half an ounce to two ounces. No injurious symptoms have followed its use in this way, and the most troublesome operations have been performed with great facility."—*Gazette Médicale*, 8 *Mai.*

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### Morbid Appearances observed in Animals after Death from the Inhalation of Ether.

"The phenomena produced by the inhalation of ether are the same in animals as they are in the human species; therefore the post-mortem appearances found in animals killed by the effects of the inhalation are of considerable importance in relation to the operation of this remedy on man. M. Amusat finds that the arterial blood of animals during inhalation, instead of being red, present a dark, almost black colour, similar to that of venous

blood: this change, however, only takes place at an advanced period of the inhalation; the bright colour is speedily resumed upon suspension of the inhaling process. If the animal's life is destroyed by the process, the blood is found black and liquid, and has been proved by M. Flandin to contain ether. The viscera almost always present well-marked traces of congestion; the heart is found much distended, and resembles closely the hearts of animals which have died from the accidental introduction of air into the veins; the right cavities of the organ contain a large quantity of fluid black blood; the surface of the lungs, as well as their interior, is of a deep red colour; the liver is gorged with black blood; the kidneys are also loaded with blood, and present a violet tinge; the spleen, on the contrary, shews no appearance of congestion; the vessels of the dura-mater are loaded with blood, and the pia-mater is greatly injected; the substance of the brain seldom presents any alteration."—*Comptes Rendus, 22d Feb.* 1847.

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## Chemical Characters of the Blood after the Inhalation of Ether.

*By M.* Lassaigne, *Veterinary School, Alfort.*

Some experiments have lately been undertaken by M. Lassaigne for the purpose of ascertaining if any obvious changes are effected in the blood by the inhalation of ether. A portion of venous blood for analysis was drawn from a healthy dog; the animal was then submitted to the influence of etherial vapour by being confined in a wooden box, through which the vapour was passed: at the end of thirty minutes the animal was stupified, and another portion of venous blood was then drawn. These specimens of blood were submitted to analysis, and the general conclusions obtained were to the following effect:—

1. The portion of blood collected before and that collected after the inhalation presented no marked difference in colour, nor in the period at which their coagulation took place: the former portion presented the ordinary odour of blood, the latter emitted a well-marked odour of ether.

2. After remaining at rest for four-and-twenty hours, in order to allow time for the perfect separation of the clot, the proportions of clot and serum were found to stand in the following relation :—

| | Blood before inhalation. | After inhalation. |
|---|---|---|
| Clot .. .. .. .. .. | 65·46 | 59·66 |
| Serum . .. .. .. .. | 34·54 | 40·34 |
| | 100·00 | 100·00 |

The clot of the first specimen of blood appeared to be of a somewhat firmer consistence than that of the etherized blood.

3. Analysis shewed that, with the exception of a small quantity of ether contained in that abstracted after the inhalation, the two portions of blood were composed of the same essential principles, as may be seen in the subjoined table :—

| | Composition of the blood. | |
|---|---|---|
| | Before inhalation. | After inhalation. |
| Water .. .. .. .. .. | 723·6 | 778·9 |
| Fibrine .. .. .. .. .. | 2·4 | 1·7 |
| Globules .. .. .. .. .. | 183·1 | 147·4 |
| Albumen and salts .. .. .. | 90·9 | 72·0 |
| | 1000·0 | 1000·0 |

If the excess of water which the blood contained after inhalation be deducted, it will be found that the quantities of albumen, fibrine, and globules, stand in the same relative proportions towards each other as they do in the blood before inhalation: thus after each deduction the proportion of fibrine would be 1·9 instead of 1·7; of the globules, 146·4 instead of 147·4; and of albumen, 72·7 instead of 72.

4. The proportion of ether contained in etherized blood is so small, that it is not possible to deduce it from the examination of so small a quantity. An attempt, however, has been made to determine it by studying comparatively, under the same conditions of temperature and barometric pressure, the tension of the vapour of the serum of blood before and after inhalation, and comparing these two tensions with that of an aqueous solution of æther in certain known proportions. The results obtained by such a method would seem to authorise the opinion that the pro-

portion of ether absorbed and dissolved by venous blood would constitute about 0·0008 of its mass, and that the composition of the fluid would therefore be about as follows :—

| | |
|---|---|
| Venous blood .. .. .. .. | 99·919 |
| Sulphuric æther .. .. .. .. | 0·081 |
| | 100·000 |

*Comptes Rendus*, 8 *Mars*, 1847. *From Medical Gazette.*

## FOREIGN VETERINARY JOURNALS.

### TRANSLATIONS BY MR. W. ERNES, *M.R.C.V.S.*

### Division of the Tendon of the Peronæus Muscle, as a Remedy for Stringhalt in the Horse.

*By* M. Boccar.

The subject of the first case, furnished by M. Boccar as far back as 1843, was a bay mare, six years old, belonging to the first regiment of Cuirassiers. The affection was so severe, that the animal hit her belly at every step she took with both hind legs. She would obstinately stand in the same place till made to move, when the hocks were forcibly bent, the croup lowered, the spine arched upwards, and in this position she was with great difficulty enabled to take a few steps only. To the above symptoms must be added the prominence of the extensor tendons over the hocks. This at once caused M. Boccar to perform the operation, which he did on the left leg. After having made the section of the tendon, the animal was released, and, to the astonishment of all present, the affection was no longer perceptible on that side. The other side was then operated on with the same success. Eight days after the operation, this mare, previously condemned to be destroyed as useless, was sold for 145 francs. The success was complete. Fifteen days after the wounds had cicatrized, the mare was driven in a cabriolet, and she has performed other work daily up to the present time.

M. Boccar observes that the hooks which were previously bent *(coudés)* have become perfectly straight.

The second operation was performed in 1844, on a gelding belonging to a lieutenant of artillery, and which was completely useless. The operation was performed in the same manner as the first case, and a week after the irregularity in action of the limbs had completely disappeared.

In 1846 the operation was performed on a mare belonging to an officer of his own regiment, with the same success.

The fourth operation was on a bay gelding used for the saddle, six years old. In this horse stringhalt was so strongly marked that the animal not only hit his belly, but also the ground, with great violence, particularly with the left leg, which was so much arched, that it was with great difficulty a man could keep himself on the animal's back. The operation was performed close to the junction of the tendon with the tendon of the extensor pedis, and about an inch of the tendon was excised on each side. The cicatrix was quickly formed, except on the left side, where luxuriant granulations shewed themselves, which it was found necessary to cauterize. Three weeks after the cure was perfected, and the action normal.

Several more cases are recorded, but they are all very similar, and therefore are withheld.

*Journal Vétérinaire de Belgique.*

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## A Case of Rabies in a Dog,

*Which caused the Death of a Veterinary Surgeon in the Jura (France); affording another instance of the dangers to which Practitioners of Veterinary Medicine are often exposed.*

About six weeks since, Mons. Nicolin, departmental veterinary surgeon at Lons-le-Saunier, was consulted respecting a little dog which appeared to suffer from inflammation of the throat. He was so imprudent as to attempt to open the dog's mouth to examine the parts, in doing which he was bit in the hand. Not having the least suspicion that the dog was affected with hydrophobia, Mons. Nicolin contented himself with slightly cauterizing the wound with liquid ammonia. Two days after he was informed

that the animal was dead. From that time he became most painfully anxious about his own health. He possessed great nervous susceptibility, which was often betrayed by symptoms of catalepsy: moreover, he had been bitten once before by a dog suspected to be rabid. His moral faculties became now severely affected, and it is stated that an apprehension of the result had taken such a strong possession of his mind, that he had been seen to stop before the fountain at Lons-le-Saunier, to ascertain if the sight of the water inspired him with any dread, which he conceived to be one of the first symptoms of hydrophobia. On the 26th of December the first indications of this dreadful malady shewed themselves, and, after three days of the most horrifying sufferings, Mons. Nicolin fell a sacrifice to this appalling disease, at the age of thirty-four.

*Journal Vétérinaire de Lyon.*

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## On Animal Electricity.

*By* M. Berkensteiner.

[*A Paper read before the Linnæan Society of Belgium.*]

The researches of this physical experimentalist had been principally confined to the torpedo and other fish in which a distinct apparatus has been observed for the discharge of electric shocks. But, stimulated by the conviction that he should discover electricity more or less developed in every thing on earth, and presuming it to be an agent pervading nature, since 1838 he has made a series of experiments on animals. He further adds, it has been supposed that the electricity observed in the torpedo is produced by a special apparatus, either to defend itself from its enemies, or to stupify and kill its prey. My opinion has always been that it is identical with this principle in nature, differing only in degree; the nervous system having been met with in all animals, from the microscopic to the highest in the scale of organization.

What is the prime mover of our ideas, or our will, when conveyed to the muscles, the effects of which are so sudden, is a question to which I can find no other solution than that it is through electricity. But to convert this hypothesis into facts, it will be necessary to produce proofs; and with this view I have made ex-

periments on many different animals, the results of which, as well as the means to reproduce these effects, I will now lay before you.

*Experiments made on Cats.*

To produce electric shocks in a cat, it is necessary that the temperature of the air should be at the freezing point, with a northerly wind and an unclouded sky. That the cat feels the cold, which is desirable, may be easily ascertained by the smoothness of the hairs, which will have the appearance of being greased. The hands of the experimentalist should also be cold. He is then to take the cat on his knees, and place the fingers of his left hand in front of the cat's chest, at the same time making passes with his right hand along the spine from the head to the tail. Pressing lightly after a few passes thus made, the shock will be produced. It seems to come from the chest of the cat, and to traverse the body of the experimenter, terminating at the hand placed on the back of the cat. Though the cat seems to like the passes along the spine, no sooner is the shock produced than it escapes as fast as it can, nor can it be easily made to submit to a second experiment. Indeed, it is only after it has forgotten the unpleasant sensation that it can be made the subject of new experiments.

I have obtained three shocks in one day from the same cat; but the last was very feeble. After each shock the cat seemed much fatigued and exhausted: it laid down, stretched itself out, and after a few days became dull, lost its appetite, seemed to forsake its favourite corner, and took no notice of the persons to whom it was accustomed.

Sometimes it is the case that animals thus operated on continue to drink after the total loss of appetite; but they become more and more languid, and die, generally, within a fortnight after the first shock. I have repeated these experiments during several years, when the weather has been favourable, on domestic cats of my own and my neighbours, who fancied that I was only caressing them, and I always learned that the animals had died a short time after, without any apparent cause.

Having from these experiments no longer any doubt of the existence of electricity in the cat, I fancied that it was developed

by the hairs; but I have been unable to produce any analogous effect on the skin of dead cats, or other stuffed mammalia. It seems that repeated shocks obtained from animals deprive them of so great a quantity of electricity that they are unable to bear its loss. One shock does not destroy life; but it makes the animal languid and even ill for some time after. I once tried the experiment on a cow. She was in the open air, tied to an iron post, and the ground was frozen. I made passes over her back with the right hand, while I held the left hand on the chest. After a few passes I obtained so violent a shock that it knocked me down; but whether this was really owing to the violence of the shock, or to the surprise it occasioned—as happened in the case of the discoverer of the Leyden Jar, the effects of which he exaggerated so much as to declare he would not for any thing in the world try the experiment again—I cannot say. The cow, however, was so irritated that she would not suffer me to approach her afterwards, nor was I desirous to recommence the experiment. I could not learn if the cow suffered any ill consequences from it, she being sold to a butcher a few days after.

In our southern latitude we have but few opportunities for such experiments; but in the north, where the temperature for several months is very low, experiments might be made on many different subjects. I have never obtained any results from experiments performed on dogs. On rabbits I have tried them with success; but they always died after the first shock.

*Journal de Medécine Vétérinaire de Lyons.*

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From the Bulletin of the 27th of February, 1847, of the "*Société de Medécine Vétérinaire de Belgique*," we extract the following Report, by M. Dohet;—

On an Epizootic which attacked the Horses in the Province of Namur in the Winter of 1845-46.

*Symptoms.*—At the *début* of the disease the horse is dull, stands back from the manger, often shifts his position by resting one leg after the other; the head is held low, progression is slow and uncertain, the conjunctiva is yellowish and injected, presenting a

varicose and turgid aspect; the pituitary membrane is discoloured, and slightly tinged with yellow; the urine viscid, the pulse soft and accelerated, the respiration increased; he coughs at intervals, but not frequently; auscultation indicates a weak, mucous *râle;* the appetite, though still good, is nevertheless capricious, and he seems to eat by fits and starts. Occasionally the animal may lie down, but he gets up again immediately after.

These morbid phenomena soon increase in intensity. The patient takes little notice of surrounding objects; refuses his food, or holds it between his teeth as if he had lost the power of mastication; there is great prostration of strength; the limbs seem to sustain the weight of the body with difficulty; the head droops, and is immobile; locomotion is more difficult and irregular; the pulse becomes small, soft, and quick; the respiration deep and sonorous; the nostrils dilated; the mucous *râle* is more marked, and the motion of the ribs more evident; the cough, from being strong and loud, becomes weak and frequent; there is no sensation evinced on pressing the intercostal spaces, and the animal persists in standing. About the sixth day these symptoms have acquired all their intensity; the prostration of strength is extreme, the slightest movement cannot be performed without danger of the animal falling; the insensibility seems complete; there is anorexia; the conjunctival membrane is much tumefied; the nostrils dilated, the respiration more frequent, the flanks much agitated, the pulse quickened and weaker, the cough painful and less sonorous, the mucous *râle* increased, and there is absence of the respiratory murmur in the inferior portions of the lungs, instead of which a strong bellows-like murmur is heard, and the beatings of the heart are strong and loud. All the sounds furnished to auscultation indicate a hypostatic hepatization of the lungs, which rapidly increases, beginning at the inferior parts of these organs and terminating at the superior, the progress of which it is easy to detect by auscultations of the chest at repeated intervals. This alteration of structure is always more extensive in one lobe than the other, and generally the left is most affected. It increases gradually until it terminates in death, unless, by medicinal means, its progress is arrested, and this is generally indicated by an amelioration of the respiration.

Death generally takes place on the eighth or ninth day, and is ushered in by an aggravation of all the symptoms.

Towards the termination of this epizootic we have noticed in several individuals a discharge from the nostrils of a greenish hue. The progress of the malady we have found to be slower in mares with foal than in those which are barren. It did not attack foals under one year old, and its effects were also less severe in yearlings and those a year and a half old.

Despite the alterations by which the principal organs, the lungs, seem to have been affected, the convalescence was from ten to fifteen days. A morbid phenomenon which often occurred at the commencement of convalescence, and which retarded its progress very much, was, one or more legs being attacked with inflammation of the synovial capsules of the tendons. This was attended with so much pain, that the patients were unable to stand. Setons, when inserted, were frequently followed by gangrenous swellings; and when this was the case the death of the animal speedily took place.

*Sectio cadaveris.*—The principal lesions were met with in the thoracic cavity. Hepatization of the lungs was invariably present, and to such an extent that the lungs were three times their normal weight. This alteration was found to have invaded generally the inferior half of both lobes, a vertical section of which exhibited a gradation of colour from dirty grey to brick red: this latter colour was always superiorly placed, while the grey was found in the inferior parts. The superior portions of the lungs often presented no alteration. The bronchi were filled with viscid mucus, having a slight citron hue, in which were perceived small white globules, that easily yielded to the finger. The fibres of the heart were discoloured and easily broken down, and ecchymosis existed on the pericardium.

*Causes.*—During the summer of 1845 the temperature of the air was very high, and much humidity was present, while in the winter of the same year the rain fell in torrents, frost being almost unknown; to which must be added the evil effects of bad ventilation, the animals being congregated in great numbers in low arched stables, in which the free circulation of air was almost impossible. The influence of hot, damp, atmospheric air *(l'air chaud, humide)*

deprived of its oxygen by repeatedly passing through the lungs, and loaded with effluvia emanating from the dung, urine, and perspiration of the animals, must be at once septic and debilitating, which accounts for the asthenic character of this malady.

*Treatment.*—The therapeutic agents employed were tonics, antiseptics, revulsives, and antimonials. Our first endeavours, however, were hygienic. We isolated the sick as much as possible from the others and placed them in dry and well ventilated stables. The food was the best we could obtain, with a view to its easy digestion; the water was mixed with flour, to which was added a solution of iron, and the animals were provided with warm clothing. At the commencement of the attack, and up to the time that symptoms of hepatization were perceived, large doses of sulphuret of antimony combined with camphor and Peruvian bark were administered; and if this did not check the progress of the malady, and hepatization threatened to invade the whole of the lungs, recourse was had to the potass. tart. of antimony in large doses, and sinapisms were applied to the chest. This was continued in use, and in some instances in increased doses, until sedative effects were produced by it. The favourable results thus obtained in the treatment of this disease were at times astonishing. We have always abstained from bleeding, and objected to it, and, above all, to copious bleeding, as we have found that in the generality of cases the loss of blood was fatal in proportion to the quantity abstracted. Nevertheless, in strong horses, in a state of plethora, and when the character of the pulse and the appearance of the mucous membranes strongly indicate its necessity, bleeding in quantities of two pounds, once or twice in twenty-four hours, might be admissible, and even facilitate the cure.

The reading of this paper was followed by a discussion, in which many of the members present took part. Our readers will easily perceive that this epizootic is similar to if not the same disease as the influenza that prevailed in this country a few years ago, and which even now from time to time shews itself.

# TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION.

## The Anatomy, &c. of the Hock of the Sheep and the Dog.

*(Continuation of the Prize Thesis, from p. 183.)*

*By Mr.* J. Mannington.

### The Sheep.

The hock of the sheep so much resembles that of the ox, that any separate description would be altogether superfluous: there is, in fact, independent of size, but few appreciable differences.

I have never found the flexor metatarsi medius give a slip (as it does sometimes in the ox) of tendon to the extensor digitorum and extensor digiti.

The internal metatarsal nerve bifurcates at the hock, and each division runs beside the anterior metatarsal artery as far as the fetlock.

So far as the motion of the bones is concerned, this too resembles that of the ox. The sheep, however, has not that ungainly motion in his hind extremities which we perceive the ox to possess, which I am inclined to refer to the larger size of the outer femoral condyle, and to the straighter shape of the tibia, rather than to any imaginary difference in the formation of the hock-joint.

### The Dog.—*The Bones.*

Fourteen bones enter into the formation of the hock of this animal, viz. the inferior parts of the tibia and fibula, the astragulus, calcis, pisiform, navicular, cuboid, three cuneiform, and four metatarsals, besides two sessamoids.

The inferior part of the tibia is wide in proportion to that of the horse. It has two convexities and two concavities, the outer convex ridge met with in the horse being supplied by the fibula. The inner ridge is more like a tubercle. It is very prominent in

the middle, overlapping the inner and superior part of the astragalus: the middle ridge is not very prominent, but is sharp at its posterior part.

The inner concavity is sloped most gradually from the inner ridge; the outer is sloped most from the middle ridge, and extends just as far as the outer part of the astragalus, having its external border formed by the fibula.

The inferior extremity of the fibula remains as an epiphysis for a considerable time: it is flat on its inner and outer sides and inferior surface. Its inner side does not rest in the least on the astragalus, but plays around its outer border, and is continuous with the tibio-astragaloid articulation.

The astragalus differs from the same bone in the horse by its greater comparative width, and by its possessing convex inferior and posterior surfaces; from that of the ox, by these convex surfaces being less evident; and from both of them by a notch on its infero-external part, by which it in some degree resembles that of the human subject.

It has a supero-anterior, inferior, and two posterior articulations, and two sides.

The supero-anterior surface is composed of two convexities, the outer being most prominent (the inner extending farthest backward and downwards), divided by a concavity which slopes regularly from each, and is large in proportion, forming the greater part of the surface of this articulation. The outer ridge curves to the outer side of the bone at that point where its outer articulation with the calcis is situated: it is flat, and articulates with the fibula at its outer edge; the inner one is sharp on its inner edge. The concavity is not much twisted outwards, and ends inferiorly in a sulcus situated a little below the middle of the bone. Below this sulcus is a flattish surface sloping inwardly at its edges, and extending to the edge of the inferior surface.

This inferior surface is somewhat quadrilateral in shape, but pointed posteriorly: its outer edge is opposed to the middle of the concavity on its superior part, and its inner border extends more inwardly than the inner part of the convex ridge on that side. It rests entirely on the cuboid, but has a slight articulation at its posterior part with the inner surface of the calcis.

The posterior surface has two articulations with the calcis,—an inner and an outer one.

The inner one is convex from above downwards, and extends nearly to the inferior part of the bone

The outer one is very irregularly shaped; it is larger than the inner one, reposes on the calcis superiorly where it is widest, and supports it inferiorly where it is narrowest. Its superior edge is sloped downwards and inwards; its inferior one is convex and prominent, terminating opposite to the outer convex ridge at its inferior part. The outer side is small, crescentic-shaped, and almost wholly articular with the fibula.

The inner side is much more extensive; it is narrow in the middle, wide above and below: superiorly it has a continuous articular surface with the upper part of the bone, and inferiorly is a prominence which gives a larger extent to the inferior surface of the bone.

Its articulations therefore are,

1. With tibia and fibula.
2. With cuboid and calcis.
3, 4. With calcis.

The calcis has not so many prominences as the same bone of the other animals treated of in this paper, and it receives and transmits more weight in proportion. It has an inferior and superior extremity, and anterior and posterior borders.

The inferior extremity is nearly wholly articular; it covers the entire superior surface of the navicular, rests somewhat on the posterior part of the cuboid, and has a slight extension of articulatory surface on its inner and posterior part, which is opposed by a part of the inferior articulation of the astragalus extending upwards.

The superior extremity is broad and flattened, raised on its edges, convex from before backward, and concave from within outwards.

The anterior border is sharp superiorly, prominent in the middle, and broad inferiorly: it has two articulations corresponding to the two posterior articulations of the astragalus.

The inner one is wider above than below, slightly concave, articulating with No. 3 of the astragalus.

The outer one commences above the prominence in the middle of the bone, over which it extends, so that it supports as well as rests on the astragalus: it is much larger than the inner, extend-

ing about the same distance down the bone. The posterior border is rounded, and extends from the top to the bottom of the bone: it is sharper above than below, flattened more on the inner than the outer side. On the inside, rather below the middle, it sends a projection inwards, which forms the posterior part of the inner anterior articulation. This projection is separated from the posterior border, in some degree, by a canal in which runs the tendo perforans. The border is inclined forwards inferiorly.

Its articulations are,

No. 1. With navicular, cuboid, and astragalus.

2, 3. With astragalus.

The pisiform is not always present. I have occasionally found it in the hocks of very large dogs, and in them it is not above half as large as a pea: it is flattened and quadrilateral in shape, and is united by a small ligament with the posterior part of the calcis and navicular bones towards the outside of the joint.

The navicular is situated on the outer side of the joint; it is quadrilateral in shape, having six surfaces, three being articular and three non-articular.

*Articular surfaces.*—The superior surface is nearly flat, of more extent on its internal than on its external part, and its posterior edge is slightly notched. It supports the greater part of the weight of the calcis.

The inferior is triangular in figure, its outer and posterior borders being sloped inwardly, its inner also stretching in the same direction: thus its anterior part may be called its base, its posterior the apex. It articulates with the two outer metatarsals by two facets.

The inner surface is flattish above and below, prominent in the middle, and its greatest length is from above downwards. The sharp projection of its middle fits in between the cuboid and the cuneiform magnum, with which two bones it articulates.

*Non-articular surfaces.*—The outer is prominent superiorly, notched inferiorly, which is overhung by a projecting tooth-like process, which forms a pulley for the tendon of the flexor metatarsi externus.

The anterior is widest across its upper third, rather depressed in its middle, forming nearly half of the plain anterior surface of the hock. The posterior is indented above and below, but presents a

bold prominence about its middle, to which is attached the posterior ligament of the calcis.

Its articulations are,

1. With calcis.
2. With third and fourth metatarsals.
3. With cuboid and cuneiform magnum.

The cuboid forms the plain anterior upper surface of the inner side of the joint. It has six surfaces, three articular and three non-articular, and is about half the size of the navicular bone. Its *articular surfaces* are,

The superior, which is rounded in front, sharp and raised behind, at which part it has a flat surface supporting part of the calcis. The greater part of this surface supports the astragalus, and is concave.

The inferior has a straightish border on its inside, a rounded one on its outer, is sloped inwards and downwards, is also slightly convex, and rests on the cuneiform magnum and medium, and sometimes on a slight portion of the parvum.

The internal is slightly concave in a horizontal direction from before backwards, and articulates with the navicular.

The *non-articular surfaces* are,

The anterior, which is deep on the outside, and rounded off towards the external surface, which grows narrow as it proceeds to the posterior edge of the bone, and ends in a projection. The posterior is prominent superiorly, hollowed out inferiorly, and it rises highest on the inner side, where it affords attachment to ligaments running to the calcis and navicular bones.

Its articulations are,

1. With astragalus and calcis.
2. With cuneiform magnum and medium.
3. With navicular.

The cuneiform magnum is placed at the inferior part of the joint, towards its inner side. It has superior, inferior, and lateral surfaces; a base and an apex. Its superior surface is triangular, widest in front, sloped downwards and outwards, supporting the greater part of the cuboid; the inferior is also triangularly shaped, it likewise slopes downwards and outwards, though less in degree, resting on the second metatarsus. The lateral surface articulating with the navicular is directly in the middle part of the front of the

joint; it is squarish-shaped, and slopes inward (speaking of the joint) and backwards. The internal lateral surface is shaped much like the external; it slopes outwards, and articulates with the cuneiform medium and first metatarsal.

The base is anteriorly placed; it is rather rounded in general appearance: the apex points backwards; it is sharp and smooth below, and has a protuberance at its upper part the size of a pea.

Its articulations are,

1. With cuboid.
2. With second metatarsus.
3. With navicular.
4. With cuneiform medium and first metatarsus.

The cuneiform medium is situated to the inside of the latter; it has superior and inferior surfaces, inner and outer borders.

The superior surface is slightly convex, widest behind, and sloped downwards and forwards, supporting a small portion of the cuboid. The inferior is a little concave, pointed behind and widest in front: it rests on the first metatarsal bone.

The outer border is squarish-shaped, and opposed to the upper two-thirds of the cuneiform magnum, with which it articulates. The inner border is articular at its posterior part with the cuneiform parvum; anteriorly it is non-articular.

Articulations:—

1. With cuboid.
2. With first inner metatarsus.
3. With cuneiform magnum.
4. With cuneiform parvum.

The cuneiform parvum is subject to great variation in shape in different animals. If a dew claw is present, it is generally larger and longer; if not, it is convex in front, concave behind, resting on the outer part of the first metatarsus, and receiving no weight from above, being only placed there for tendinous attachment.

Its articulations consequently vary: in general it has one with the cuneiform medium, a second with the first metatarsus, and a third with a small bone which is an analogue of the dew-claw, which is situated below the latter, and is shaped exactly like a claw. It supports the cuneiform parvum, and rests on the posterior part of the first metatarsus, its superior part being continuous with the articulation of the head of that bone.

*Upper Heads of the Metatarsals.*

The first is internally placed: its upper surface supports the cuneiform medium; is long and narrow; narrower behind than in front, and is the highest of the metatarsals. Its anterior part is rounded off, and is continuous with the posterior surface, which slopes downwards and becomes broad, supporting the two last bones.

The border looking towards the inside of the joint and outside of the leg (which I term the external) has a synovial surface, continuous with the superior, by which it articulates with the lower one-third of the inner side of the cuneiform magnum and with the inner border of the second metatarsal, extending lower posteriorly than anteriorly.

The second has superiorly an articulatory surface supporting the cuneiform magnum, much broader in front than behind, where it terminates in a sharp point looking outwardly.

The internal border has a synovial articulation posteriorly with the external border of the first metatarsus; the external border has the synovial membrane common to the superior surface covering it posteriorly: anteriorly is an isolated oval-shaped articular surface, looking backward.

The third has the longest superior articular surface: it is convex, as wide in front as behind, where it is protuberant, overhanging the posterior part of the second, and looking inwards. The internal border has a continuation of the synovial membrane of the upper surface posteriorly; in front of this is an oval-shaped convex surface: these articulate with those described on the external border of the second bone, and the first one prevents the bone moving forward.

The external border has also a synovial membrane, extending from the posterior part of the upper surface, and in front of this is an isolated one looking backward.

The fourth has an articular surface at its superior part, broad in front, narrow behind, which with the upper surface of the latter bone supports the navicular: its posterior part looks inwardly.

Its inner border, somewhat rounded posteriorly, is an extension of the upper synovial membrane; anteriorly is a small arti-

cular surface opposing the isolated one on the anterior part of the external border of the last bone.

Besides these there are two sessamoid bones, the outer of which is the largest, articulating with the three outer metatarsals on their posterior superior parts, which are smooth and rounded.

### Ligaments.

These, for the sake of convenience of description, may be divided into external and internal lateral; and anterior and posterior.

#### *External Lateral.*

1st. From the inferior part of the fibula to the infero-external part of the os calcis.

2d. From the antero-external part of the tibia, turning backwards under the latter, to become attached to the calcis at the upper edge of the superior articulation with the astragalus.

3d. From the inferior part of the fibula to the superior part of the outer side of the astragalus.

4th. Infero-external, from the inferior part of the calcis to the head of the outer metatarsus.

5th. A very short one, under the latter, from the inferior extremity of the calcis to the superior part of the navicular.

6th. From the odontoid projection on the side of the navicular to the upper part of the outer metatarsus.

Some fasciculi unite the fibula to the tibia both anteriorly and posteriorly. I have considered these as lateral.

#### *Internal Lateral.*

1st. From the tibia to the cuneiform parvum at its upper and posterior part; it also sends off a slender band to the upper part of the false digit, or the small bone supplying its place.

2d. From the anterior of the infero-internal part of the tibia to the upper part of the small cuneiform, and to the posterior of the cuboid.

3d. Under the latter from the inferior of the tibia to the side of the astragalus.

4th. A broad ligament from the infero-internal part of the calcis to the inner side of the cuboid, crossing the astragalus.

5th. A very small one situated under the latter, from the inferior part of the astragalus to the upper part of the cuboid.

6th. From the inner part of the cuboid to the middle and small cuneiform bones.

7th. From the cuneiform parvum to the inner metatarsus and rudimental digit.

*Anterior Ligaments.*

1st. From the middle and outer parts of the lower head of the tibia; it then passes over the anterior part of the joint, and becomes attached to the cuneiform magnum and to the second metatarsus. It may be said to be continuous with the superior annular ligament.

2d. From the inferior part of the outer convex ridge on the superior part of the astragalus, becoming blended inferiorly with the two latter.

3d. Situated under the latter: it extends from the antero-inferior part of the astragalus to the navicular, cuboid, and superior part of the cuneiform magnum.

4th. From the antero-inferior part of the calcis to the upper part of the navicular: it is situated under the last.

5th. A transverse one from about the middle of the anterior surface of articulation of the calcis and astragalus, uniting the two bones.

6th. Transverse also, from the upper part of the navicular to the cuboid.

7th. From the inferior part of the navicular to the upper of the third metatarsus: it is a short ligament.

8th. From the inner and inferior corner of the cuboid to the upper and inner part of the cuneiform magnum.

9th. A transverse ligament from the cuneiform magnum to the cuneiform medium.

10th. From the inferior of the cuneiform magnum to the second metatarsus.

Several small transverse ligaments unite the superior parts of the metatarsals and the rudimental digit.

*Posterior Ligaments.*

1st and 2d. Short ligaments from the posterior part of the superior ridges of the astragalus, to the anterior part of the calcis, just above its superior articulation with the astragalus.

3d. From the upper and posterior part of the calcis it runs in an obliquely outward direction to become attached to the head of the outer metatarsus.

4th. From the postero-inferior part of the calcis to a tuberous projection, situated at the posterior part of the navicular: it is continued from this to the sessamoid bones.

5th. From the lower part of the pulley-like surface of the calcis: it divides into three, which are inserted into the posterior parts of the navicular, cuboid, and small cuneiform bones.

6th. From the inferior part of the calcis to the outer sessamoid, being a long thin ligament.

7th. From the cuboid to the cuneiform medium: it is a short ligament.

8th. From the navicular to the two sessamoids: it is a broad one.

9th. From the outer and larger sessamoid to the third metatarsus, about one-third of the way down the bone: it may be divided into two.

10th. From the tuberous projection on the posterior part of the navicular to the outer metatarsus.

## Muscles.

These are numerous and somewhat complex. By their arrangement, coupled with the osseous structure, the dog is, perhaps, enabled to perform more varied action with his feet than any of our domesticated animals; but their action, as produced on the hock, is not so great as might perhaps be expected. For the sake of brevity, I have frequently referred to the muscles of the hind extremity of the ox where similarity exists between them.

The *Inferior Rotator and Abductor* muscles of the thigh. Each gives off a tendon, and these unite in front of the gastrocnemii, about

half way down the tibia, forming one which is inserted into the point of the calcis in front of the gastrocnemius externus tendon.

*Action.* To aid materially in the extension of the leg, and to form a fixed point, so that the muscles situated under them may be bound down in their action.

The *Gastrocnemius Externus* has two sessamoid bones at its superior attachment; in other respects it resembles that of the horse and ox.

The *Gastrocnemius Internus* resembles the same muscle in the horse and ox; till its tendon reaches the inferior part of the os calcis, where it splits into four, which diverge and accompany their corresponding metatarsals. At the metatarso-phalangeal articulation each spreads out, allowing the passage of a tendon of the perforans; it then dips into a sheath given off from two sessamoid bones, runs along the posterior part of the first phalanx, under another sheath, and finally becomes attached to the head of the second phalanx at its posterior part.

*Use.* To assist in the extension of the hock, and in the propulsion of the body: its chief action is to flex the first and second digits.

The *Popliteus* presents no peculiarity.

The *Flexor Perforans*, with the exception of an attachment to the fibula, resembles that of the ox, as far as the middle of the metatarsals, where it splits into five tendons, the inner one of which runs to the dew claw; the others run under the divisions of the perforatus tendon, pass through them at the inferior parts of the metatarsals, getting to their posterior parts, and are finally attached to the heads of the third phalanges. Prior to its division it gives off a fine slip of tendon, which passes between the two middle divisions of the perforatus, and is attached to the elastic pad.

*Use.* To flex the digits, and slightly assist in the extension of the hock.

The *Flexor Accessorius.* With the exception of an attachment to the upper and posterior part of the fibula, it resembles the flexor accessorius internus of the ox.

*Use.* To assist the perforans, pulling it inwards when in action.

The *Extensor Metatarsi Externus* arises from the upper and outer part of the tibia and anterior of the fibula: it becomes tendinous half way down that bone at the hock, runs over its posterior part,

and, inclining slightly forwards, becomes inserted into the outer part of the head of the fourth metatarsus. I at one time much doubted whether this was a flexor or an extensor; but I have decided on its being the latter, from its being posteriorly placed to the fibula inferiorly, and from a flexor being situated close to it.

*Use.* To extend the hock-joint and abduct the fourth metatarsus.

The *Flexor Metatarsi Externus* has the same superior attachment and relations as that of the ox. It has not so oblique a direction, as it crosses the hock and enters the joint between the navicular and outer metatarsus to the posterior part of the head of the first digit.

*Use.* To flex the hock, abducting it, and turning the posterior part outward. I am inclined to think this muscle is of great use in assisting the animal to turn.

The *Flexor Metatarsi Internus* has the same origin as the corresponding muscle in the ox. As soon as it becomes tendinous it crosses obliquely to the front and inside of the hock, and at its lower part spreads out and becomes attached to the head of the false digit.

*Use.* It is a powerful flexor of the leg: it will adduct it, and turn the back part of the hock inwards.

The *Extensor Digitorum* has the same origin and relations as those of the ox and pig until half way down the tibia, where it splits into four fleshy bellies, the inner one coming off first, the second next, and the fourth continuing fleshy farthest down the leg. Each ends in a fine tendon, and these accompany each other under an annular band above and below the hock, the latter being quite a loop, arising from the antero-inferior part of the calcis, and which acts as a pulley with regard to the tendons. From this they gradually diverge, each running towards its respective digit, and is inserted into a sessamoid bone and the capsular ligament in front of the metatarso phalangeal articulation; it is then extended to the capsular ligament of the joint, between the first and second phalanges, and is finally attached to the base of the third phalanx.

*Use.* To assist in the flexion of the hock: it raises, extends, and adducts the digits: the outer division acts most powerfully, but they have all a somewhat independent action.

The *Extensor Digiti Externus* resembles the muscle of the same name in the ox as far as the hock; it here crosses under the tendon of the flexor externus, passes down the antero-external part of the fourth metatarsus, and becomes attached to the head of the first phalanx.

*Use.* To extend and abduct the outer digit: it also assists the flexores externi and interni.

The *Extensor Digitorum Inferior.* Attached to the infero-anterior part of the astralagus and to the capsular ligament of the hock joint by an expanded fleshy belly: it splits into three divisions, which end in three tendons, running to the capsular ligament of the metatarso-phalangeal articulations, and to the upper extremity of the first, second, and third upper phalanges.

*Use.* To extend the digits, raising them. It acts most powerfully on the first digit. It also completes the flexion of the hock, acting very powerfully in this respect.

The *Flexores Digitorum Inferior.* Four small fleshy bellies arise from the sessamoid bones situated at the postero-inferior part of the hock, and from the heads of the metatarsals; they run down the back of the leg, under the perforans tendon, and are attached to the four sessamoids situated at the posterior part of the metatarso-phalangeal articulation, and to the capsular ligament.

*Use.* To flex the digits, and to extend the metatarsal bones slightly.

### The Arteries of the Hock

are furnished by the femoral, which gives off the Internal, Anterior, and Posterior Tibial Arteries.

*The internal* is first given off. It arises from the inner side of the main trunk, a little above the origin of the gastrocnemii muscles, accompanying them about half way down the tibia: it here bifurcates; one division runs to the anterior part of the hock, giving it branches, becomes subcutaneous, and is continued to the lower parts of the metatarsals; the other division continues in front of the gastrocnemii to the hock, and runs over the calcis in company with the perforans tendon, furnishing the inner and posterior parts of the hock; it then gains the back of the leg,

and at the inferior part of the metatarsals splits into four principal divisions, which furnish the skin of the posterior part of the foot and its elastic pad.

*The anterior tibial* dips between the heads of the gastrocnemii externus, winds round under the muscles clothing the outer part of the thigh, passing between the fibula and tibia to gain the front of the latter, down which it runs. At the hock it gets rather to the outside, but when near the lower part of the joint it turns inwards, crosses under the extensor digitorum, and dips between the first and second metatarsal bones, and is continued down the back of them to their lower parts, where it divides into four principal branches, which furnish the deep-seated parts of the foot and the interdigital spaces. In its course it gives off

1st. Numerous branches to the extensor digitorum and flexores metatarsi.

2d. Branches to the anterior and external parts of the hock.

3d. Branches to the inferior flexor muscle at the back of the leg.

*The posterior tibial* also passes between the heads of the gastrocnemius externus, giving branches to its anterior part: it likewise, before it dips through that muscle, gives off a large branch which courses its back, and is continued as far as the os calcis.

The blood is returned from the posterior parts of the foot by two sets of veins, superficial and deep-seated: these form the external and internal metatarsal veins. The inner one accompanies the metatarsal artery, derived from the anterior tibial, as far as the hock, where it leaves it for the inside of the joint, but crosses the back of the tibia to empty itself into the

*Outer metatarsal;* which having at the hock received branches from the front of the metatarsals, crosses the outer side of the joint. Above, it receives the branch before named, and passes up the thigh, covered by the biceps abductor muscle.

There are also several veins which arise from the anterior part of the hock; these unite, forming one trunk, which accompanies the anterior tibial artery.

The Nerves of the Hock are

The crural, the anterior, and posterior tibial.

The crural runs on the inside of the thigh, being situated in front of the internal tibial artery. At the hock, it splits into numerous branches which run to the anterior and inner parts of the joint, some of them being continued as subcutaneous nerves lower down on the inside of the leg.

The sciatic gives off the anterior and posterior tibial just above the stifle. The anterior much resembles the same nerve in the horse in its course: it emerges from under the abductor muscle, giving numerous branches to the muscles on the outside of the thigh, and its main trunk gradually crosses to the front of the leg, dips under the muscles here situated, and accompanies the anterior tibial artery down the leg and over the hock, being distributed to the anterior part of the leg and digits.

The posterior nerve also resembles the same nerve in the horse: it dips between the heads of the gastrocnemius externus, to which it gives numerous branches, and then divides into two principal divisions. A. The outer branch crosses round to the outer part of the leg, and is distributed to the anterior and outer part of the hock and the two external digits. B. Accompanies the perforans muscle and tendon till over the os calcis, when it divides into, 1. Twigs which cross the outer and back part of the leg, furnishing the posterior part of the digits. 2. A large trunk, which dips into the flexor digitorum inferior, supplying that muscle, and is then continued to the posterior part of the digits, where it divides into numerous filaments, some of which run to each of their extremities.

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The weight supported by the hock of the animal is pretty equally distributed, the tibia resting on the large surface of the astragalus, and the fibula on the calcis, these being supported by the navicular and cuboid, which in their turn rest on the cuneiform and metatarsal bones. These latter present a large surface of support, and from this and the digits diverging inferiorly, as well as from the elastic pad, a large basis of support is offered, and the hind parts of the animal have consequently much stability.

It is often remarked how seldom a dog performs the walking pace, and it may be imagined by some persons that this is dependent on the conformation of his hocks; but it is not the case. I am inclined to refer it more to peculiarity of disposition than to any other cause; for if any one of this species is noticed to walk, it will almost invariably be a large and even-tempered animal (a mastiff or Newfoundland dog for example), and not petted or small dogs, who are naturally fidgetty and restless in their disposition. These latter are also generally exercised at a pace which forbids the walk to be performed, and this may account, in some degree, for their acquiring a habit of trotting.

In the performance of the trot the hock is brought under the body by the contraction of the flexores metatarsi, assisted by the extensor muscles, the astragalus and calcis running on the tibia and fibula, and afterwards by the assistance of the extensor digitorum inferior. The navicular and cuboid move on the astragalus and calcis, though this action is limited in the canine species. From the flatness of the articulations of the other bones they perform but little motion during the flexion or extension of the limb, either on each other or on the metatarsals; but as each tendon of the extensor digitorum arises from a distinct muscular slip, and from the outer digit having a separate muscle, and from the metatarsals having synovial articulations existing between their upper extremities, it is evident *they* can be moved and elevated somewhat independently of each other.

When the hock is flexed to its utmost, the metatarsals do not approximate so near to the tibia and fibula as do the corresponding bones in the ox or pig. The digits are approximated, and either one or the other of the metatarsals may be raised above its fellows, and from the direction of the flexor externus, the foot is brought to the outside of the fore foot when it is placed on the ground; or if, as is often the case, one hind foot be brought opposite, or a little to the inside of the corresponding fore foot, the other hind foot will be placed *very much* on the outside of the corresponding fore foot, giving the animal a one-sided gait.

The gastrocnemenii now contracting (the calcis being their fixed point), the limb is straightened by the tibia and fibula being pulled in a straight line on the femur, which bone is also extended and the body pushed forward, the extension of the hock joint

being assisted by the tendon proceeding from the rotator and abductor muscles and the extensores metatarsi, which latter, from their course, and being made up in so great a degree of tendinous structure, act as much mechanically as vitally. During this motion, the fibula and tibia are placed to the back parts of the articulations of the calcis and astragalus, and the navicular and cuboid to the back of the inferior parts of the same bones; the leg being sufficiently extended to allow of the foot being raised from the ground, which is accomplished by the flexor muscles of the foot, the small bones and metatarsals glide over each other in some degree, and the foot is gathered into a ball-like form by the continued contraction of the flexor.

I do not think the bones of this joint have more motion in the gallop, as from the great power of motion the animal possesses between the femur and the acetabulum, the number of gluteal muscles, and the large extent of surface of the stifle joint, he possesses much liberty with his hind quarters; and this extent of motion is well and simply exemplified by the act of scratching his head, though this is much assisted by the flexion of his loins. The same remarks apply to the tremendous springs some dogs, especially greyhounds, will take; the immense comparative length of femur and tibia, and the closeness of the hock to the ground, all indicate that the animal needs not a great degree of motion in his hocks. The short distance this joint is from the ground, and consequent inelasticity caused by this conformation, is fully counterbalanced by the number of bones composing it, by the metatarsals, and, more than all, by the number of digits and the elastic pad.

The number of bones also materially assist in moving the body quickly round to either side; the flexor externus twists the back of the hock outwards, assisted by the rotator muscle about the head of the tibia: it is turned inward by the flexor internus, and by the abductor and a rotator muscle extending from the ischium to the supero-external part of the femur. The small bones rotate over each other in either of these movements.

[To be completed in the next Number.]

FEBRUARY 10, 1846.

The TREASURER in the Chair.

## CASE OF FRACTURE OF THE ULNA.

*By Mr.* WHITE.

*Mr. White* laid on the table a fractured ulna, taken from a cart colt, and stated that the animal was cast for the operation of castration by means of the old-fashioned collar rope, and he fell on the side opposite to that on which the fracture took place. The operation was considered to have been performed successfully; but on releasing the animal he was observed to be very lame, and a swelling at the ulnar region, about the size of an egg, was also perceived to exist. He was treated by a farrier, who had operated on him, for this lameness, and active blisters were repeatedly applied by him. Still, however, the lameness remained present, and the swelling increased up to the eleventh day, when Mr. White discovered that the ulna was fractured, and advised the animal to be destroyed, which was accordingly done. He remarked that the case was interesting, as shewing to what an extent osseous matter had been thrown out; and he did not consider this great deposition to be owing to any diseased state of the bone, but rather to the powerful irritation which was kept up by the continued application of the blisters, since there was shewn no disposition to osseous disease in other parts of the system.

*Mr. Kent* and *Mr. Dunsford* were of opinion that the bone was in a diseased state previous to the fracture taking place, it having a spongy appearance.

*Mr. P. Ferguson* said he could not observe any thing which would induce him to believe that there was any disease of the bone existing prior to the fracture; and the large osseous deposits about the parts were referrible, in his opinion, to the great excitement kept up in the part by the contractions of the powerful extensor muscles of the arm, which, from its attachments, must have separated the olecranon from the ulna itself, and thereby prevented that formation of healthy callus which would have taken place if we could have secured the fractured parts in apposition, and likewise pre-

vented their motion upon each other, and the consequent irritation, with increased inflammatory state of the parts involved. Again, the great excitement kept up by the application of blisters would naturally determine a great quantity of blood to the part, and increase the secretion from the surrounding vessels. But there was another question which was interesting, viz. was the fracture owing to muscular contraction, or to mechanical injury from the hind foot striking the olecranon and fracturing it from the ulna? He was of opinion that it was the result of a blow from the hind foot in the struggles of the animal; and he came to this conclusion, after considering the muscular attachments of the fore extremity, coupled with the fact that the leg was not fixed at its inferior part.

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## Case of Tetanus.

*By Mr.* G. South.

Gentlemen,—A case of somewhat unusual occurrence, and therefore possessing some degree of interest, having lately fallen under my notice, I have deemed it not altogether unworthy of the consideration of the members of the Veterinary Medical Association. It is an instance of traumatic tetanus—such at least I presume it to have been—followed by peritonitis. The symptoms of the latter form of disease were, however, so ambiguous and ill defined, that until after death we did not even suspect its existence.

It is little more than a rough outline of the case I here offer you: its worth will depend, therefore, on the remarks it may elicit from others, since no novel mode of treatment was adopted by me; and it is well known that tetanus too often bids defiance to all the curative agents that may be suggested, from our inability to administer them.

I am, Gentlemen,

Respectfully your's.

In the beginning of last May I was consulted respecting a grey gelding, six years old, on account of lameness. I was of opinion that chronic inflammation of his fore feet existed, particularly of the near fore-foot, and also incipient navicular disease. The animal

was consequently placed under my charge. I first bled him from the affected foot, and that largely, and subsequently from the opposite one; cold applications were also had recourse to, and this plan of treatment, with rest, proved effective, as the lameness yielded, and the horse continued sound for nearly two months. At the termination of this period I was again sent for, and found the lameness had returned; his feet, also, had been very much neglected. I immediately had the shoes removed, and the feet well pared out, which afforded relief, but only for a short time, not longer than a week or ten days, and from that time he at intervals fell lame for a few days, but with rest, and, his feet being kept wet with cold water, it disappeared. In this manner he continued for several weeks; at last the proprietor became tired of this uncertainty, and requested me to perform the operation of neurotomy. At this time, however, the horse went perfectly sound, of which I informed the owner, and he deferred the operation. Nevertheless, a fortnight had scarcely elapsed, when he sent me word that he had determined on having it performed. In compliance with his request I divided the nerves of both legs, and after the animal was liberated from the hobbles he was trotted, and went perfectly free from lameness. To my recollection I never witnessed a patient do better. This was on the 14th of December, 1845. The third day after the operation I removed the sutures, and the wounds healed without any suppurative action being set up, and in a fortnight, or even less, the animal was put to work. I had several opportunities of seeing him afterwards, and frequently passed my hand down his legs, when he never appeared to resist my attempts, nor could I detect any soreness about the parts.

On Sunday, February 1st, about twelve o'clock, the owner's servant came, desiring my immediate attention to the grey horse, as he was very ill. I lost no time, but went directly, and on my arrival found him labouring under tetanus. On inquiring how long they had perceived him to be in that state, they informed me he had eaten his first feed, and after that he was observed to stand with his head resting on the manger, and to breathe laboriously. He was at once removed to my infirmary, and placed in a loose box. Having witnessed the narcotic influence of tobacco in similar cases, I infused an ounce in a pint of water, and endeavoured

to administer it; but not more than half of it was given. An extensive mustard cataplasm was applied along the back and loins, and over his fore legs. An enema of tobacco smoke was also given, which caused an evacuation of his fæces, which were encoated with mucus. In the evening the pulse had fallen to 54, and the breathing was more tranquil. The enema was repeated, and the dung expelled was very hard, and still coated with mucus. Having failed in the administration of the solution of tobacco, and the bowels being now constipated, I mixed fifteen drops of croton oil in some mash, with the hope and expectation that he would eat it during the night, but it remained untouched.

*Monday, Feb.* 2*d.*—On examination this morning, I found my patient in a high state of excitement: he had not fed during the night, but had drunk about half a pailful of water. The pulse was 60; the respiration much increased, and more rigidity of the muscles present; the jaws were firmly closed, and any attempt to open the mouth produced much pain. Tobacco enemata were thrown up three times in the day, which brought away some fæces. In the evening the symptoms were nearly the same as in the morning. I enjoined perfect quietude.

*Tuesday, Feb.* 3*d.*—The symptoms remain unchanged, except that the pulse is less frequent, being 52. The animal cannot feed, but drinks his water freely. Enemas continued. In the evening no better. Strong mustard plasters, made with oleum terebinth. et acid. acetic. dil., were applied as before, and allowed to remain on all night, which produced considerable excitement.

On Wednesday, Feb. 24th, he appeared better than I expected to find him after the powerful irritant which had been applied. The pulse was 48, and the respiration not so much hurried. The plasters were removed, and the enemas continued. As the bowels were still torpid, ten drops of croton oil were placed in half a pail of water, the greater part of which he readily partook of, so that six or seven drops of the oil may have been taken. In the evening he manifested a desire for food. Hay was allowed, of which he collected a little in his mouth, and then went to the water; but this aggravated the disease so much that I was compelled to order its removal, and direct the animal to be kept perfectly quiet.

*Thursday, Feb. 5th.*—My patient not so well; pulse 58; breathing very much accelerated, and the head and neck are bedewed with cold perspiration.

At 12 o'clock he appeared paralysed in his hind quarters, and, being fearful that he would fall down, I placed him in the slings. I next shaved the hair off his back and loins, and applied a plaster consisting of the extract of belladonna and opium. He appeared perfectly tranquil in the slings for about an hour afterwards, when he became very uneasy, and from that time he rapidly got worse until 10 o'clock at night, when he died.

*Post-mortem Appearances.*—On laying open the abdominal cavity, extensive peritoneal inflammation of all the viscera was found to exist, with chronic disease of the liver.

On exposing the thoracic cavity and removing the heart and lungs, numerous spots of ecchymosis were seen on the pleuræ costalis et pulmonalis. The left side of the heart and its investing pericardium, with the left lung, were intensely inflamed, being of a very dark red colour. The vessels of the brain and medulla spinalis were in a highly congested state; but, on a careful examination of the nerves of the legs that had been subjected to the operation prior to the attack of tetanus, not the least trace of inflammation could be perceived to exist. In the navicular bone the ulcerative process was going on. It yet remains to be decided, if the operation had recourse to was the immediate cause of tetanus. No other lesion could be detected, and, were it not for the length of time which intervened, little hesitation would be felt in tracing the tetanic symptoms to it. But, even then, we have to assign a cause for the peritoneal inflammation, the indications of which were very obscure. Indeed, it is the ambiguous nature of the case which has principally induced me to lay it before the members of the Association.

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*Mr. Dunsford* stated, that he had seen the animal in question the day before his death, and he certainly did not anticipate that dissolution would have taken place so soon as it had done. At that time he did not observe any thing like symptoms of peritonitis present, the pulse not being more than 48 in the minute. He had dissected one of the legs, and found nothing unusual about the nerves where they had been divided; but there was ulceration

of the navicular bone: thus Mr. South's prognosis was confirmed. There was, however, one remarkable feature in the *post-mortem* appearances, which Mr. South had forgotten to mention; it was the contracted state of the ilium, the diameter of which was not more than about one inch. The late Mr. John Field had remarked the same peculiar contracted state of different parts of the intestines in several cases of tetanus which fell under his notice.

About six months ago he (Mr. Dunsford) had a case in which tetanic symptoms shewed themselves, and, being unwell, his friend Mr. Broad saw the case for him, and on consultation it was agreed that enemas of tobacco-smoke should be tried. They were consequently exhibited three or four times a-day, and a cataplasm of mustard and vinegar applied to the loins; and although he at first considered the case hopeless, the animal ultimately recovered, and is now well. It is true, the horse was bled by his assistant, in consequence of the symptoms becoming more aggravated after the application of the mustard cataplasm; but this was done during his absence. He mentioned the fact of the patient having been bled in his absence, as he was not an advocate for bleeding and blistering in tetanus.

*Mr. Simonds* observed, that the use of counter-irritants and bleeding had been much censured by many eminent practitioners in cases of tetanus. Some years since a case was sent to his infirmary of the traumatic form; and as there were no hopes entertained of a recovery, he, by way of experiment, bled the animal to the amount of 28 lbs, and when the heart's action seemed to stop, and only then, the orifice was pinned up. A sheep's skin was next applied to the loins, and a strong cathartic administered, and the animal got well.

Some time after this another case of tetanus was placed under his care, and he bled this animal till he fell; but it proved an unfortunate case, for the air rushed into the vein, and death quickly took place. He related this last case to caution young practitioners against the danger of bleeding to syncope in this disease, thus allowing of the air to rush into the vein before the orifice can be closed. As to Mr. South's case, from the fact of the operation being successful, the wounds healing well, and no aggravation of the lameness before the attack, he would rather consider it a case of idiopathic than traumatic tetanus.

*Mr. Mitchell* had seen a case of tetanus which terminated fatally, and it was attributed to the presence of a great quantity of bots in the stomach, the coats of which were nearly eaten through in some places.

To the relation of these cases succeeded the reading of a paper "On Garget in the Cow," from the pen of Mr. Dexter. From an arrear—and a heavy one—of matter, we are precluded from inserting the essay, although its author was practically conversant with his subject. It, however, presented but little novelty; nevertheless it was written "*con amore*," and elicited a useful, as well as a somewhat discursive, argument. Selections from it may be made hereafter.

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FEBRUARY 17, 1846.

The PRESIDENT in the Chair.

CASE OF RABIES FUROR.

*By Mr.* AINSLIE, *M.R.C.V.S.*

*Mr. Ainslie* laid on the table the morbid parts removed from a rabid dog, and stated that on the 14th instant he was requested to accompany his friend Mr. Daws in consultation on the dog from whom the parts before the members of the Association were taken. On visiting the animal, he at once concurred in opinion with Mr. Daws, that the dog was rabid. He was then very violent, and he had subsequently learned from the owner that he had been very irregular in his habits for two or three days previous to Mr. Daws being called in. The symptoms were so well marked, that he had no hesitation in at once pronouncing the case to be one of rabies furor. But although both Mr. Daws and himself came to this conclusion, it was with much difficulty that the owner consented to have the animal destroyed; however, he was brought to his hospital, where he became even more violent, having gnawed through a strong door-post and rails, before he was there killed by prussic acid.

This dog had been bitten a little before Christmas in the foot, and was, both before and after this accident, in the habit of being

at liberty. However, on Saturday the 14th instant he, as usual, went out when his owner's shop was opened, and was seen to bite two or three dogs. Mr. Ainslie would certainly attribute this well-marked case of rabies to the bite which the dog had received before Christmas, particularly as he seemed, within the last two or three days of his life, to experience great pain in the foot which was bitten, and had, during the attack, gnawed this foot very much.

As this was so well a marked case, he preserved the stomach, to shew the junior members the many different matters contained in it, such as pieces of wood, tow, carpet, cord, &c., and also to point out the inflammatory state of the organ. In this case, however, those ecchymosed patches generally found in the stomachs of rabid dogs that had been allowed to die of the disease were not present; they would, in all probability, have existed in this case also, if the animal had not been poisoned, by which the disease was prevented from running its natural course.

The larynx was, as is usual, very much inflamed; and the trachea likewise, down to the bronchi: the lungs were also congested. In conclusion, he said that the *post-mortem* appearances fully proved the case to be one of "rabies furor," or raging madness.

*Mr. Dawe* stated that this dog was the property of a person whose horses he was in the habit of attending, and in consequence of his owner, who had no suspicion as to the real state of the animal, remarking the dog to be unwell, he was requested to give him some physic; but when he called to see the animal, he found him apparently unconscious of what was passing around him. He was lying beneath a chair, and on his going towards him he attempted to bite him, but not in a savage manner, it being more like a careless snap. When roused he would perambulate the room as if following some imaginary object, at which he was continually snapping; then all of a sudden he would be seized with a paroxysm, and tumble over and over. Some water was offered him in a bason, into which he plunged his nose as far as his eyes, and, when he tried to swallow, the spasm of the larynx was so great as to produce convulsions, accompanied with a peculiar plaintive cry. His voice had become much altered during the last three or four days, and at night he was continually howling. He had been

observed to pass his excrements, and immediately to eat them; and, although a dog of very cleanly habits in the house, latterly he had voided great quantities of urine on the drawing-room carpet, the corner of which he had afterwards eaten, as well as a small woollen mat that lay upon the stairs.

*The President* referred to the interesting nature of this case, and acknowledged, on the part of the members, the obligation the Association was under to Messrs. Ainslie and Daws for the introduction of this instance of rabies canina, a disease than which there is not one more interesting nor more important on which to institute inquiries; and since there are many particulars connected with this malady respecting which a variety of opinions exist, it would be well if practitioners would seize every opportunity that presents itself, so as fully to investigate its nature. It unfortunately is a disease which has caused the death of many human beings; and as it is incurable, it is of the greatest moment that we should be correct in our diagnosis. Much subsequent danger might be avoided from the inoculation by a bite of a dog reported to be rabid, by first ascertaining if he really be so, and, being so, by taking the necessary precautionary measures. If, on the contrary, the animal is proved not to be rabid, the anxiety of the mind necessarily attendant will at once be relieved; nevertheless, he would advise excision of the bitten part in all cases, and the free use of the nitrate of silver over the excised surfaces.

He did not agree with the opinions advanced by Messrs. Blaine, Youatt, and others, as to rabies occurring only from inoculation by the saliva of a rabid animal. Again, as to the vulgar opinion of this disease being more prevalent in warm than in cold weather, the statistical reports did not confirm it, but would lead rather to an opposite conclusion, if closely inquired into; the fact being that rabies occurs in all seasons.

As to the symptoms of this disease, the history of the case just given by Messrs. Ainslie and Daws furnished an admirable outline, at least of that kind properly called rabies furor. But there was another form, called "dumb madness," in which the animal was comparatively harmless, from the jaw being paralysed; and this latter kind might by the uninformed be mistaken for choking by some foreign body, as a bone sticking in the throat, &c.

However, the distinguishing symptoms of both those forms of madness were well marked, and particularly in rabies furor, in which the general habits became almost always very irregular for a day or two before the more violent symptoms manifested themselves; and the howl or cry is so very peculiar, that, when once heard, it is not easily to be mistaken or forgotten.

With respect to the post-mortem appearances, they could not always be relied on in forming an opinion as to the actual state of the animal prior to its death. For example, gastritis is a common disease in dogs, and morbid appetites also, with their consequent alterations of structure: a correct conclusion, therefore, can only be arrived at by connecting the symptoms during life with the post-mortem appearances.

The President also alluded to the popular but erroneous opinion of rabid animals having a dread of water. Animals affected with rabies will endeavour to drink if water be placed before them, but they cannot, in consequence of the paralysed state of the pharynx and fauces. Another error was equally as prevalent, and through which many dogs were sacrificed: he alluded to epileptic fits.

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*Mr. Daws* directed the attention of the members to a fractured pastern bone of a coach-horse, and

*Mr. Ainslie* presented a large osseous tumour which he had removed from the mamma of a bitch. It contained much ossific matter, and was about three and a half inches long by two and a half broad. He said the bitch had seven or eight other tumours, which he intended removing in a few days, as soon as the wound caused by the removal of the large one now exhibited was quite healed. As to the treatment which he had found most successful for the incised wounds in those cases, he said that they healed soonest when the lips were simply drawn together by means of sutures, and then left exposed to the atmosphere, not bandaged.

The remainder of the evening was occupied by the consideration of Mr. Dexter's Essay on Garget.

*Mr. Harman* thought that garget should be considered as manifesting itself under two forms—viz. the acute, occurring immediately after calving; and the sub-acute, which arises from other causes, and is slower in its progress. He advocated bleed-

ing in the acute form, and the exhibition of purgatives; and also approved of permitting the calf to be left with the cow, even though there might be a serous oozing from the mammæ.

*Mr. Mannington* thought there might be a still further distinction made when considering the structures implicated in the disease called garget. He believed that the mucous membrane lining the ducts in the mammary glands often became diseased, and poured out an acid secretion, which causes decomposition of the milk, and which, in its turn, gives rise to a diseased state of the gland generally, and this most frequently ends in scirrhus. Other cases of the acute form will go on to sphacelus. He was of opinion that, when the mammary secretion became obstructed, the absorption of milk into the system gave rise to great constitutional disturbance, and was the cause of much wasting, and frequently of the death of the animal. As to treatment, he would exhibit the carbonate of soda, but would not bleed, except when there was great constitutional irritation. He also approved of setons being inserted near to but not in the substance of the udder.

*Mr. Bass* agreed with Mr. Mannington as to the distinctive characters of the different forms of the disease, and spoke of local congestion as frequently occurring after calving; and in such cases he would foment the udder and give purgatives. He added, that frequently, when called to a case of mammitis, he had found a lump of coagulated milk at the base of the teat, and in such cases he would make an opening near the base of the mamma, and then freely foment the parts. He, however, did not agree with Mr. Mannington as to the danger to be apprehended from the absorption of milk into the system, though the case was different and became really dangerous when absorption of pus took place. When sphacelus was present, he said he would leave the dead parts to slough away, not having recourse to the knife.

*The President* remarked that, with respect to Mr. Mannington's observations about the danger to be apprehended from the absorption of milk into the system, he could not concur, as such took place constantly in "drying of cows" for fattening; and as to removing parts that had taken on mortification from the udders of cows, or in any case, a simple rule might be observed, namely,

to excise if the sphacelus was spreading, but to let the parts slough away if the sphacelus be small and circumscribed.

*Mr. White* remarked that he had seen "dry" cows become affected with garget, and in such cases the animals always wasted very rapidly and the udder suppurated. When gangrene was present, he would extirpate the quarter affected. He had removed the whole of the udder in sheep by means of a ligature tied at the base of the gland.

*Mr. Dexter* related a case of garget which had occurred during that week, in consequence of a cow having been driven hurriedly from the fair at which she was purchased to his establishment. Her udder was very much enlarged, but on the morning after her arrival she gave only three quarts of milk, and was feverish. At night the gland had become much more swollen, and was very hard, and the appetite gone. It was at this time he saw the animal, on his return home, when he gave a brisk purgative, and had the udder constantly fomented for three days; and the animal is now quite well, and giving milk from the four quarters of the gland, although for four days one of the teats was quite impervious.

*Mr. Ainslie* remarked, that great benefit in the treatment of those cases resulted from supporting the udder by means of suspensory bandages, the use of long-continued fomentations, with aperients, and by drawing off the milk as frequently as convenient.

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FEBRUARY 24, 1846.

The TREASURER in the Chair.

ON the table several morbid specimens were laid.

## CASE OF LACERATION OF THE RECTUM, WITH ESCAPE OF THE COLON INTO IT.

### *By Mr.* W. ERNES, *M.R.C.V.S.*

*Mr. Ernes* said, this case being very uncommon, he was desirous of laying the morbid parts before the members of the Association, with the history of the case, which was brief, and as follows:—

The animal was a chestnut gelding, about twenty years of age, and had been a racing trotter; but latterly he was in the possession of a skindresser, who, on account of the animal's fast paces, drove him twice a-week very long journies. The last journey he performed was finished on Sunday, at one or two o'clock, A.M., when he appeared in his usual good health, and fed well all the day.

Early the following morning I was requested to attend the animal, on account of an attack of spasmodic colic, but, being from home when the messenger arrived, my assistant went, and exhibited the usual antispasmodic draught. I visited the patient on my return in the evening, when he seemed better, and his pulse was firm and natural. The next morning, however, he was much worse: he pawed, and strained as if he wanted to urinate, but could not. My prognosis was unfavourable. I considered him to have peritonitis, and ordered the necessary remedies; but the owner, as I was leaving the establishment, requested me to make an examination, so as to ascertain the cause of the violent attempts made to empty the bladder: I therefore introduced my hand up the rectum, and, to my surprise, found that there was a portion of intestine protruding within the gut, and, on withdrawing the hand, extensive prolapsus ani shewed itself. The case being now altogether hopeless, the animal was at once ordered to be destroyed. At the autopsy the rectum was found to be ruptured or lacerated, and a portion of the single colon had protruded into it so as to constitute an intestinal hernia. Every inquiry was made as to whether the animal had been kicked or back-raked, or met with any accident, but nothing of the kind was acknowledged to have occurred. Mr. Ernes had also carefully examined the entire extent of the alimentary tube, but did not find a calculus or any thing that would give rise to the laceration of the intestine. The heart was much enlarged, and weighed nine pounds; but this might be referrible to the circumstance of his being a horse of fast action, and in the habit of undergoing great fatigue. The ingesta were natural.

*Mr. Simonds* said that the case was interesting, although a knowledge of the cause could not be satisfactorily arrived at; but, considering the situation of the lesion in connection with the absence of any foreign body in the alimentary canal and the normal state of the ingesta, he was rather inclined to view it as the result of some mechanical injury; and, in illustration, he referred to several

cases of rupture of the rectum which he had placed on record in "THE VETERINARIAN" and "TRANSACTIONS OF THE ASSOCIATION," some of which were produced by mechanical injuries inflicted by malicious persons, and others were the result of accidents.

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## CASE OF ENLARGED SPLEEN.

*By Mr.* JOHN KENT, *M.R.C.V.S.*

*Bristol, March* 6, 1847.

Dear Sir,

I NOW send the history of the case of the mare from which the diseased spleen forwarded to you was taken, as far as I can obtain it. She was a cart mare, eight years old, bred by a small farmer on the banks of the Bristol Channel, and was in his possession until within a fortnight of being killed. The land is good, and, from its proximity to the sea, has been a favourite spot for turning horses out to grass, from the prevailing idea that the neighbourhood of salt water is beneficial to their health. This mare was supposed to be in good health until last autumn, when she had a sudden attack of purging, but her appetite was good, and nothing further noticed, and I believe she had not any medical treatment while in the farmer's possession. The purging ceased, but it occurred again from time to time; and at some period during the autumn, when the purging had ceased, she became, as was supposed, very badly broken-winded: the flanks heaved heavily, and the intercostal muscles were depressed at each respiration, and a cough was present of that peculiar description which to a considerable extent characterises broken-wind, but which was not of frequent occurrence even to the end of life. Each time when the purging occurred the breathing became relieved to some extent, and when it again ceased the symptoms of broken-wind increased. In consequence of this the farmer determined on selling her, and did so during the time she was purging: he obtained for her five pounds as a broken-winded animal, without giving the history of the case at the time. The purchaser is a knacker, but he possessed himself of the animal for the purpose of putting her to work, and says she

was in fair working condition as regarded flesh. Having purchased her, he obtained from a farrier some medicine to stop the purging, which had the desired effect: on which the symptoms of broken-wind immediately appeared in such a violent degree, to use his own words, that "her sides almost touched each other every time she breathed; and the heaving at the flanks and the breathing became so bad, that he thought she would drop down and die." He says that at this time her cough was not frequent, but very hollow and painful. Under these circumstances he killed her.

On post-mortem examination he stated to me that the right lung had a small part along its edge indurated, and of the colour of liver, but the lungs otherwise were free from disease in every other respect, and that the only diseased organ in the abdomen was the spleen, which I have sent to the College. I never saw the mare alive, nor even after death; therefore I am entirely dependent on the statement of the knacker, who forwarded the spleen to me, as he had never seen one so much diseased before, and also because the mare was so badly broken-winded, and that without any disease of the lungs to cause it.

I should have transmitted this history sooner, but I have not had leisure. I am, dear Sir,

*To W. J. T. Morton, Esq.* Your's truly.

*Mr. Ernes* commented on the unknown functions of the spleen, and said that he believed it to be connected in some way with digestion, since, when the stomach was full, he thought it was less in size, and *vice versâ:* he also stated that the French had recognised congestion of this organ as being of common occurrence, particularly in ruminants.

*Mr. Pearson Ferguson* said that he considered the disease of the spleen on the table to be of a carcinomatous nature, in which the normal structure of the organ had given place to the deposition of cancerous matter, and which in the case in question was, according to Dr. Carswell's classification, of the second order, presenting, when cut into, a hard granular gritty surface. He looked upon this specimen of morbid anatomy as totally distinct from what was commonly designated scirrhus, as occurring in true glandular

structures, when effusion of lymph took place into the inter-areolar tissue, and afterwards became organized and hard, but not malignant, as in the case of true cancer.

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## Remarkable Case of Poll Evil, complicated with Ulceration of the Cerebellum, and Inflammation with Thickening of the Spinal Meninges at the Axo-atloidean Region.

*By Mr.* Pearson Ferguson, *M.R.C.V.S.*

The history of this case is brief, and may be dated from the arrival of the animal in London by railway from the country, when he was purchased for Messrs. Pickford, the eminent carriers.—About a week after he came to their establishment at Camden Town, Mr. Broderick, the veterinary surgeon in attendance on their stud, was informed that this animal, which was only four years old, had a swelling on his poll; he therefore examined him, and found considerable tumefaction extending from the tubercle of the occiput to the posterior part of the dentatæ. The parts, being tender and painful on pressure, were ordered to be well fomented, and the horse was placed in the infirmary stables. This treatment was continued for several days, with the exhibition of an occasional purgative; but the patient got worse, and the swelling increased, as did also the tenderness, when, on the 12th of January, an abscess was discovered on the off-side of the poll. This Mr. Broderick punctured, and the case appeared going on well for about a fortnight, after which, however, another abscess was discovered on the near side. This was also punctured; and a seton was passed from the near to the off side, between the ligamentum colli and the atlas, from the opening made in puncturing the abscess on the near side to that formerly made. The parts were then fomented and the bowels kept free; the discharge diminished gradually, and all went on well up to the 17th of February, when the poll again became tumefied, and the animal uneasy, evincing symptoms of pain. Fomentations were constantly applied; but on the evening of the 19th the groom observed him to move in his

stall with difficulty, and he shewed symptoms of severe pain. Mr. Broderick saw him early on the morning of the 20th, and found that he was quite uncertain in his gait; the head was shaking involuntarily, like an old man's; pulse 48, and full; respiration rather laborious, but not quick; the pupils dilated, and the expression of the eye wild or unconscious. Ten pounds of blood were then abstracted, and aloes ʒvi in bol. administered.

In the evening of the same day, Mr. Broderick, not finding the urgency of the symptoms in any way abated, but rather increased, requested my attendance in consultation. On examining the patient, I found him standing with his legs far apart, and manifesting symptoms which, *en masse*, clearly indicated compression of some part of the cerebro-spinal axis: he was palsied, tottered when urged to move, and in a semi-comatose state. On examining the poll, I detected an abscess very deeply seated under the strong aponeurotic expansions of the muscles going from the posterior cervical region to be inserted into the wing of the atlas and the occipital bone; the pus apparently causing compression of the spinal cord, by pressure on the capsular ligament situated at the interval existing between the dentata and the atlas. I accordingly freely laid open the cavity of the abscess, by a large incision carried from the side of the mane obliquely down to the posterior corner of the wing of the atlas on the left side. A quantity of the imprisoned pus then escaped; and, on introducing my finger, I found that my diagnosis as to the situation of the matter was correct, for I was enabled to feel the posterior part of the atlas, and pass the finger back to the spine of the dentata along the capsular ligament. The animal seemed relieved by the operation and evacuation of the pus; but as the symptoms of cerebral irritation were still urgent, he was bled to the amount of 12 lbs., and placed in a large apartment without light. Contrary to our expectations, however, he got worse during the night; and he fell down in convulsions, which at first occurred at long intervals, but subsequently became so frequent that no hopes were entertained of his recovery, and he was consequently destroyed on the 21st, at three o'clock, P.M.

*Post-mortem examination.*—In dissecting the poll it was discovered that there were several sinuses in connexion with the abscess last laid open; and the capsular ligament of the articula-

tion between the dentata and atlas was much inflamed and thickened, and adherent to the dura mater within; and the dura mater itself, with its arachnoid lining, was also much thickened by effusion of lymph between them, which had become organised and hard. The substance of the dentata was likewise altered from inflammation at the base of the anterior part of its spinous process, but not to any great extent, being only what might be expected to be met with, as resulting from inflammatory action communicated by continuity from the capsular ligament to the bone. The superior surface of the spinal cord underneath the ligament was also softened, and somewhat discoloured, for about the space of two-thirds of an inch, and inclining rather to the right side. The remainder of the cord did not present any thing uncommon. But, on laying bare the brain and its meninges, the dura mater of the cerebellum was injected; and, on removing it, and the attached arachnoid, a quantity of greenish purulent matter was discovered, covering a deep and extensive ulcerated surface of an irregular-shaped abscess of the right lobe of the cerebellum, in which it was remarkable that the white fibrous nervous matter remained almost intact, whilst the grey vesicular substance was eaten away by the ulcerative process.

The cerebrum was healthy to *all appearance*, as indeed were all the other parts of the nervous system, except the spot on the superior part of the spinal cord, under the thickened portion of the capsular ligament, and the dura mater at the axo-atloidean articulation.

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## March 3, 1846.

Mr. J. Mannington, V.P., in the Chair.

### Acute Glanders supervening on Laryngitis.

*Mr. Daws* directed the attention of the members to a larynx and trachea, the lining membrane of which was much thickened and extensively ulcerated. The morbid parts were taken from a mare that had been under his care for an attack of acute laryngitis, and for which the usual remedial measures had been resorted to. After a few days the respiration became so extremely difficult that tracheotomy was obliged to be performed, and the improved

tube of Virtel was inserted. But despite all that was done, the case got much worse; and as there was a peculiar noise emitted during the act of respiration, the animal was destroyed on the 2d instant. In the lungs were found several vomicæ, and the Schneiderian membrane was slightly ulcerated.

*Mr. Mannington* related a similar case, which also commenced with acute laryngitis, and for which blisters were applied. In three days after, small ulcerative spots were observed on the membrane of the nostrils, but no enlargement of the submaxillary glands presented itself for several days after. The case, however, continued to get worse; and there being no chance of recovery, the animal was destroyed, when considerable ulceration was found to exist in the larynx and trachea.

*Mr. Pearson Ferguson* said that he considered the case communicated by Mr. Daws to be one of acute glanders, in which the various phases of the disease had succeeded each other very rapidly. He related the particulars of several cases that had come under his own observation when in private practice, and which had manifested symptoms similar to those described by Messrs. Daws and Mannington. The roaring noise, he stated, was caused by the air striking on the roughened parts of the larynx and trachea where they were ulcerated. With respect to the term glanders, it was, in his opinion, very frequently misapplied, and should only be used to designate those cases where there was tubercular deposit and true *chancrous* ulceration of the membrane lining the nostrils and the air-passages.

*Mr. Daws* then laid on the table a fine specimen of diseased liver, in which the structure of the organ had taken on the change designated *ramollissement*.

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## Case of Albuminous Urine.

*By Mr.* J. W. C. Pope, *M.R.C.V.S.*

*Ashford, Feb.* 22, 1846.

Dear Sir,

A case of more than ordinary interest, as I believe, has lately fallen under my notice, although it is little more than an outline of it that I shall be able to offer you. It is one of a cart-horse, seven

years old, that has for some time been losing flesh very fast. The pulse is feeble, and numbers 56 in the minute; the appetite is much impaired, and he frequently urinates, the secretion being very high coloured and viscid. I suspected it to be albuminous, and this was confirmed by my testing it with a solution of the bichloride of mercury, which gave a cloudy precipitate.

The horse was bought about a month since, warranted sound; but he has not done well since the time of purchase. I administered a dose of laxative medicine, which operated so powerfully, that I was obliged to give an astringent to check its inordinate action. The animal is very weak, evinces pain on pressure being applied over the loins, and always lies on his right side.

I am, Sir,

*To Professor Sewell.* Your humble servant.

*The Secretary* doubted if the so-called cases of albuminaria were truly so, since the usual tests for the presence of albumen in the urine of our patients would be often found to fail, from the secretion being alkaline: thus, it is well known that heat, so commonly resorted to to indicate this principle, will not cause its coagulation when an alkali is present. The safest reagents are heat and nitric acid separately employed. He was inclined to think the majority of the cases should be designated *mucous urine*, since oftentimes the mucus was present in such quantities in urine as to render the fluid viscid and tenacious, and he had never seen this character imparted by albumen.

*Mr. Bass* agreed with Mr. Morton's view of the subject; and as it regarded the frequent staling, it was as likely to be the result of irritation or inflammation of the mucous membrane of the bladder, as of organic disease of the kidneys.

*Mr. Daws* considered that the digestive organs were the primary seat of the affection, and that the urinary organs were only secondarily implicated; and his treatment for such cases would be a course of tonics, with the occasional administration of mild aperients.

*Mr. Pearson Ferguson* related two cases, one of which was truly albuminous urine, as was ascertained by the solution of the bichloride of mercury throwing down large flakes of coagulated albumen. The animal, which was a mare, became attacked rather

suddenly, after being brought to town from the country, where she had always been in good health. She urinated very frequently, but in small quantities; suffered very great loss of condition, and fed badly; her pulse was quick, and she was very excitable, shewed symptoms of low, irritative fever, and sweated profusely after slight exertion. She was also restless and uneasy in the stable, and frequently kicked. These latter symptoms indicated irritation, as if from a calculus, but, on examination, none existed. She was therefore subjected to a course of alterative treatment, which consisted in the administration of large quantities of gentian and sulphate of iron, with an occasional aperient to keep the bowels natural; and as she sweated profusely she was clipped, to admit of her having plenty of walking exercise: her diet consisted of boiled barley, with bran and bruised oats, and a fair share of hay. She got well in about two months, and continues so up to the present time, although it is now more than two years since the attack.

The other case was not one of truly albuminous urine, but the secretion was viscid, ropy, and in appearance resembled oil. It only became turbid on the application of sol. hyd. bi-chlorid. This case was at the beginning treated in the same way as the former, but it did not go on well. The irritable state of the urinary organs continued, and the low fever was also present. Large and frequent doses of balsam copaiba were then given in the form of emulsion with gum-water, followed up by vegetable tonics, and the case quickly got well.

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MARCH 10, 1846.

The TREASURER in the Chair.

A PAPER on Foot-Rot in Sheep, by Mr. J. Mitchell, was read. For the reason already assigned, we are compelled to withhold this Essay.

The following remarks on the Anatomy of the Foot of the Sheep, by Mr. Kent, with part of the debate, may not be uninteresting to our readers.

The foot of the sheep is composed of different textures. First, the hard or horny covering of the toes or digits, called the crust; secondly, that of the soles, which is softer and more yielding than the crust; and, thirdly, the pad or cushion of the heels.

The crust grows from above downwards, and from within outwards; i. e., from the coronet above and from the sensitive laminæ within; the sole from above downwards, and from behind forwards; while the pad grows wholly from above downwards, the fibres inclining forward as they inosculate with those of the sole. Between the heels is an inflection of the coronary secreting surface, which, under the magnifying-glass, presents numerous pores or openings. We hear also of a biflex canal, situated immediately within the skin, where it bifurcates; and a canal runs down on each side over the inner surface of the pastern, reaching the coronary ligament at the commencement of the hoof. I have looked most carefully for this bifurcation, but cannot find it. However, between the ossa suffraginis and the ossa coronæ, I find a large quantity of fatty matter, in which is imbedded a vermiform cushion, formed by an inflection of the glandular-dermoid substance between the digits, which is filled with hair, varying in colour in different sheep, although, generally speaking, it is of a brownish white. In shape it is like the letter S, as printed; the superior part or head of it having an open mouth, from which protrude a few of the hairs with which it is so completely lined. The inferior portion, or tail end, terminates in a pouch or closed sack, there being no bifurcation, and reaches as far up as the superior part of the lower heads of the ossa suffraginis. Its curved part, or body, goes to the back part of the ossa coronæ. Its principal use, in my opinion, is to act as a cushion to prevent the coronal and suffraginal bones from too forcibly coming in contact during the varied movements of the animal. This, together with the whole of the internal structure of the foot, receives its blood from the arteria-centralis metacarpi, an artery running in a groove down the centre of the metacarpal bone. Its sensation, of which at its mouth it possesses very little, although some pretty considerable amount exists at its tail, or glandular end, is derived from the nervorum-centralis metacarpi, which passes down by the side of the extensor pedis tendon,

and about half-way down the metacarpal bone, sending off branches to the vermiform cushion, the ossa coronæ, and the ossa pedis.

Our great authority upon this subject, Mr. Youatt, says that, "in consequence of the soft marshy pasture upon which sheep are sometimes placed, presenting little, if any, of that rough friction to which the feet of the animal are intended to be exposed, the crust grows over the sole, accumulating filth; or is broken off, sometimes exposing the quick, or opening new pores, into which the particles of earth or sand force their way, until, reaching the quick, an inflammation is set up." Certainly, if the hoof does break off, so as to expose the more sensitive parts to the action of foreign and exciting agents, disease will be produced. But, if I am not much mistaken, this will not take place so long as the sheep remain upon the meadow-land; but take them from the soft pasture, and drive them upon a hard road, especially in the summer time, and, by the reaction which takes place, the horn, which was previously soft and porous, becomes hard and brittle. This, however, as also a disease which sometimes attacks the vermiform cushion, I do not look upon as "true foot-rot."

One of the feet now before you is from a soft marshy farm—the other from a hilly and rocky one. Now you will perceive that, so far from the crust having grown longer in the foot exposed to the marshy soil, it is rather the reverse. In fact, in all the feet which I have examined, I find that the soles are more prominent on soft soils than on hard. The disease now under notice I look upon to be caused either by an arrestation of the functional secretions of the part, or by contagion. Knowing that the organs in which functional secretion takes place are greatly diversified, it may not be amiss, if it be not considered by you as presumption, to describe briefly the manner in which, and the organs from which, a few of the secretions take place.

Upon the back and sides, more especially, of the sheep, an uniform vascular superfice appears to pour out the fluid, which, as it lays upon the surface in quantities, we call the yolk. The coronary secreting surface presents, as seen externally, numerous orifices; while the pedal glands, supplying the vermiform or sigmoid cushion, appear to be of the conglomerate kind, having numerous excretory tubes issuing from them. The substance

secreted from the pedal glands is of an oily character, while that of the back and sides is sebaceous; that is to say, that of the foot is not so plastic as the other. In fact, the variety of secretions furnished by the same animal, not only in different parts of the body but at different times, is surprising. Thus the bile of the fœtus is sweet to the taste, and only becomes bitter after birth; while, on the other hand, the ears secrete waxy matter—the teats, milk—the brain, sulphur—the kidneys, urine—and the testicles, semen. Now, although secerning glands are said to possess very little sensibility in and of themselves, still, their secretions being checked by either moisture or small particles of dirt that may have insinuated themselves into their porous openings—which, by the by, on moist ground are much larger—become foreign agents, which excite inflammation that extends to other parts; and thus, in one way, the work of devastation is commenced. We are told, and we often see, that "fatting sheep" are more liable to this disease than others. And so they are likely to be, if exposed to the same exciting cause. Sheep so situated having a larger amount of adipose matter about them, have, of course, more secretion going on; and, being fatter, they are heavier; and, being heavier, will sink deeper into the soft ground; and, fatness being a species of disease, they are predisposed to inflammation, whenever any exciting cause may present itself. Hence the feet become first affected. Of course, from this you will infer that the disease may commence either in the coronary inflected surface, or in the upper part of the laminæ of the crust, and from either of these parts extend over the whole surface of the foot.

*Contagion.*—On this point I am sorry to differ with Professor Simonds. Still, I feel satisfied it is contagious, both from what I have seen, and from what I have heard from large sheep-owners. An agricultural friend has related to me one or two cases lately, in which he exercised the greatest care in order to ascertain the truth of the assertion that foot-rot is contagious. The following is his statement:—"I bought a ram, my own having been sold on account of age. Upon his arrival in my yard, I found him lame, but no way sore-footed; I therefore took no notice of it. The animal gradually improved during the three days that he stood in the cow-shed. On the fourth day he was loosed among the flock in the lower meadow, and was in very good condition.

The lower meadow is the one we consider the most luxuriant. On the tenth day after purchase, he was seen by the shepherd to be going upon his knees, and upon examination it was found that he had got 'foot-rot.' I again placed him in the cow-shed, and was determined to try the question you have so often bothered me about. His disease was left unattended to. I placed in the shed with him a sheep and a lamb from the low-meadow flock. On the fifth day from this the lamb went sore-footed; and on the seventh I discovered that the hoof had slightly separated from the upper part: there was a discharge of sanguineous pus from this part. The next day the sheep fell lame. I examined the feet, but could discover nothing abnormal, save great heat of the parts, and a slight swelling of the coronet. Upon examining the next day, I found a viscid secretion round the coronet, which had formed minute vesicles: the same appearance was presented by the parts between the toes, but the vesicles were not so large. These I left undisturbed until the next day, when I found that many of them had burst, and a nasty discharge came from them. This quite convinced me that you were right—that the disease is contagious. This sheep being in good case, I took her from the shed, applied the usual dressing, and placed her in the barn with the lamb. They are both quite well now.

"Being still desirous of answering all your inquiries, I took a lamb and a sheep from the upper park, and placed them with the ram. They were there for fourteen days. However, since no disease shewed itself, and the 'old boy' was in great pain from the extensive ravages which the disease had made upon him, I replaced them with the flock, and set to work to try to cure the ram, but am sorry to say in this I failed. Sinuses had formed, the '*worm*' was affected, and the hoofs on the near fore-foot had sloughed off, and he was quickly wasting; so that I deemed it advisable to use the *actual cautery*, as our butcher calls it: in other words, I killed him."

It appears to me, from this and many other cases, that lambs are more liable to contract the disease than sheep. To assign the reason requires no great stretch of imagination, the whole of the structural arrangement of the feet being more vascular.

*Mr. Mannington* considered foot-rot as analogous to canker in the horse. As to its causes, damp pasture was the general pre-

disposing one; and any thing that would injure the foot, such as broken horn, excoriated coronary substance, became the exciting causes. But, in addition to those, he said he was now a decided contagionist, and went so far as to say that foot-rot almost never affected sheep except through contagion; and he was led to this conclusion from practical observations which he had made during last summer. In one case, a gentleman, who never previously had the foot-rot on his farm, bought a flock of Cape sheep which happened to be affected with this disease; and shortly after they were placed where other healthy sheep were feeding, and those were all attacked with the disease.

*Mr. Bass* disagreed with Mr. Mannington as to the contagious and specific nature of the disease, and would rather attribute it to common causes, such as a wet pasture, the horn becoming too abundant, and the projection of the crust at the bottom of the foot forming a circle and cavity which became clogged up with filth, &c., which in its turn gave rise to irritation in the more sensitive structures, and ultimately this disease shewed itself. Keeping sheep in a fold without great attention to cleanliness would also give rise to it. As to the treatment, the application of the sesquichloride of antimony, and those attentions to the feet usually had recourse to, were commonly efficacious. He could not agree with Mr. Kent as to the use of the biflex interdigital canal, but considered it a secretory organ to obviate the effects of friction between the digits of the foot, and not as a cushion to prevent concussion.

*Mr. Varnell* observed, that a friend of his, who had during the past year treated upwards of two thousand cases of this malady, considered it to be contagious; but, for his own part, he was not satisfied on this point, as he knew it frequently arose from want of cleanliness. He agreed with those who considered the interdigital canal as a secretory organ for the protection of the interdigital surfaces; and, in conclusion, he alluded to the view taken by the antients of this interdigital canal being the cause of foot-rot, and their absurd practice of excising it for the cure of the disease.

*Mr. Simonds*, in reply to some of the members, stated it to be his opinion that foot-rot is *not* contagious; and that he considered the interdigital canal to be an organ whose office it was to furnish

a secretion to prevent the excoriation of the interdigital surfaces. Sometimes it becomes blocked up by an alteration and accumulation of secretion; but this took place altogether independent of the malady termed foot-rot.

*Mr. White* looked upon hereditary predisposition as a cause of this disease; and, in reference to the disease itself, he felt assured that, in proportion as land was drained, so would it lessen in frequency.

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## The Effects of certain Narcotics on the Stomach, compared with their Effects on the Rectum.

It having been asserted, and denied by turns, that narcotic substances, when administered in the form of clyster, produced a greater effect than when taken into the stomach, Sigs. Restelli and Strambio, of Milan, have recently availed themselves of a police regulation of their city, enforcing the destruction of all unmuzzled dogs found at large, to perform the necessary experiments for clearing up this disputed question. The number of their experiments amounted to one hundred and fifty, and the substances employed for the purpose of experiment were strychnia and morphia, the latter in combination with sulphuric or acetic acid, and either dissolved in water or spirit of wine. These solutions were always administered to dogs of equal size and the same breed. Some experiments were also tried with prussic acid, but the exceedingly rapid action of this fluid prevented any certain results from being arrived at.

The dogs which were designed for the clyster experiment had their rectums cleared out by a syringe previously to injecting the poison; the other dogs were fasted for a day before the experiment.

A quarter of a grain of strychnia dissolved in one drachm of spirit of wine was injected into the œsophagus of several dogs: the first manifestations of the poison were observed as a mean after the lapse of twelve minutes and twenty-eight seconds, and the first tetanic attacks after twenty-eight minutes and twenty seconds. A similar dose injected into the rectum began to operate after six minutes, and the convulsions followed after nineteen minutes. The longest duration observed before the first accession

of symptoms when the poison was injected into the stomach was thirteen minutes, and thirty minutes before the first convulsions. By the rectum the longest period before the accession was ten and twenty minutes, the shortest four and ten minutes.

The morphitic salts, after many trials, yielded similarly varying results; twelve grains of syrup of morphia in four scruples of water developing their poisonous action as follows:—

| | Mouth. | Rectum. |
|---|---|---|
| Mean time .. .. .. | 5 m. 10 s. | 4 m. 16 s. |
| Longest .. .. .. | 6 ,, | 6 ,, |
| Shortest .. .. .. | 3 ,, | 2 ,, |

Twelve grains of acetate of morphia dissolved in one drachm of water:—

| | Mouth. | Rectum. |
|---|---|---|
| Mean time .. .. .. | 7 m. | 5 m. 20 s. |
| Longest .. .. .. | 9 ,, | 7 ,, |
| Shortest .. .. .. | 6 ,, | 3 ,, |

Twelve grains of a salt of morphia (which?) in one drachm of spirit:—

| | Mouth. | Rectum. |
|---|---|---|
| Mean time .. .. .. | 5 m. 30 s. | 4 m. 36 s. |
| Longest .. .. .. | 7 ,, | 6 ,, |
| Shortest .. .. .. | 4 ,, | 3 ,, |

In order to meet the objection which might be brought, to the effect that the grade or intensity of the poison's agency between its application and the first resulting symptoms might vary, the following experiments were performed:—

1. A quarter of a grain of strychnia being dissolved in common brandy, and injected into the stomach, death followed in sixty-five minutes—as a mean of several experiments. A similar dose injected into the rectum killed in forty minutes.

2. The paroxysms of tetanus, by which poisoning by strychnia is characterised, are more frequent and more violent after administration by the rectum than by the stomach.

3. One-sixteenth of a grain of strychnia injected into the rectum produced in three dogs convulsions and death: in three others, to which the same dose was administered by the mouth, only a few tetanic spasms were noticed, and the dogs recovered.

4. Similar results were obtained with morphitic salts.

*From the Milan Medical Gazette.*

THE

# VETERINARY RECORD, &c.

VOL. III.] OCTOBER 1847. [No. 13.

## CONTRIBUTIONS TO VETERINARY PATHOLOGY.

*By Mr.* J. PURVES, *V.S. Hon. E.I.C. Service.*

### 1.—CASE OF PARALYSIS, CALLED BY THE NATIVES OF INDIA "STROKE OF THE WIND."

*November 21st.*—A SLIGHT febrile attack, which yielded to the ordinary remedies, has kept the horse from the ranks for some days; but this morning he appeared better, and accompanied us on our march to Roorpoorab. On his arrival at the ground he seemed dull; his flanks were "tucked up;" the respiration was quick, and the pulse feeble, but not much accelerated. I ordered a rowel to be inserted in the front of the chest, and aloes ʒj cum pot. nit. ʒiv to be given in ball.

*24th.*—Animal apparently much better.

*26th.*—This morning he appeared convalescent, and was ordered to be discharged from the hospital; but at 4 P.M. it was reported to me that he had fallen down, and was unable to rise, although the moment before he was feeding as if nothing was the matter with him. On my arrival I had him lifted on his legs, and the symptoms that presented themselves were, a staggering gait, inclining to the left side when he was moved, which he resisted from a fear of falling; and he fell in about an hour afterwards. I bled freely; blistered the head and loins; gave aloes ʒij, hyd. chlorid. ʒj, et resinæ ʒiv in ball, and threw up clysters of warm water. The animal appeared afraid of Europeans, but had no dread of the natives.

*27th.*—He has lain stretched out on his left side all the night, struggling with his legs, but making no attempt to get up. The

pulse is not much affected; still he seems easily alarmed, and shrinks when his head is touched, and moans. Repeat the blister to the head and loins; drench with gruel; clysters continued.—Five P.M. The pulse becoming quick, we endeavoured to lift him on his legs, and did so, but found he could make no use of his limbs. The case being hopeless, bled till the pulse faltered, and turned him over on his right side. After this he raised his head and looked at his flanks repeatedly, as if in pain, which he did not when lying on his left side. Gave aloes ʒiij et ol. terebinth. ʒj in draught. He rolled over again on his left side about an hour afterwards, when he laid stretched out as before.

28*th*.—In the morning I found the animal in the same position. Pulled him over on his right side, when he raised his head again as he did last night. He eats grass.

29*th*.—Continues much the same. The left jugular is inflamed from friction. Apply the actual cautery to it, and blister around it.

30*th*.—The vein is better, but otherwise no change is perceptible. Give aloes ʒiij.

*Dec.* 1*st*—The animal remains in the same state. In the morning I tried to get him up, when he injured himself much from falling. He continues to lie on his left side, and is constantly moving his legs. He died about 4 P.M. this day.

*Post-mortem appearances*.—Examined 2d Dec., about 9 A.M. Villous portion of the stomach inflamed; cuticular lining in two places much corroded. Veins of the stomach full and enlarged, and the viscus itself nearly half filled with partially digested food, which is covered in some places, apparently with bile. Small intestines lined with thick yellow bile, and a small quantity of fluid ingesta in them. Large intestines inflamed, but not so much as the stomach: contents in a fluid state. The omentum very much diseased, and nearly black. Liver discoloured, and easily broken down. Spleen larger than natural. Pericardiac cavity filled with bloody serum, and in the right ventricle of the heart a quantity of yellow lymph. One lobe of the lungs black and congested. Lining of the trachea much diseased, and in some places quite black. Brain very vascular, and much congested; and also the spinal marrow. The ventricles distended with a dark-coloured fluid, and the plexus choroides appeared like a mass of coagulated blood.

## 2.—Inflammation of the Stomach and Intestines, with Strangulation of the latter, and Scirrhous Liver.

The animal is about sixteen years old, and the subject of repeated attacks of spasmodic colic, which hitherto have yielded to the ordinary remedies. The farrier-major reports that the horse experienced one of his usual attacks this morning, from which he apparently recovered; but in half an hour afterwards he broke out in a profuse perspiration, rigors came on, and he vomited by the nostrils.

At 12, noon, he was brought to my own stable, where I first saw him. Symptoms then present were vomiting, or making violent efforts to do so; the breathing a little hurried; ears cold, and cold perspiration bedewing the surface of the body; the conjunctiva of a natural colour; the belly a good deal swollen. Gave tinct. opii ʒij, cum tinct. piperis nig. ʒj, et aloes ʒiv, dissolved in warm water. V.S. five quarts.

Within from a half hour to an hour after the medicine had been administered the farrier-major came to me and reported the horse to be still very ill: the breathing was laborious and hurried; the body and extremities deadly cold; the perspiration profuse; the pulse scarcely to be felt; the rigors dreadful; the conjunctival membrane intensely red, and fluid ingesta constantly discharged from the nostrils. He had not lain down since he came to my stable, and I was afraid to give him more medicine, not being certain that that given was not the cause of this severe attack, which came on almost immediately after it was administered. Scalded the abdomen, and threw up aloetic clysters, but did nothing more until the animal died, as the pulse sunk rapidly, and he continued to vomit by the nostrils in great quantities. The farrier-major stated he vomited altogether about six or seven seers.

*Post-mortem appearances.*—The stomach throughout its whole inner surface intensely diseased, and its peritoneal tunic appeared as if blood was extravasated on it, or, rather, as if its bloodvessels were ruptured. The duodenum and part of the jejunum, for about thirty inches, were perfectly black, and the latter strangulated. The strangulation appeared to be caused by the intestine becoming entangled in the mesentery. At the stricture the gut was perfectly

white and small, as if it had been tied by a string; behind this the small intestines were empty, and also healthy in appearance. The large intestines, particularly the colon, diseased. The contents of these viscera not at all unnatural. Omentum highly inflamed, and also the mesentery. Liver tuberculated, and could be scarcely cut into, it was so much indurated; its colour was greyish, or almost white, and it weighed fourteen and a half seers.

The condition of this gland must have been the cause of the former attacks of gripes, by producing derangement in the function of digestion, from the want of the natural stimulus to the intestines, bile; the scirrhous state of the organ rendering it incapable of separating this fluid from the venous blood.

### 3.—Extensive Visceral Disease, involving the Urinary Organs.

This animal was admitted into the hospital on the evening of May 27th, reported to have been lying down and getting up since 2 P.M., from stoppage of urine, but the pain was not violent.

*Symptoms.*—Pulse slightly quickened; the mucous membrane lining the eyes and mouth red, or rather of a dirty brown colour, and the latter a little offensive. The animal laid down as if attacked with colic, when I perceived the right testicle to be very much enlarged; and I examined the scrotum, to ascertain if hernia existed, but it did not. On rising he commenced eating slowly of grass. Ordered the farrier-major to give him aloes ʒiv in solution, to throw up a clyster, and, if the animal was not relieved, to inform me of it. The farrier-major came as desired, and said the horse was uneasy for some time after I left, but since the clyster he appeared easier. I ordered him to be watched all the night. About 4 P.M. of the next day he was again uneasy. The symptoms present when I saw him were,—pulse quickened, and weaker; mouth highly offensive; conjunctival and buccal membranes much discoloured; and he was lying down, as if suffering from dull pain. V.S. iij qts.; insert a rowel in chest; give antim. tart. ʒi, pulv. digit. x grs., nitre ʒiij. Having no appetite, I ordered him to be drenched with gruel if he would not drink it, and to be placed in a loose box. Soon after this I was told the horse was very ill—in fact, dying. When I arrived at the stable, about five o'clock,

he was breathing very laboriously; the pulse was quick, small, and weak; the visible mucous membranes were of a brown colour, approaching to black. Ordered his belly to be scalded, his throat blistered, clysters to be thrown up, and legs bandaged. He died the following morning early.

*Post-mortem appearances.*—The right testicle and cord were quite black, the vessels being engorged with blood, and what appeared to be a tumour closed the abdominal ring; but, on cutting into it, I found it to be a portion of small intestine filled with fæces. The omentum was diseased, torn in places, and in others adhering to the peritoneum close to the ensiform cartilage. The villous portion of the stomach was very much inflamed, and the organ distended, principally with offensive fluid ingesta. The small intestines were also inflamed, as was the inner surface of the colon; its contents dry and hard, and about a quart of small stones were found in one part of it. The cæcum, and rectum, at its beginning, also participated in the diseased action, but contained only a small quantity of mucus. The liver was much disorganized, being completely altered in structure: on the convex side adhesions existed; the gland was much smaller than natural, firmer to the feel, and discoloured; the biliary ducts were full of thickened bile, and the bloodvessels gorged with blood. The bladder was much contracted, and empty, and the lining of the trachea highly injected.

## 4.—Suspected Hydrophobia.

The animal was admitted for foot lameness, and which had been considerably relieved, when he suddenly manifested a disinclination for food, pawed the ground, was constantly voiding his urine with pain, and much saliva flowed from the mouth. At 4 P.M. I saw him; he was still pawing, had not laid down, and was eating some grass slowly: the pulse was much accelerated, the eyes red, and he was continually staling. Bleed to the amount of nine quarts, and give tinct. piperis. nig. ℥ij cum aloes ʒvj in solution. Of this he swallowed about half, and, as there appeared a difficulty in swallowing, the throat was blistered.—7 P.M. The animal has lain down once since I saw him at 4 o'clock; he drank water slowly, and with difficulty. I attempted to give another drench of aloes, but

the animal could not swallow it. Blister the throat and breast more effectually—10 P.M. The symptoms appear more severe; he is lying down and getting up frequently, the pulse keeps up, and the breathing is hurried. Scald the belly, and give a dose of aloes in a ball: this he took. V.S. five quarts. Blister the throat again, as it appears to be in a high state of disease.

18*th*, 7 P.M.—Animal worse throughout the night: he lays down frequently, and the voiding of urine and discharge of saliva are as bad as ever: he swallows water with great difficulty, but the conjunctival membrane is less injected than it was yesterday. He has attempted to bite the attendants, and appears highly excited and suspicious. Nothing of this kind was observed until this morning. Apply tartar emetic and turpentine to the throat and breast, as the blister does not appear to have taken any effect. I have now some suspicion of the disease being hydrophobia.

Died 4 A.M., 19th March.—Dissection shewed the stomach highly inflamed, and distended with dry undigested food—the large intestines inflamed, but not much so; small ones also slightly inflamed—bladder very full of urine, and its inner coat injected; and likewise the lining membrane of the œsophagus and trachea—liver slightly diseased.

## 5.—Scrofulous Tumours.

The lesions in this case were as extraordinary as the result was unanticipated.

The animal was admitted for lameness of the near hind leg, which was swollen and œdematous. A rowel was inserted on the inside of the thigh, and aloes ʒiij given in the form of ball. This was on the 11th of October. The following day the medicine acted powerfully, and continued to operate for a day and a night, so that it was found necessary to give the animal rice-water to check it. The lameness was much relieved by the dose of physic.

*Oct.* 16*th*.—There being no room in the hospital, and the case apparently going on well, the horse was sent to the lines, and placed in a loose box.

*Oct.* 21*st*.—Bowels costive, and the animal appears a little dull, but no other unfavourable symptom is present, with the ex-

ception of a trifling swelling about the stifle-joint. Gave aloes ʒij. This produced a laxative effect.

*Oct. 24th.*—The animal reported to be again ill. The symptoms were, quick and very weak pulse; œdematous swelling between the fore legs; scrotum and sheath very much swollen. He is also very dull and listless. Brought back to hospital. Insert a rowel in the chest. Give digitalis grs. xx, pot. nit. ʒiv, in ball, followed by spt. ether. nit. ʒi, magnesiæ sulphas ʒviij in draught. Throw up a clyster, and place on diet of gruel. In the evening give calomel ʒss, pulv. digitalis grs. xv, pulv. gentianæ radix ʒj, in ball. He drinks as much suttoo water as is offered to him, but eats very little grass.

*Oct. 25th.*—My patient is worse, but I dare not bleed, the pulse being so weak. The swellings are no less; the rowel in the thigh has healed up, and that in the chest does not act well. Rubbed liniment of tartar emetic and turpentine over the rowel and around it, which produced the desired effect. Give spt. ether. nit. ʒj, in haustus, and continue the clysters. In the evening animal no better; breathing shorter, and more hurried. Gave digital. and nitre as before.

*Oct. 26th.*—Still no better. Treatment as before continued. The fæces are highly offensive, resembling those of the carnivora.

*October 27th.*—In the evening gave spt. nitric ether. ʒj, magnesia sulphas ʒviij, in haustus. Rice-water was allowed in the course of the day.

*Oct. 28th.*—The animal much worse—the pulse scarcely to be felt—the breathing very hurried—the bowels have ceased to act; but the swellings have disappeared in a great measure. At half-past ten P.M. he dropped down and could not get up again, and died at half-past eleven.

*Post-mortem appearances.*—The cavities of the abdomen and thorax were filled with a serous fluid (about sixteen seers). A tumour was found in the stomach about the size of two large fists; it was very dense, and going on to suppuration. Another of the same kind was on the spleen. The mesenteric glands were very much enlarged, and contained pus. The peritoneum was much discoloured and highly inflamed. The liver was diseased, and several small suppurative spots existed on one of its lobes. The colon was quite black externally, and its lining membrane in a state of gangrene. The mediastinum was extensively diseased, and covered with

masses of lymph. A deposition of the size of two fists existed at the root of the trachea, and the pericardium contained about five or six ounces of serous fluid: in fact, I never saw a horse in which disease had made such ravages before; nor were there any symptoms to indicate what was going on, the swellings externally being merely the effect of the internal derangements.

### 6.—Ruptured Stomach.

*June* 7, 1838.—The animal was admitted about 2 o'clock P.M., reported to have been taken ill in the lines about one o'clock. Symptoms:—Pulse scarcely to be felt at the maxillary, ears and extremities quite cold, cold perspiration and rigors, and conjunctival membrane pale. I was informed that he had lain down three times in the hospital before I saw him, and evinced pain. When I saw him he was standing, dull and listless, and breathing laboriously. Merely as an experiment, thinking I could do neither good nor harm by bleeding, as I considered the case altogether a hopeless one from hæmorrhage going on internally, I opened the jugular vein, but I was obliged to pin it up before a seer of blood was abstracted. I gave a dose of aloes in solution, and ordered the belly to be scalded; but the animal died at nine o'clock P.M., the stomach being, as was prognosticated by me, ruptured.

### 7.—Inflammation of the Stomach and Intestines.

*May* 14, 1839.—This horse was admitted in the morning, breathing laboriously, the pulse was quick but feeble, the visible mucous membranes were highly injected, the mouth offensive, abdominal pain was evinced, and profuse diarrhœa present. Ordered congee water, inserted a rowel in the chest, and gave tinct. opii ʒij, spt. ether. nit. ʒj, in haustus.

At 4 P.M. No better. Stimulate the abdomen with liniment of tartarized antimony.

9 P.M.—Still purging, and otherwise no remission of the unfavourable symptoms. Repeat the draught.

11 P.M. Died.—*Post-mortem appearances.* Stomach highly inflamed, and in places quite black; liver much diseased; mucous lining of the large intestines considerably inflamed, resembling the stomach; but the small intestines were apparently healthy.

## COMMUNICATIONS AND EXTRACTS.

### Cases of Tetanus—Benefit of Cold Affusion in extreme Cases—Causes.

*By Mr.* W. Wright, *M.R.C.V.S.*

Dear Sirs, *Burnham Overy, July* 21, 1847.

Within the last fortnight three cases of tetanus have fallen under my notice, the particulars of which may prove more or less interesting to your readers: one was traumatic, the other two idiopathic. The first occurred in a foal one month old, and, when I told the proprietor the nature of the disease, the cause of which I could not find out, he wisely had the animal destroyed. The second case was a pony that fell and slightly broke his knees. The wounds were well fomented and then dressed with the ordinary tincture, and, being nearly healed, the animal was turned out. The morning following, on the pony being removed from the pasture into the stable, he was found to walk stiffer than usual. I was requested to examine him, when I found tetanus to be present. I ordered the knees to be dressed with a stimulating liniment, and a hot poultice applied over the partially healed wounds. I also recommended a fresh sheep-skin to be placed over the loins every twenty-four hours, and two drachms of Barbadoes aloes with half a drachm of powdered opium to be given every twelve hours until the bowels were relaxed. I have seen the pony to-day, and am happy to say he is going on favourably. Having had several instances of recovery under this plan of treatment, there is nothing particular in this case, but the following may prove more interesting.

On Friday, July the 16th, a message was sent by Mr. Wright, Northbreak, requesting me to see a mare of his immediately, his steward having informed him that a young mare, in the pasture with her foal, was labouring under lock-jaw. Not being at home, my assistant ordered her to be bled and removed from the pasture into the yard. Having a long round that day, I was not able to visit her until six o'clock in the evening. When I first saw her she was lying in the yard, the front of her head exposed to the sun, and, the day being extremely hot, she was truly an object of pity. I was informed that she fell immediately after she was bled: six quarts of blood were abstracted, and she had been getting worse

ever since. Her jaws were completely locked, and, the animal being unable to rise, I expressed my fears of its being a hopeless case: in fact, it was one of the worst cases I have ever met with. Recollecting an instance that occurred last winter twelvemonth of an old horse that was scarcely worth powder and shot to destroy him having tetanus, and which I recommended to be turned out into the yard with the other stock to take his chance, the weather being very wet and cold, and which got well without any medical treatment, the affusing of cold water suggested itself to me. Finding the facial veins of this mare to be very much distended, I opened them with my lancet, and ordered the steward not to put a stop to the bleeding, but to let the blood flow as long as it would. I then directed two pails of water fresh from the pump to be brought to me, and taking one, dashed it on the front of her head. As she did not rise, I took the other and applied it in the same way, when she rose immediately, and with great difficulty staggered up against a wall. I now ordered a man to get on the wall and by means of a watering-pot to keep constantly pouring water over her from the head to the tail. In this way three men were kept employed all the night, and about three o'clock on the Saturday morning they considered her somewhat better. At eight o'clock she began to grind her teeth; at ten o'clock she drank a pailful of water; and when I saw and examined her about eleven o'clock she manifested a desire for food. Twelve drachms of purging paste were now given by one of the men with his hand, and the body was kept wet with water all Saturday. At night she began to feed well, and on Sunday morning she appeared quite well. The foal was now put to her; and on Monday she was turned into some pasture land, and to all who have seen her she is the subject of wonderment. I do not remember a case recovering in so short a time in my life.

I entered the college as a pupil in the year 1818, and in the year 1819 I commenced the cold water treatment of tetanus, and lost every horse I tried it on. I then abandoned it altogether, and had not the recovery of the horse referred to come to my remembrance, I certainly should have ordered Mr. Wright's mare to be shot; but for the future I shall not decide so quickly as I have been in the habit of doing.

With respect to the cause of idiopathic tetanus, I am perfectly

satisfied that both heat and cold will produce the disease. I have known cows labouring under derangement of the digestive organs become tetanic from the rain dripping on their loins in a house not well covered. A gentleman living at Burnham Overy, whose marshes are close to the sea, has lost more horses from tetanus in the summer than any of my employers; I think I might say more than all of them put together. What can be the cause in operation here? I believe heat, there not being any place the animals can get under to screen themselves from the sun's rays.

I have no doubt but that the disease in Mr. Wright's mare was also produced by exposure to the heat of the sun. There was no derangement of the digestive organs previously; for had there been, the foal would have shewn it; but both mare and foal were apparently healthy the night before.

I remain,

Your's truly.

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CASE OF ABSCESS IN THE TESTICLE OF A BULL, ACCOMPANIED WITH HYDROCELE.

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

Dear Sirs, *Aylesbury, April 19th,* 1847.

THE morbid specimen I forward to you, with the short history of the case, is, I believe, one of not every day occurrence; and having thought it might prove interesting to your readers, will, I hope, be a sufficient excuse for my troubling you with it.

I am, your's truly.

On the 25th Feb. 1846, I was consulted by E. Lawfer, Esq., of Leighton Buzzard in Bedfordshire, respecting a rather singular case of a two-years-old bull of the pure short horn breed and of great value, he having been purchased at a considerable sum of money not long before, of a Mr. Beesley, an eminent breeder in Northamptonshire.

I was informed that at the time of purchase the animal appeared to have a larger scrotum than ordinary for bulls of his age, and that he never shewed that eagerness for cows which is common to animals of his kind, and in many cows that had been sent to him the œstrum returned, or they proved barren.

At the time I saw him his scrotum was of an enormous size, and he had altogether ceased to take notice of cows. After a little manipulation I satisfied myself of the presence of fluid, and considered it a case of hydrocele. I at once determined to give exit to the imprisoned fluid, which was done by the introduction of a trocar on the 3d of March, and twelve pints of serum, having a slightly purulent character, escaped. The scrotum afterwards corrugated upon a thick dense irregular hard mass, neither of the shape nor size of a testicle. The scrotum was now injected with a weak solution of the sulphate of zinc. The testicle on the opposite or left side was smaller than natural, and felt soft, and, previous to evacuating the fluid, it rested upon the mass at the superior part of the scrotum. In this state the animal remained until the end of April, after which time the scrotum began to increase its volume; and on visiting my patient, on the 13th of May, I distinctly ascertained that the fluid was re-accumulating. I passed a seton between the vaginal tunics, of about four inches in length, when about a pint of serum escaped of the same appearance as the first. The introduction of the seton produced considerable tumefaction, with slight constitutional derangement, which a little aperient medicine soon removed, and all went on apparently well. The testicle on the left or more healthy side sunk lower down in the scrotum, and felt firm and natural, and the opposite or diseased side also became of its proper size. I should have stated that, after the action of the aperient had passed off, the animal took daily for six weeks half-drachm doses of hydriodate of potass.

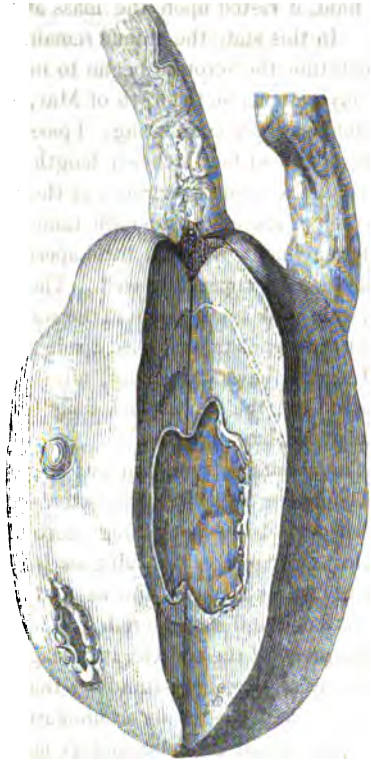
But the most unfavourable symptom was a constant discharge of pus from the opening left after the seton was removed, and this led me to suspect it was something more than an ordinary case of hydrocele: moreover as the bull took little or no notice of cows, it was quite useless to keep him as a stock-getter, consequently he was fattened and slaughtered.

From the appearance of the testicle, it having in its very centre an abscess, evidently of very long standing, that, I presume, was the primary disease; and the serous accumulation in the vaginal tunic was merely the result of inflammatory action subsequently set up.

There appeared to be a constitutional tendency to suppuration, as in February last a very large abscess formed itself between the posterior femoral muscles; and the butcher who slaughtered the

animal said that several small abscesses were situated in the mesenteric glands. Seeing the present state of the testicle, and it opening into the vaginal cavity, I make no doubt but that pus was escaping from the testicle into it at the time I first operated; the fluid which escaped having, as before said, the appearance as if slightly mixed with pus.

[The preceding case being one of more than ordinary interest, and exceedingly rare, we have thought its value would be increased by an engraving shewing the situation, &c. of the abscess, which, it will be observed, is in the centre of the gland.



The cause of the disease is somewhat ambiguous: probably a local injury gave rise to it, and the depositions of purulent matter met with in other parts resulted from pus becoming absorbed into the system. It is evident, from the nature of the disease, that all

treatment would have proved of no avail in bringing about a restoration to health; and, even had the testicle been removed, still the morbid action induced in other parts would have continued to progress.]

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## Accumulation of sabulous and other Matters in the Colon of a Horse.

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

My dear Sir, *Newmarket, June 4th,* 1847.

On Saturday, May 29th, I was summoned to attend an old cart mare, supposed to have colic. I ascertained she had fallen in the cart, when at work, several times of late, without any apparent cause; and that morning the horsekeeper had great difficulty in getting her up in the stable, notwithstanding she was taken to work as usual. During the day she fed well on grass, and ate a good feed of corn at night, previous to her being turned into the yard at six o'clock. At eight o'clock the owner found her down, and unable to rise, when I was sent for. On my arrival I perceived complete loss of power over the hind extremities to exist: she could raise herself on her fore feet, but would make no effort with the hind legs. Pulse 50; breathing slightly accelerated; the abdomen greatly distended with gas; and a slight indication of pain of a dull character. I bled her, administered an antispasmodic draught, applied a sinapism containing water of ammonia to the loins, and threw up clysters, which were followed by a copious alvine evacuation. On revisiting her at ten the next morning, I found she had just died. My impression was, that the case was one of stoppage in the intestinal canal, with pressure on the stomach and lungs caused by the great quantity of gas generated from the grass she had eaten (which was new food to her, and none of it appeared in the egesta), thus producing stupor and paralysis. I immediately opened her, when I found no trace of inflammation on any part of the abdominal or thoracic viscera externally. The stomach and small intestines, together with the cœcum and nine-tenths of the colon, were considerably distended with grass and gaseous matter: the inner coat was perfectly healthy, but at the last curvature of the colon, just before it terminates in the rectum, the inner tunic was slightly inflamed; and here I discovered an accu-

mulation of from fifteen to twenty pounds weight of sand and other extraneous matters, some of which I have sent you, completely blocking up the passage. On inquiry, I found the mare had been always subject to attacks of spasms, and was a very voracious feeder.

I am your's truly.

*To Mr. Morton.*

[The matters sent to us consist, as stated by Mr. Stevens, of sand, with fragments of flint, partially digested food (the ligneous part), &c. Such substances are very frequently met with in horses that have been foul feeders, and which, accumulating in the lower and larger portion of the bowels, often give rise to intestinal irritation; or, becoming agglutinated by the mucus of the intestines, they form those concretions vulgarly designated "dung balls."]

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## On Dislocation of the Fetlock.

*By Mr.* W. Litt, *M.R.C.V.S.*

*To the Editors of "The Veterinary Record."*

Gentlemen,—In one of the earliest numbers of The Record I took the liberty of reporting a case of dislocation of the fetlock, which I then remarked was the first injury of the kind of which any account had been given by an English veterinary writer, and naturally concluded that the accident was of very rare occurrence. As I happen to have met with no less than three similar cases within as many years, I propose now to make some remarks on the subject, with a view to direct the attention of the profession to a matter of considerable importance.

Mr. Percivall, who is unquestionably our best veterinary author, writing on the subject of dislocations, states that "in horses they can seldom be undertaken with any flattering prospects of success;" and, on the subject of this paper, is satisfied with the following paragraph, which I give entire:—

"Dislocation of the fetlock, we are informed by Hutrel d'Arboval, notwithstanding the little that has been said about it, '*happens, perhaps, more frequently than others*,' being producible by any

of those causes to which violent sprains and contortions of the same part are owing. He tells us that the displacement may happen either forwards or backwards, inwards or outwards; and that it is to be reduced according to the rules laid down for dislocations in general, and then bound up with splents and pads, and dossils of tow and bandages, and the animal afterwards turned out: he gives us, however, but little hope of restoring the case."

From this quotation I think it is clear that Mr. Percivall, never having met with a case of the kind himself, seems to doubt the justice of the French veterinarian's remark, that "it happens, perhaps, more frequently than others." My own practice, which is only a fair sample of the experience of other country veterinarians, seems to prove that D'Arboval is quite correct in his assertion; although I have reason to differ from him in other particulars, and chiefly, which is most important, from his conclusion that there is "but little hope of restoring the case." First of all, however, let us refer to the cases themselves.

*Case* 1 has been already fully reported in No. 2 of this Journal, to which I refer the reader for particulars; merely reminding him that the dislocation was outwards, and that the termination was in all respects most satisfactory, the horse having been afterwards sold with a warranty, and without the slightest blemish.

*Case* 2.—On the 20th of November, 1845, a very fine bay mare, the property of Mr. Robert Luther, of Acton, in this county, the gentleman who hunts the "United Pack," whilst carrying her owner over, or rather through, an awkward scrubby fence, became on a sudden so lame as to be quite unable to move. On examination, Mr. Luther, and some gentlemen who were riding near him at the time, observed a complete dislocation of the fetlock of the off fore leg; the luxation being outward, and so perfect, that the inside of the pastern and hoof came in contact with the ground. At the time of the accident the poor mare was fortunately not more than three miles from her own stable; to which Mr. Luther, having succeeded in his first attempt to reduce the dislocation with a degree of ease that surprised himself, ordered her to be quietly taken and placed under the care of the farrier who had always attended at his establishment. Splents, pads, and bandages, were applied, and the animal turned into a loose box; and I have little doubt that, had the attendant been satisfied with this treatment, my services would never have been called for.

All seemed to go on prosperously for about a week, when the practitioner, anxious to know the state of the injured parts, removed the whole of the splents and bandages. Nothing could be more satisfactory; the joint was straight, its motion perfect, and not the slightest swelling was perceptible. Owner and farrier were alike pleased: it was a subject of mutual gratification and surprise: the case was an honour to both; and they accordingly retired to the house to talk the matter over, leaving the mare's leg in the meanwhile without splent or bandage! Not that they meant quite to abandon these aids. Oh, no! it would be well to re-apply them; but the mare would feel more comfortable, it was thought, without them for a short time. An hour or two having passed pleasantly away, it was determined to visit the patient again; when, judge of their surprise on discovering that the joint which they had so recently left "as fine as a foal's," was now immensely swollen. The practitioner was sorely puzzled, but at length resolved to reduce the swelling by stimulating applications. The consequences need scarcely be described: suffice it to say, that my attendance was requested on the 6th of December, and that I found the mare's fetlock enormously enlarged, very hot and tender, and the lameness, of course, excessive, but the motion of the joint seemed quite perfect. A cold lotion was constantly applied until I had time to prepare a long wash-leather bandage, which having been first well soaked in cold water, was applied as tightly as possible, and afterwards frequently wetted by the leg being held in a bucket of cold water until the leather was completely saturated. When the bandage became rotten, a new one was applied, and this process was kept up as long as any heat or tenderness remained. At the end of about two months I thought it expedient to apply the compound iodine ointment, which was used for several weeks, and its action followed up by repeated blisters. I was now anxious to fire the joint, but Mr. Luther, having a strong prejudice against the operation, could not be prevailed upon to allow its performance; otherwise much of the enlargement that still remains would, I doubt not, have been removed. The mare was covered by *Bran* in the spring of 1846, but proved barren; and having become perfectly free from lameness during the summer, was got into condition, and did good work as a hunter the whole of last winter, landing her gallant

owner in at the death of more than a dozen foxes in the course of the season.

*Case 3d.*—My patient was, in this case, a two-year-old bullock, of the improved Hereford breed, the property of William Edmonds, Esq., of the Pentre, Montgomery. The cowman discovered, on the morning of the 30th of January 1846, that one of the bullocks was unable to move, although he had left him on the previous night perfectly well. On examination he detected some strange injury of the fetlock in the near hind leg: the joint came to the ground, and the hoof and pasterns projected laterally and outwardly. The servant immediately apprised his master of what had taken place, who, judging correctly of the nature of the injury, attempted its reduction, but without success, and, consequently, sent over for my assistance. Taking with me plenty of gum and bandages, I found, on my arrival, that the case was simply one of dislocated fetlock; and, after some little difficulty, I succeeded in putting it straight. The gum bandage, with some light splents, was applied; the animal was kept as quiet as possible for two or three weeks, and, two months afterwards, the bandages dropped off, and the bullock was perfectly free from lameness, nor was there the slightest enlargement about the parts. I may remark that we had no means of accounting for this accident, excepting on the supposition that the animal must have slipped in the act either of rising or lying down, as he had been tied up all night.

*Case 4th.*—Late in the evening of Saturday the 15th of May last, I was summoned to Lydbury North. The messenger informed me that a valuable black colt, the property of Mr. Hamer, of Brocton Mill, had broken his leg, and that my opinion was requested simply as to the propriety of treating him. On my arrival at the stable where he had been taken to, I found the poor animal in great pain, with a dislocation of the fetlock of the off hind leg to the outside. There was no crepitus perceptible, but the rupture of the ligaments must have been extensive, as, after reduction, when the limb was drawn up, the pastern hung loose and dangling, as though the skin was its only medium of connexion with the leg. The accident had occurred in consequence of his having run away and got his foot entangled in the frame of some harrows that lay opposite a forge in the village. It being very late, I was satisfied with the application of such rude

splents and bandages as could be readily obtained, and, having secured him in a way to prevent him from lying down, I left him for the night. On the following morning, having prepared some light splents, pads, &c., I applied them with the gum bandage, which soon acquired the necessary firmness, and afforded so great a degree of support to the joint, that he was able to walk to his own stable, a distance of two miles, on the Tuesday following. The bandages were removed in the beginning of the present month, at which time the joint was without the slightest swelling. Immediately afterwards, however, on being taken to light work, some enlargement made its appearance, of which I was not apprised at the time. The colt is now doing his usual work, free from lameness, and the swelling is gradually giving way to the steady application of soap liniment and iodide of potassium.

Remarks.—Although these cases speak plainly enough for themselves, it will, nevertheless, be well to make one or two observations on them before taking leave of the subject. The most important conclusion I arrive at (notwithstanding Mr. Percivall's assertion that dislocations "in horses can seldom be undertaken with any flattering prospects of success," and Hurtrel d'Arboval's equally discouraging remark) is, that, *under proper treatment, no injury can be more easily or successfully remedied than dislocation of the fetlock.* The French author asserts that "the displacement may happen either forwards or backwards, inwards or outwards." Now it is certainly curious that in all the above cases the displacement was "outwards;" and I am inclined to think that this will be found to be most commonly the case, although I can see no reason why the "inner" dislocation may not easily happen; but the anatomical construction of the parts will point out to us that a luxation "backwards" is highly improbable, and one "forwards" scarcely within the reach of possibility. The reduction seems exceedingly simple, as far as my experience is concerned; Case 3 being the only one in which there was the least difficulty about the matter. The treatment should consist simply in the application of very light wooden splents and the gum bandage, and especial care should be taken that these be not removed too soon: they should remain on two months at least. In a word, *the parts*

*need only support and rest long continued, until nature shall have had time to perfect their restoration.* When Hurtrel d'Arboval recommends that the animal be "turned out," he violates every principle of surgical knowledge.

I remain, Gentlemen,
Your obedient servant.

*Bishops Castle,*
*July 27th,* 1847.

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## Case of Lumbar Abscess in a Cow, associated with Chronic Disease of the Lungs and Liver.

*By Mr.* F. M. Leech, *M.R.C.V.S.*

Dear Sir, *Ashbourne, Aug.* 12, 1847.

I beg to inform you, that yesterday was forwarded to your address at the College a box, containing certain morbid parts that were taken from a cow upon which our opinion had been sought.

Upon my arrival I learned that the cow calved some time in April, and from that time she had never done well, but at times had been very subject to derangement of the digestive organs, accompanied with considerable hoove. The symptoms which presented themselves to my notice were,—an increased pulse, small and quick, about 95; breathing hurried, with an occasional cough; staring coat, the skin here and there presenting yellow patches, especially on the inside of the thighs and outside of the shoulder; countenance dejected; conjunctival membrane injected; mouth coloured of a yellow tinge; the right hind and fore leg were deathy cold, while the opposite ones were quite warm. There was considerable atrophy of the muscles of the loins and side, more especially on the left side; appetite good, and bowels regular. There was no unnatural enlargement visible anywhere, but upon applying the ear to the left side, by a person striking on the opposite side, fluctuation of fluid could be clearly detected. Carefully reviewing

these symptoms, I ordered the animal to be destroyed, which was accordingly done, and the following are the

*Post-mortem appearances* that were observed:—On cutting into the cavity of the thorax, we found considerable tubercular deposition to have taken place in the lungs, with effusion of serum into the cavity. On laying open the abdomen the intestines appeared healthy; and so was the uterus; but the liver presented that appearance which butchers call "pipy." After the bowels were removed we found a large tumour occupying the region anterior to the left kidney, to which you will see that it is attached: its other points of attachment were the peritoneal covering of the liver and the cellular membrane of the loins; for it was situated without the peritoneum, and contained four gallons of fluid of a sero-purulent character. What the origin of this was I cannot say, never having met with any thing of the kind in my practice before.

I am, your's most respectfully.

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## Diseased and Enlarged Prostate Gland of a Dog.

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

*Veterinary Infirmary, Church-street, Brighton,*
Dear Sir, *June 2d*, 1847.

I have sent a tumour per rail which I consider to be a very rare specimen of enlargement of the prostate gland of a dog. The history of the case is as follows:—A spaniel, thirteen years old, about last Christmas, experienced a somewhat rapid enlargement of the abdomen, but without his general health being in any way affected by it. It continued gradually to increase, but he felt, or appeared to feel, no inconvenience from it, until within the last few days, when he was observed to void his urine very frequently: still his appetite remained good until the day before yesterday, when he was brought to my infirmary, presenting the following symptoms. Beginning with the most prominent, there was an immense enlargement of the abdomen, which had a tense feel,

more especially at its sides; incessant attempts to void the urine were made, and which was sometimes passed in small quantities; a general state of marasmus existed; somewhat laboured respiration; disinclination to move; pallor of the mucous membranes; and the bowels in a regular state.

My diagnosis was unfavourable; and I expressed my opinion to his owner that all remedial means would be useless, and that I considered it a case of ascites, accompanied by a tumour of some kind within the abdominal cavity, and which, in all probability, was an enlarged mesenteric gland. He would not, however, consent to the animal being destroyed, but wished me to relieve him from all acute pain, and to render his path to the grave as easy as possible. I contented myself by merely giving an aperient. On the next day he was again brought to me, presenting all the above-named symptoms, but in an aggravated form. On my telling the owner that the only chance of even temporary relief was by performing the operation of tapping, he at length reluctantly consented, and I accordingly operated on him. I succeeded in withdrawing about a pint of sero-sanguineous fluid, which escaped very slowly. The dog bore the operation very well, but it had little effect in reducing the enlarged abdomen, which now felt as if its contents were perfectly solid; and he gradually sunk from this time, notwithstanding I administered diffusible stimulants frequently. He died about nine hours after the operation.

The *post-mortem examination* presented the following appearances:—The large tumour sent was hanging from the pubic region to the inferior part of the abdomen, which it nearly filled. The stomach and intestines were in a perfectly normal condition, and had food in them; the liver was quite healthy, the gall-bladder rather distended. The urinary bladder was empty, or nearly so, the pressure of the tumour producing incontinence of urine. The lungs were slightly congested.

I should have sent the entire carcass, with the tumour *in situ*, but the gentleman would not allow me to do so. Although, doubtless, the Association does not now hold its weekly meetings, I could not resist the opportunity of sending this specimen to you, knowing the interest you take in the canine species; and although I do not by any means wish to infringe on your time, which now

ought to be one of relaxation from professional duties, yet, if you will favour me with a few lines to say if this is a very unusual sized tumour, &c., I shall be much obliged.

I am, Sir,

*To Mr. Simonds.* Your's faithfully.

P.S.—Perhaps I should have stated that the weight of the diseased gland is ten pounds and a-half, whilst the body of the dog, after its removal, amounted to only fifteen pounds and a-half.

[Enlargement of the prostate gland of the dog is a disease but little alluded to by writers on canine pathology: it is, however, of frequent occurrence, and, in the majority of instances, appears to be true hypertrophy of the gland. From the situation of the gland, it is evident that any augmentation in its size would give rise to a mechanical obstruction to the free evacuation of the urinary secretion, and thus strangury usually constitutes the leading symptom of the disease. The long retention and accumulation of the urine within the bladder frequently lead to an attenuation of its coats, which at length giving way, a rupture of the cyst takes place, and of this an instance is recorded in the TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION for 1840-41, p. 57.

The case communicated by Mr. Mannington is, however, a most extraordinary one, and differs considerably from the usual forms in which this disease shews itself, as well as in the results: indeed, at first, we doubted its being an enlargement of the prostate, but careful examination proved it to be so. In no instance do we remember hypertrophy of an organ to have been more perfect. By its size it pressed upon the peritoneal reflection extending into the pelvic space, and, carrying this before it, protruded itself into the abdominal cavity, where, by encroaching on the viscera, it induced a dropsical effusion within the peritoneal sac; thus giving rise to the appearances presented by the animal during life, and fully justifying the diagnosis of Mr. Mannington.]

## Case of Choking in the Horse for which Œsophagotomy was performed.

*By Mr.* G. White, *M.R.C.V.S.*

*Hill Hall, Lichfield, April* 11, 1847.

Gentlemen,

As choking in the horse is not of every-day occurrence, I have thought the following case would not be altogether uninteresting to some of your readers.

I was requested on Sunday night last, April 4th, to see a valuable cart-horse, belonging to Mr. Thomas Mills, near this place, when I was informed that the horse had not eaten any thing on that or the previous day. The symptoms were as follow:—Considerable discharge of saliva from the mouth; breathing quick; anxious countenance; pulse 60, and weak; a great desire evinced for liquids, which returned almost immediately through the nostrils; a slight swelling down the neck, about midway between the larynx and the chest, and I could feel a substance lodged in the œsophagus at that place. Both the master and the wagoner assured me that the horse had had no ball given to him, nor had he been eating turnips, or any thing likely to become impacted. I ordered constant fomentations to the neck, manipulating the hard substance well; gave warm water to drink, and directed the animal to be supported with clysters of good gruel. I saw him the next morning, and again questioned the wagoner respecting his having given any thing, informing him the horse would die. This I did with a view to elicit information, and he now confessed that on the Friday evening previous he had given *a powder mixed with some dough*. As there really appeared no immediate danger, I thought it advisable to allow a few hours to elapse ere we passed the probang; but the same evening, the animal being no better, I proceeded to pass it, and pushed the ball down a few inches, but could not possibly get it any farther. I then left him for the night, and on the next morning, as he appeared much weaker, and the other symptoms remained the same, I advised the owner to call in another practitioner, which he did; but, owing to certain circumstances, he did not come till

the next day, namely, Wednesday. I arrived first, and found our patient much worse: he was breathing laboriously; the pulse was imperceptible; the legs and ears cold; and evidently he could not live many hours, unless relieved in some way. The owner now pressed me to operate on him, which I had only been prevented doing, on the previous day, in consequence of the non-arrival of the other veterinary surgeon, coupled with the vain hope that the dough would become softened.

The horse being down, I availed myself of the opportunity to put on the hobbles, and immediately performed œsophagotomy, which was done without losing more than a few drops of blood; and through the opening made I extracted a mass nearly as thick as a man's wrist, having several layers of paper round it: so large was it, that I felt quite satisfied that no force which could have been consistently employed would have pushed it into the stomach. I now passed the tube of the stomach-pump through the opening made in the œsophagus, and injected into the stomach three or four pints of warm gruel: immediately after doing so, the animal began to struggle violently, and, much to my surprise and chagrin, he died in a few moments after.

*Post-mortem examination.*—The œsophagus much dilated at the place where the ball was first lodged; intestines and abdominal viscera generally healthy; lungs and pleura costalis much inflamed, and a deposition of lymph had taken place around both lungs to a great extent; the heart was soft and flabby, and the bronchi filled with frothy mucus.

I inclose a portion of the ball extracted.

I would ask, Did the death of the animal occur from suffocation, caused by his struggling to get loose, or from a collapse coming on from the operation being performed when he was so much weakened?—What was the cause of pleuro-pneumonia in this case?—At what period did it come on?—I did not find the pulse more than 60 on the Tuesday night, and there was an absence of all indications of this affection.

*To the Editors, &c.* Your's respectfully.

[The portion of ball forwarded consists of the usual alterative compound given by stablemen, the sesquisulphuret of antimony and nitrate of potash being predominant in it.]

## Fatal Effects of Ether Vapour on the Horse—Gestatory Period of Tetanus.

*By Mr.* G. B. Webb.

Gentlemen, *Balsham, April* 12, 1847.

A fatal case, resulting from the inhalation of the vapour of ether, having this day fallen under my notice, I feel it incumbent in me to apprise you of it, and to furnish you with particulars.

A horse labouring under chronic lameness of the fore feet, and on which I was about to perform the operation of neurotomy, was, with the consent of the proprietor, to be etherized previously: for this purpose the apparatus was placed over his nostrils, and seven ounces of ether poured into the bladder, which was suspended in warm water for about a minute and a-half. The animal at first offered considerable resistance, and twice threw the bladder off. Within five minutes, however, he fell, and lay struggling, being evidently still sensible. Feeling convinced that as yet he was not fully under the influence of ether, I removed the bladder, and introduced an ounce and a-half more ether. After inhaling the vapour for about four minutes longer he became quiet, and I proceeded to operate. I had just divided the nerve, when I requested the valve to be opened to admit a little air, so as to facilitate respiration, when, looking at the animal, to my surprise I saw that he was dead. From the commencement till the time I pronounced him dead was under twelve minutes. There appeared no undue excitement, the breathing was not more hurried than might fairly be anticipated, nor was there any perspiration; so that life, it may be said, was stolen insensibly away.

Unfortunately, and for which I may be blameworthy, I did not make a post-mortem examination. But I am of opinion that the horse did not die from the effects of the ether vapour, nor even from the quality of the air, but from its deficient quantity; he was therefore suffocated. If there be not sufficient air admitted to distend the air-cells, a collapse must be the consequence, the lungs becoming engorged with blood; because, the more air there is in the lungs, the less blood—and the more blood, the less air. The apparatus, according to my views, should have a flexible tube, fixed

to the nosebag, of the same length and caliber as a horse's trachea; and the bag at the end for the ether should be large enough to contain the lungs of a horse, and this lined with tinfoil or something impervious to air: thus should we make the supply equal to the demand, and also facilitate the act of inhalation.

I etherized a small donkey with a tube the length of his own trachea, attached to a bag that would nearly hold his lungs, and it answered admirably. I etherized a mare on Tuesday last with the same apparatus, and with some of the same ether as that which I used in the fatal case. In this instance I tried four ounces of ether first, which not having the desired effect, I added three ounces more, and then operated without any pain whatever being manifested. The operation was division of the flexor tendon of the fore leg, brought on by a dislocation of the pastern joint about fifteen months ago, and the patient walked nearly upon her fetlock joint.

In the last number of THE RECORD I perceive there is a case of tetanus by Mr. South. I am of opinion that the cause, in this instance, was not the performance of the operation of neurotomy, but the act of casting the animal for it; as I believe that, generally, this disease proceeds from some injury done to the spine.

The *gestatory* period of traumatic tetanus—for I have never seen a pure case of what is designated idiopathic tetanus—is from fourteen to twenty days. Why it should extend over so long a time I cannot say. A few cases may be accepted in corroboration.

I was requested to attend a horse, some years since, which had fallen down with a load of dung, and cut his shoulder. This animal was attacked with tetanus within about fifteen days after. There was no proof that it proceeded from the wound: my opinion is that it was from the fall.

*Case* 2.—A horse fell down in a wagon, and cut his shoulder: in sixteen days he had locked jaw.

*Case* 3.—A mare fell down in a dung cart. No lesion, not even integumental, was to be seen; and in fifteen days she was attacked with tetanus.

*Case* 4.—A horse fell off a barley mow. No wound could be found to exist, nor did he appear to be hurt; but on about the fifteenth day tetanus shewed itself.

*Case* 5.—I cast a colt, and castrated him; and all went on apparently well until the eighteenth day, when symptoms of tetanus appeared.

*Case* 6.—A colt was cast, but nothing done to him. On the fourteenth day he was found tetanic.

*Case* 7.—A mare was covered by a stallion, and she became tetanic the same night.

*Case* 8.—A gentleman leaped his mare off a high bank, and in fifteen days she was attacked with locked jaw.

It is common to have tetanus arise from punctures in the feet. In all, nearly twenty cases of tetanus have fallen under my care since I have been in practice; and it is my opinion that nine cases out of ten arose from injuries done to the spine. If the mare above referred to had jumped off the bank into the field at night, or the colt that I cast merely had fallen down in the night, it would have been called idiopathic tetanus.

I have had three cases recover from the constant application of cold water along the spine; but I believe the best plan of treatment consists in keeping the patient cool and quiet.

I am, Gentlemen,
Your's, &c.

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## Extensive Disease in the Colon of two Horses.

*By Mr.* W. Perry.

Sir, *Swaffham, May* 29, 1847.

Although I am personally unknown to you, yet I venture to lay before you the particulars of, to me, two extraordinary cases which have occurred in my practice lately, and I shall feel obliged by your giving your opinion on them.

About a week since one of my employers had a mare attacked, when brought up in the morning from grass, with what appeared to be gripes, and they treated it as such. At ten o'clock, A.M., I was sent for, but the animal died in a few minutes after my arrival. As I seldom miss the opportunity of a

*Post-mortem examination*; I immediately examined her; and she presented, on opening her, all the appearance of a fresh slaughtered animal, with the exception of an effusion of serum into the abdomen amounting to about six quarts. But, proceeding in my investigation, I found the colon to be the seat of extensive disease. There was no trace of inflammation in the stomach, nor in the other intestines; but the entire villous coat of the colon appeared to be injected with blood, presenting a shining surface of the deepest purple colour; indeed, it might be termed black. The only impression this unusual appearance made on my mind at the time was, that it was one of those cases that occur to every practitioner, in which changes are met with altogether different to those seen before.

On Wednesday morning last another mare, belonging to the same person, was attacked about the same time, and with similar symptoms. I was immediately sent for, and found her presenting every appearance of peritoneal inflammation. The pulse was small, wiry, and considerably accelerated: she continued throwing herself on her back, with every other indication of the above disease, and she died within a few minutes after my arrival, as the other had done; and, to my astonishment, on a

*Post-mortem examination*, she presented exactly the same appearances as the other, not deviating in the slightest degree from what I have previously described.

You may imagine that my suspicions were now awakened; but it was too late, for I had neglected to preserve any of the contents of the stomach or intestines. I shall not venture to give an opinion as to the cause, but shall feel indebted to you if you will furnish me with such remarks upon the subject as may suggest themselves to you.

I am, Sir,

*To Mr. Morton.* Your humble servant.

P.S.—About three weeks since a friend of mine, residing in the same parish as the one alluded to in my letter, found one morning a brood mare dead in the field, and soon afterwards another died, and both were within about the same period of foaling; but the carcasses were disposed of in the usual way, without my being made acquainted with the circumstance or any suspicion excited.

[The structural derangement being confined to one portion of the alimentary tube, and that the colon, the impression on our mind was that some deleterious vegetable had been partaken of by the animals when at grass, and we expected, if this really were so, that others would be similarly affected. Such, we are informed by Mr. Perry, has not been the case, and we are, therefore, compelled to express our inability satisfactorily to state the cause. An analysis might have thrown some light on the question; yet it is fair to infer that traces of inflammation would have presented themselves in the anterior part of the intestinal canal, had any active poisonous agent been administered, maliciously or otherwise; although, where the alimentary matters are longest retained, there the greatest amount of diseased action is generally found to exist.]

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## Polypi in the Duodenum of a Horse, and Rupture of the Stomach.

*By Mr.* W. Banister.

Sir, *Battle, June* 16, 1847.

Ere this reaches you, you will, doubtless, have received a small basket from me, which contains a portion of one of the small intestines, the duodenum of a mare. She was a patient of mine many times during the past year, and I have thought the morbid specimen might prove instructive and not uninteresting to some of the junior members of the profession. The history of the case is as follows:—

I should think that, at least, twenty times during the past year the animal was attacked with spasms of the bowels, often twice in one week; at other times she would work well for two months or more, being apparently healthy. Sometimes constipation was present, at other times the reverse. I invariably used to give her oil in combination with spirit of nitric ether, as an antispasmodic, which would often relieve her in three, four, or five hours: when the pain has continued longer, I have administered a dose of aloes. The last attack was on the 3d of this month, when, after rolling

about for twenty-four hours, she appeared quite easy, and her bowels responded well to the medicine given. Two days after she shewed symptoms of influenza, from which she also recovered; and on Saturday the 12th, I left orders for her to go to work on Monday; but on Sunday I was again sent for in great haste, the mare being reported as much worse, and shewing the most alarming symptoms: before my arrival she was dead.

On laying open the abdomen, I discovered a rupture of the stomach about twelve inches in length, which, of course, accounted for the animal's dying so suddenly. In that part of the intestine where I have placed a pin, an introsusception existed, and, on laying open the gut itself, I perceived a number of pendulous tumours attached to its inner coat. It is that portion of the intestine I have sent to you, believing similar instances are met with but rarely, or, if so, they are seldom recorded. Of course, all the previous attacks under which the animal laboured are now easily accounted for.

I remain,

*To Mr. Spooner.* Your's respectfully.

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Sir, *Battle, June* 20, 1847.

In answer to your questions relative to the case in which the polypi occurred, I should say,

1st. That the rupture of the stomach took place in the pyloric portion.

2d. All the coats of the stomach were ruptured, and that to the same extent, the edges of which were covered with coagulated blood.

3d. From the quantity of ingesta found in the abdomen, I should think the stomach must have been very full at the time of the rupture. She had eaten very little food for some time until a day or two before the rupture took place.

4th. The coats of the stomach were not flaccid, but rigid.

5th. I did not examine the intestinal canal further than where the polypi were found; neither could I the morning I received your note, as the parts had been removed.

I am, your's, &c.

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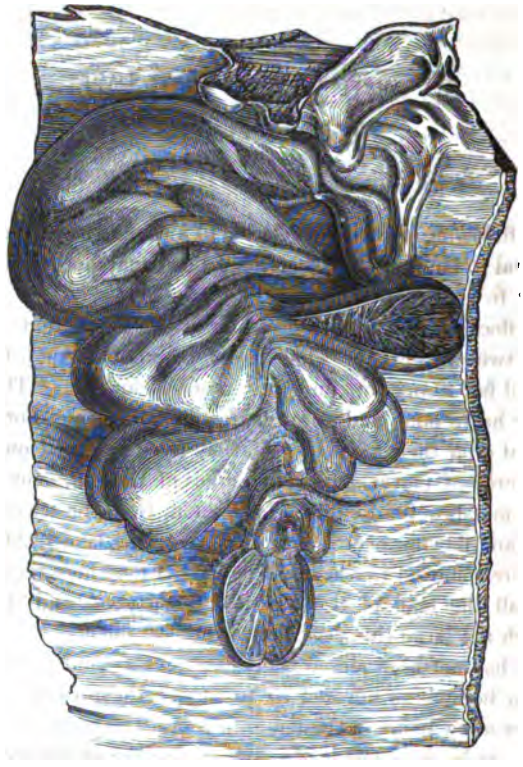

[The above woodcut will convey an idea of the appearance presented by these abnormal growths. We are of opinion they are of the nature of polypi; and although it is rarely the case that they are met with in the alimentary canal, except at its termination, the rectum, yet occasionally they have been found in other parts; and of this an instance is recorded by Mr. Simonds in the first volume of THE RECORD, in which they existed in the colon of a mare. Generally, they are attached to other mucous surfaces, as the lining membrane of the nostrils, the uterus, and the bladder. In the Museum of the College is a specimen of a large polypus existing in the bladder of a horse; and in the present number is an account of several of these pedunculated bodies in the urinary cyst of an ox, introduced by Mr. Gowing at one of the meetings of the Veterinary Medical Association.]

## Hydatids in the Brain of Lambs.

*By Mr.* A. Copeman.

*To the Editors of "The Veterinary Record."*

The following particulars relative to a disease which has proved very fatal to lambs in this neighbourhood may not be devoid of interest to your readers.

The flock consists of twenty-four score Down and Leicester lambs, twenty score of which were bought in August last at Thetford fair in one lot, and four score in another. They came off poor heath land, and were very low in condition. For the first fortnight after their arrival home, they were pastured on a good second crop of clover, within two miles of the sea, contiguous to the salt marshes, the locality being humid, from the sea constantly ebbing and flowing over a large tract of bog land. Afterwards they were removed to a sainfoin layer. I may here remark, that nearly all the land of the farm is dry and good, and the crops, although not large this year, are of the best quality.

They had not been placed many days on the sainfoin before two of them became so affected as to induce the proprietor to turn them for a few hours in the day into some "after-grass," for the purpose, as he considered, of counteracting the stimulating effects of the "layers;" notwithstanding which, ten more were similarly attacked in the course of the succeeding fortnight. He now put them on his stubbles, which also failed to produce any beneficial result, as several fresh cases from time to time occurred, making in all about thirty. These changes in their food having proved altogether ineffective, the proprietor, at the expiration of three weeks, again placed them on the "layers;" and it is well worthy of remark that not one fresh case occurred during the following month. On the 1st of November they were folded on Swedes, and allowed good hay in addition; when they soon again began to "drop," and sometimes two or three in a day were attacked, amounting in all to forty-eight.

The symptoms were evidently those of a cerebral character, the

majority of the lambs being quite comatose, and unable to stand when lifted on their legs. In a few cases the head was carried on one side, the eye was amaurotic, and the animals staggered in their gait. Occasional exacerbations came on, which were accompanied with falling, grinding of the teeth, and forcibly throwing the head on the same side to which it had been previously inclined.

In the majority of the cases a partial recovery took place, but the remainder were killed by the butcher, and thus no opportunity was then afforded me of making a post-mortem examination.

The disease continuing to progress, and the symptoms becoming more aggravated, the proprietor determined to slaughter thirty more of the lambs, and now I was enabled to institute an *inspectio cadaveris*. In the first examined, on detaching the head, a considerable quantity of serous fluid escaped from the spinal sheath; and, on laying open the brain, four hydatids were found in its substance. In the second three hydatids were found, about the size of walnuts; and in two others, which had been ill only a few days, three existed in each brain, but the cysts were of a smaller size. From this it became evident that no remedial measures would be productive of any good, and the owner resolved to have the animals killed, as they evinced symptoms indicative of the existence of the parasites, preferring this to selling them while there was a doubt of their being in a healthy state.

Thinking that you would be somewhat interested in this matter at the College, I have sent one of the lambs for your examination.

*Walpole, January* 18, 1847.

[In the brain of the lamb forwarded we found three hydatids in the right side of the cranial cavity, and two in the left. The former were situated between the arachnoid membrane and pia mater. One was of large size, and located on the anterior lobe of the cerebrum; the others were more posteriorly situated, and the bones covering them had become thinned by the pressure they communicated. The latter were situated in the left ventricle, and one of these was also of large size, the cerebrum having become considerably diminished from its encroaching on this part of the encephalon.

In the second vol. of this Journal, p. 40, an account is recorded by Mr. Silvester of lambs similarly affected; and the above furnishes another instance of the injurious effects on sheep of the long continued wet weather which prevailed in the autumn of 1845.]

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## Chloride of Zinc in Thrush.

*To the Editors of "The Veterinary Record."*

Gentlemen,

Having been lately engaged in making experiments on the disinfectant fluid of Sir William Burnett, which is a solution of chloride of zinc, and having found it a most valuable agent in removing the fœtor of unhealthy discharges in general, and particularly those of old ulcers and phagædenic ulcers; and, moreover, having found chronic ulcers of many years standing take on a healthy action when treated with this fluid; I was tempted to make trial of it in chronic thrush of the horse's foot.

I was immediately led to this experiment by observing the extremely bad odour of the discharge in this disease, and the result has been most satisfactory. The strength of the solution which I employed was one drachm of the chloride of zinc to a quart of water. With this lotion I had the feet sponged three times a-day, and at the end of a week, the discharge had entirely ceased, and the feet had resumed their healthy state.

The property which this solution possesses of immediately destroying bad smells, without substituting another, as is the case with chloride of lime, will, I think, render it a valuable addition to the "armamentarium medicaminum" of the veterinary surgeon. As an alterative stimulant calculated to excite a new action in chronically diseased tissues, it will also be found an important agent.

I do not enter upon the question of the policy of arresting old-standing discharges; but, if this should come under discussion, it might be deserving of inquiry whether a more fragrant secretion might not be substituted for that of thrush. I have no such fears myself, and it has occurred to me that, in many instances, the dogma of the healthy tendency of a discharge has been adopted as an apology for our own inability to effect a cure. Let us be

sure we *can cure* a discharge before we hug ourselves with the notion that it would be baneful to do so.

Should any of your readers be tempted by this communication to make use of the chloride of zinc, I should feel greatly obliged, and science would be indebted to them, if they would furnish their experience to THE VETERINARY RECORD.

I am, Gentlemen,

Your obedient servant,

55, *Upper Charlotte-street, Fitzroy-square, Sep.* 8, 1847. ERASMUS WILSON.

[We have used the chloride of zinc as a caustic, and its solution in a case of sinuous wound, and can speak favourably of its action.]

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CASE OF PNEUMO-HEPATITIS IN THE HORSE, FOLLOWED BY THE FORMATION OF CHRONIC ABSCESSES IN THE LUNGS, AND SUBSEQUENTLY BY EFFUSION AND ABSCESS IN THE BRAIN, AND PARALYSIS. LATELY IN THE COLLEGE INFIRMARY.

ON April 28, 1847, a chestnut gelding, six years old, was admitted into the infirmary, labouring under an acute and severe attack of pneumo-hepatitis, indicated by an accelerated pulse, laboured respiration, yellowness of the visible mucous membranes, and other symptoms generally present in this affection. Active remedial measures were immediately had recourse to; and in about five or six days the acute stage had passed off, leaving the animal, however, much debilitated, with considerable discharge from the nostrils of a muco-purulent character, and a painful and distressing cough, the appetite being also impaired.

A course of tonics combined with gentle laxatives was now entered on, during which the appetite became good, the animal lively, and the nasal discharge considerably diminished; but the cough remained unabated, and it became more violent whenever the respiration was increased in the least degree by the horse being moved in his box or led out for exercise. Setons with other counter-irritants were applied over the larynx and along the course of the trachea, and sedative agents administered; the diet being carefully attended to.

Under this treatment a marked improvement was soon mani-

fested, which continued to progress till June 22d, when the animal was taken from the infirmary; at which time his condition was fully restored, and he had apparently recovered his wonted spirits and general health, except that, when first submitted to exertion, the cough would occasionally shew itself.

His owner continued to ride him as a pleasure horse up to August 21st, on the morning of which day he called at the College to consult Mr. Spooner respecting the animal's being turned out for the winter; he having ridden him, a day or two previously, eighteen miles, and was much pleased with his performance of the journey. However, he stated the horse still occasionally coughed, but, on the whole, he considered him better than he had been while in his possession, a period of two years.

At the moment of his remounting, he perceived that a slight swelling existed in front of the upper part of the trachea, to which he incidentally drew Mr. Spooner's attention. It proved to be the formation of a small superficial abscess in the inflammatory stage. On the evening of the same day the proprietor again rode the horse to the College, and, the swelling having somewhat increased since the morning, it was considered advisable that this should be attended to before the animal was turned out. On examination, after removal to a loose box, the pulse was found to be natural, and no febrile excitement whatever present. A poultice was applied over the abscess, and a bran mash with corn given to him, which he ate with avidity.

On the following morning a train of symptoms presented themselves altogether unexpected and extremely urgent. The animal was perceived to be standing with his head protruded, the tail partially erect, the legs in a fixed position and tremulous, the pulse, however, was only 40 in its number of beats, the respiration slightly accelerated, the countenance anxious, and he became much excited on being approached, but evinced a difficulty to move from the position in which he had placed himself. These indications were evidently tetanic in their nature; but there was an absence of that rigidity of the muscular system which gives rise to the fixed jaw and protrusion of the membrana nictitans.

On compelling the animal to move, he walked as if affected with stringhalt in all his legs, particularly the fore ones, which were drawn up spasmodically, and he appeared as if he had lost all

power to direct him in progression. The evacuations were natural. As the abscess in the neck fluctuated under pressure it was opened, when about an ounce of laudable pus escaped.

Being convinced that the above symptoms could not arise from this abscess, and reflecting on the disease under which the animal had previously laboured, the chest was carefully auscultated; when the respiratory murmur at the centre of the thoracic cavity on the right side gave evidence of the existence of solidification of the lung at this part, while a little more anteriorly a remarkable bellows-like sound was heard. On the left side was detected a mucous râle, which seemed to extend throughout the whole lung in a greater or less degree.

Although a considerable amount of disorganization of these all-important organs was thus found to exist, and connected with which, in all probability, was the abscess in the laryngeal region, yet the diagnosis remained imperfect, from the cause of the cerebral disturbance being unascertained. A mild cathartic was given, an enema of warm water thrown up, the poultice repeated to the abscess, and the diet restricted to mashes.

Throughout the day the symptoms continued to increase in urgency, and towards the evening the animal fell, and was unable to rise; and on attempts being made to raise him, he fell forwards with violence, the fore extremities having become completely paralysed. Cold affusions were directed to be applied over the head, and quietude was enjoined.

On the following morning no alteration in the unfavourable symptoms was perceptible. The horse was still prostrate; the bowels had responded once during the night, the fæcal matter being soft. The pulse remained unaffected, excepting during occasional struggles of the animal, when the hind legs were forcibly extended, their movements being confined to the hip joint: the fore legs were altogether powerless. A desire for water was manifested, but all food refused. The bladder was emptied by the aid of the catheter, and the urinary secretion found apparently healthy.

It was now evident that the case would terminate fatally. On the morning of the third day after his admission he gradually sunk, the pulse not numbering more than 60 up to within an hour or two of death taking place.

*Inspectio cadaveris.*—On exposing the viscera of the abdomen they were found to be generally healthy, excepting the liver, which was somewhat enlarged, soft in texture, and of a light brown colour, having flocculi of lymph on its peritoneal covering.

On laying open the thoracic cavity the abnormal appearances first observed were, chronic adhesions existing between the pleura pulmonalis and the pleural covering of the pericardium and the diaphragm. Over the right lung the pleura was considerably thickened, and bands of organized lymph were adherent to it. In its parenchyma were several large abscesses, containing thick pus of a light colour; their parietes were dense, and the surrounding tissue of the lungs indurated to a considerable degree. The left lung was emphysematous, the pleura being elevated on its surface to the extent of two hand-breadths, giving rise to an aërial vesicle of unusual magnitude. There was no effusion in the chest, nor any indications of acute disease.

On the head being removed from the trunk at the lower region of the cervical vertebræ, a large quantity of transparent fluid of a straw colour escaped from the theca vertebralis. Beyond this no other abnormal appearances were detectable throughout the spinal cord. On examining the brain, the vessels of the pia mater were seen slightly injected; both ventricles were distended with fluid of the same character as that which escaped from the theca vertebralis; the choroid plexuses were blanched, and small granular bodies existed on their surfaces. At the base of the brain the membranes gave evidence of acute inflammatory action having existed, and, on dissection of the pons varolii, an abscess was found about the size of a large walnut, filled with pus, which was thin, of a light dirty green colour, and evidently of recent formation. The contiguous substance of the brain, to a considerable extent around the abscess, was softened, of a light yellow hue, and infiltrated with serum.

These lesions of the encephalon will satisfactorily account for the very peculiar symptoms which so suddenly shewed themselves and which proved so quickly fatal. Their origin may be traced to the existence of abscesses in the lungs, the result of the former acute attack under which the animal laboured in the month of April. The pus becoming absorbed into the system, acted as a poison to

the blood, and caused the formation of abscesses in other parts of the body; the abscess in the neck immediately preceding that in the brain, which latter, from the diseased action it induced, became the cause of the effusion into the ventricles and theca vertebralis. In confirmation of this view, it may be observed, that cases somewhat similar to this have followed suppressed strangles in the horse.

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## Chronic Abscesses in the Lateral Ventricle and Cerebrum of a Steer.

In the early part of the present year a steer of the short-horn breed, and about eighteen months old, was presented to the College by J. Kinder, Esq., in consequence of the animal having been observed for some time past to exhibit indications of a cerebral disease, and for which depletive treatment had been resorted to with only temporary benefit.

When admitted into the infirmary the leading symptoms present were the carrying of the head to the right side, and which disposition existed to such an extent that when confined in a shed he would thrust his horn so forcibly against the side of the wall as to break down the brick-work, and when led out, no efforts on the part of the attendant could prevent his turning to the same side, while, if left at liberty, he would continually form circumgyrations. The pulse and respiration were normal; and the pupillary opening of the right eye contracted naturally on the stimulus of light, differing in nowise from that of the left. On pressure being applied to the head, at the base of the horn, the animal would occasionally shrink back, but no bulging or softening of the bone could be detected. The appetite was good, the condition low, but the secretions and excretions were apparently healthy, with the exception of the bowels occasionally becoming constipated.

During the time he was in the infirmary the animal experienced two or three attacks in which the general symptoms became much aggravated, accompanied with contraction of the iris, more particularly of the right eye, which had an amaurotic appearance.

These symptoms shewing the existence of some abnormal growth, or probably an hydatid in the brain, the treatment consisted prin-

cipally of palliatives, with attention to diet, and the keeping of the bowels in a relaxed state. Setons were however applied, more as an experiment than otherwise, over the frontal bone, and the back of the poll on the right side: but they were unattended with any visible beneficial effect; at any rate, it was not permanent.

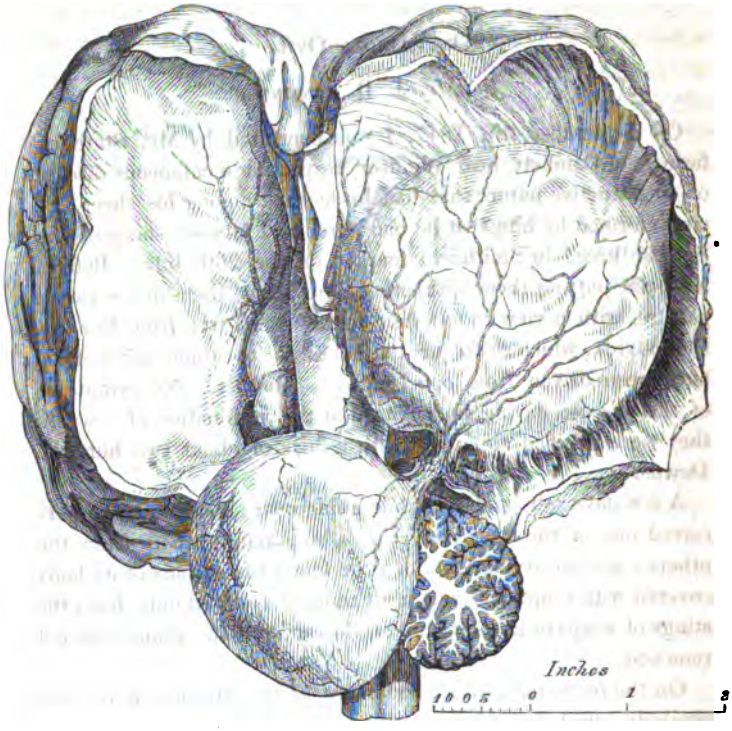
In the month of April the animal was apparently better, his condition had improved, and, when turned into the paddock, he would walk for some distance in a straight line before he commenced to turn to the right side. In the following month, although no urgent or violent symptoms had manifested themselves, yet, there being no hope whatever of an ultimate cure being effected, the animal was killed for dissection.

*Examination of the Encephalon.*

On removing the common integument, the frontal bones were perceived to be thin, and they yielded readily to pressure. In places the whole of the osseous structure was absorbed, especially on either side of the sagittal suture. On raising the skull-cap, the dura mater was found extremely attenuated, and covered with small flocculi of lymph. The arachnoid and subarachnoid spaces were filled to distention with serous fluid. The aspect of the surface of the brain was pallid, and on the posterior lobe of the right hemisphere of the cerebrum was an enlargement which proved to be an abscess containing thick white pus. The lateral ventricle on the same side contained a large quantity of serum, which had accumulated to such an extent as to cause considerable absorption of the cerebral substance. In the left lateral ventricle, in addition to the increased quantity of fluid, were two large cysts, filled with grumous matter, their external surface being slightly vascular, and, from the disgregated state of the plexus choroides, they appeared to have been formed by their investing membrane.

The cerebellum was about half its natural size, pale in colour, and softened.

The subjoined woodcut admirably shews the situation and relative size of these strange cystic formations in the brain.

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### Analysis of Melanotic Deposit.

M. Foy found a portion of a melanotic mass taken from a horse to be composed as follows :—

| | |
|---|---|
| Albumen | 15·00 |
| Fibrine | 6.25 |
| A highly carbonized principle, probably altered crassamentum | 31.40 |
| Water | 18.75 |
| Oxide of iron | 1.75 |
| Sub-phosphate of lime | 8.75 |
| Muriates of potash and soda | 8.55 |
| Carbonates of soda, lime, and magnesia | 8.00 |
| Tartrate of soda | 1.55 |
| | 100 |

## On Variola Ovis.

*By Mr.* J. B. Simonds.

On September 4th, 1847, I was consulted by Mr. Statham, farmer, of Datchett, near Windsor, respecting a cutaneous disease of a destructive nature that had broken out among his sheep. I was informed by him that he had purchased fifty-six sheep of the Spanish breed in Smithfield market on the 26th July. Before, however, putting them with others, he placed them in a separate pasture, with a view to ascertain if they were free from Eczema Epizootica, which so frequently makes its appearance after sheep have been driven from one locality to another. No symptoms of this disease having shewn itself at the termination of a week, they were allowed to mingle with a flock of about two hundred Downs.

A few days subsequently, while going over his grounds, he perceived one of the Spanish sheep to be standing apart from the others; and on examination of it he found the surface of its body covered with eruptions, which he thought resulted only from the stings of wasps or hornets, and on that account the animal was not removed.

On the following day several more of the Merinos were seen similarly affected; and from this time the disease continued to spread, and many of the sheep died.

It was about a fortnight after they were depastured together that the malady *first* shewed itself in the "Downs," and these seemed to suffer more from it than the Spanish sheep. They were now separated; still the disease continued to progress, and daily losses were sustained.

Before my arrival at Datchett the sheep had been judiciously divided by Mr. Statham into three lots, which were placed in fields situated at a distance from each other, so as to prevent the affection being communicated by contact or even by infection. The first lot consisted of "Downs" supposed to be healthy; the second of Merinos recovering from the disease; and the third of Merinos and Downs still labouring under it: the latter I carefully inspected.

Those in the *first* stage of the disease were extremely low in

condition; a discharge from the nostrils of a mucous character was present; the breathing was quick and catching; the visible mucous membranes were inflamed, particularly the conjunctival lining of the eyelids, from which tears in increased quantities flowed: all food was refused; rumination had ceased; the ears were lopped; the head held low; and a disinclination was evinced to associate with each other, some standing and having a most dejected appearance, and others lying down. The pulse was considerably accelerated, and scarcely perceptible at the maxilla or leg, but at the heart it gave to the hand a jerking sensation: the skin was hot, red, and elevated in patches in the form of nodules, which approximated each other. The greater amount of the eruptions were on the inside of the arms and thighs and sides of the face, the labia of the female, and præputium of the male, those parts which are either nude or covered only with hair; yet, on separating the wool, the whole of the skin was seen to be similarly affected, although less intensely.

In the *second* stage greater debility and emaciation existed: the discharge from the Schneiderian membrane was increased, viscid, and adherent to the alæ of the nostrils, impeding the respiration; the capillaries of the eyelids were in a highly congested state; the pulse was indistinct even at the heart; the ears and feet were cold; and the wool came off easily, shewing the skin underneath to be inflamed; but the redness existed principally between the elevations, still no distinct areola was present. The summits of the nodules were blanched, arising from effusion of a *very small quantity* of serous fluid beneath the cuticle, which scarcely gave to it the character of a true vesicle. All the eruptions, however, had not taken on this change.

The *third* stage shewed the vital powers to be prostrated; the fever had become of a typhoid character, the discharge from the nostrils fœtid, and the other general symptoms much aggravated. The cuticle covering the majority of the nodules had assumed a brown colour, and pus here and there was formed on the margins of some of them, shewing the ulcerative state to have commenced: in others, simple desquamation of the cuticle had begun to take place.

In some extreme cases the ulceration had extended to the sub-

cutaneous structure, and large unhealthy sores existed on the sides of the face, the inferior parts of the abdomen, the prepuce, and inside of the thighs. I was at once struck with the resemblance of this disease to small-pox in the human subject, and the identity of the two was further proved by the fatality of the affection in the febrile and third stages; upwards of twenty sheep having already died, and others being in that state which precluded all hope of ultimate recovery.

The treatment recommended to be adopted in the *first* stage consisted of a dose of laxative medicine given at the onset, followed by the daily exhibition of mild diffusible stimulants, in conjunction with febrifuges; such as the spirit of nitric ether, acetate of ammonia, and very small quantities of the antimonial compounds. After the acuteness of the attack had passed off, vegetable and mineral tonics conjoined were administered; the agents of this class being the compound tinctures of bark and gentian, and the sulphate of iron.

When the condition of the skin shewed desquamation of the cuticle associated with ulceration of the cutis to be coming on, a very dilute solution of the chloride of zinc was applied; and the same was directed to be used in the ulcerative stage. Careful nursing, and generous and varied diet, were especially enjoined.

As prophylactic measures, isolation of the apparently healthy ones was strictly enforced, with a daily inspection of them, and instant removal of any in which the slightest indication of the disease manifested itself. The exhibition of aperients occasionally, the feeding of them on grass land, where they could have access to water, and the placing of rock salt in their troughs, were also recommended.

Being convinced of the consequences that must result from the introduction of so serious a malady into this country, I immediately instituted those inquiries which enabled me to trace it to its origin; and I found that this, unfortunately, was not a solitary instance of its existence. The sheep adverted to in the previous account were, with several others, imported from Tonningen, on the coast of Denmark, by the ship Trident: they all appeared to be in health, and were consigned to the usual salesman, who disposed of them in different lots, some of which still continue well. Another lot of 166 brought in by the "Mountaineer," from Ham-

burgh, and one of 80 by the "Princess Royal," a part of a large cargo, were purchased on the 26th July, of two salesmen, by Mr. B. Weal, of Woodhall, Pinner. These lots were equally divided between himself and his brother, and in both of them the disease has shewn itself. A portion of the same cargo of sheep by the "Princess Royal," was sold to Mr. Goodchild, of Kingsbury, and these are reported to have been also affected with it; while others bought by Mr. Pitman, of the same place, and Mr. Choke, of Barking, are stated to have continued in health ever since the time of purchase.

In the flock belonging to Mr. B. Weal, which was examined by me on the 7th of September, I found two sheep in the earliest stage of the malady; but the majority were rapidly recovering from the attack. Many of them had been affected, twenty had died, and seventeen were otherwise disposed of. The disease first shewed itself in the lot of eighty, about ten days after their arrival, and rapidly extended itself to the others; and in most of those in which it proved fatal death took place in the acute stage, within seven days from the attack. The losses of his brother were not so great.

Mr. Statham, at my request, kindly forwarded two sheep to the College, one being in the early, and the other in the latter stage of the disease. The first of these died shortly after its arrival, and thus afforded me an opportunity of ascertaining the lesions that had taken place. THE SKIN was thickly studded with the eruption in its nodular or tuberculous form. A section of some of these nodules being made, shewed that they extended to the subcutaneous structure, presenting an appearance not very dissimilar to that of warts. The cellular tissue immediately beneath the integument was infiltrated with blood; the conjunctival and Schneiderian membranes were highly injected, as was the mucous lining of the trachea and bronchi; and the vessels of the lungs were filled to engorgement, which evidently was the immediate cause of death. The other viscera, both of the thorax and abdomen, shewed no traces whatever of diseased action.

The second sheep having been shewn to several medical friends, among whom was Mr. Erasmus Wilson, and the views taken by me of the nature of the disease being confirmed by them, a series of experiments was determined on.

*Experiment* 1.

A healthy "Down" sheep was placed in a shed on the 6th of September with the affected Merino for *twelve* hours, and afterwards removed to a sufficient distance, so as to preclude the possibility of the disease being subsequently communicated by infection. It was daily watched, and no appearance of indisposition presented itself until the morning of the 16th of September, when the animal was observed to refuse his food; to be dull and dispirited, and otherwise to manifest indications of febrile excitement. On examination of the skin, on the inside of its thighs and arms, numerous eruptions in the form of red isolated patches were seen to exist; thus proving *that the disease had been produced by contagion.*

*Sept.* 17*th.*—The eruptions are less perceptible to-day than they were yesterday, and the animal's general health remains nearly the same.

*Sept.* 18*th.*—The eruptions have become more numerous, also more elevated, and of a deeper red colour.

*Sept.* 20*th.*—Inperfectly formed vesicles cover the whole surface of many of the nodules, giving to them a blanched appearance. Some of the smaller vesicles are rounded at their summits, but the greater number are flat, having slightly raised margins, but no distinct areola surrounds them. The patient's health has improved, and the appetite returned.

*Sept.* 21*st.*—The cuticular covering of many of the less developed nodules has assumed a brown colour, indicative of approaching desquamation; and a still greater number of the tuberculous elevations have presented themselves on the inner part of the arms.

To-day the animal was seen by Mr. Ceeley, of Aylesbury, who has given to the subject of vaccination much attention, and he at once recognized the disease as true variola. Being anxious to carry on some experiments with the ovine lymph, several points were charged by him from the vesicles.

*Sept.* 22*d.*—Some of the nodules are disappearing without

passing through the several stages. Others have their surfaces still covered with small vesicles. The earlier formed ones have the cuticle of a browner colour, which is being detached in the form of a scab, but no formation of pus is detectable beneath it.

*Sept.* 23*d.*—A few of the scabs on the prepuce are of a still darker colour, and are surrounded by a whitish raised border, from which a small quantity of purulent fluid can be pressed.

*Sept.* 24*th.*—The animal may be reported as approaching convalescence. The majority of the crusts have become detached, and the exposed surface presents a healthy appearance.

The attack in this instance was the mildest we have yet seen; but the result has been perfectly satisfactory, and the deductions to be drawn from it are obvious, no interference whatever having been given to the progress of the disease throughout its various stages.

*Experiments* 2 *and* 3.

*Sept.* 13*th.*—An Irish sheep, in perfect health, was this day inoculated, using for the purpose the cuticle removed on the 7th inst. from the surface of the nodules in their second stage, the cells of which were charged with lymph. A portion of it was inserted inside the fore arm and the ear, by puncturing the skin with a lancet, and separating it from the subcutaneous structure, the cuticle containing the virus being placed in the space thus formed.

Another sheep was similarly inoculated; but in addition to the portions of epidermis, some pus, procured from an animal in the ulcerative stage of the malady, was also introduced underneath the true skin.

*Sept.* 14*th.*—Inflammation, apparently of a common character, surrounds the incisions in both animals; the inflammatory action, however, is greater in the one where the pus was used.

*Sept.* 15*th.*—The inflammation has increased in both, but particularly in the sheep inoculated with pus, the fore limb of which is swollen, hot, and painful, associated with lameness, and some febrile action has been set up in the system. Matter is beginning to be formed in all the incisions.

*Sept.* 16*th.*—The suppurative action has become fully established;

which has every appearance of being only the result of ordinary inflammation. Both the animals feed well.

*Sep.* 21*st.*—During the intervening days, the wounds have freely discharged pus of a healthy character, and the sheep are now apparently in perfect health.

*Sep.* 22*d.*—Both patients this morning are dull; they refuse food, keep themselves separate; lie down frequently; their heads droop; the ears are lopped; the countenance is anxious; the conjunctival membrane reddened; the pulse increased in frequency, and the breathing accelerated. An eruption has made its appearance on the inner side of the fore arms in each sheep, which presents the true character of ovine variola.

*Sep.* 23*d.*—The animal into which the pus was introduced in addition to the cuticle suffers more than the other. The mucous lining membrane of its nostrils is highly inflamed, and the secretion from it considerably increased, flowing over its lips; the pulse is much quickened; the respiration very short and painful; the conjunctiva inflamed, and tears trickle down the face; all food is refused, and the febrile excitement is great, but the eruptions are not more numerous than they were yesterday.

### *Experiment* 4.

*Sep.* 21*st.*—Assisted by Mr. Ceely, I inoculated a sheep on the inside of the fore arm. Several very small scratches were made with the point of a lancet, through the epidermis only, in different places; and upon these some transparent dry lymph, procured from vesicles five days previously, and moistened with a little water, was rubbed; the limb was kept extended afterwards until the blood which had exuded became dry.

*Sep.* 22*d.*—The skin is inflamed, thickened, and raised in a fold, extending a short distance from the places of inoculation to the front of the leg.

*Sep.* 23*d.*—The integumental inflammation is somewhat less, the stratched cuticle is elevated, has a yellow aspect, and contains a whitish purulent secretion. The animal's general health appears to be unaffected.

[Our readers will observe that experiments 2, 3, and 4 are of necessity incomplete. The progress of the disease in those animals will, however, be carefully watched and faithfully recorded. We have been desirous in the present number to put them in possession of a knowledge of the fact of the existence of this direful malady, which is new to this country; and in our next we hope to be able to give proofs of its communicability to other animals, or otherwise, of the modes of treatment, and also the means of prevention, or of mitigating its virulence. Very many experiments will, of course, be required to ascertain the necessary information connected with these facts.

Up to the present time we have not been informed of the disease shewing itself in other localities than those already referred to; yet we expect such will soon be the case, as several lots of affected sheep have found their way into Smithfield Market and been disposed of. We regret also to be obliged to add, that the measures hitherto adopted have not proved effectual in preventing its fatality. Mr. Statham, in whose flock the malady first shewed itself, has lost sixty by death, and been compelled to sacrifice eleven others.]

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## Experiences relative aux Effets des Inhalations d'Ether Sulfurique.

*Par* A. Thiernesse, *Professeur a l'Ecole de Médécine Vétérinaire et d'Agriculture de l'Etat, &c.*

Under the above title we have received three *brochures* from the author, which contain extracts from the bulletin of the sittings of the "Academie Royale de Médécine de Belgique," of March 27, April 24, and May 29, 1847.

They refer to a series of experiments on the inhalation of the vapour of sulphuric ether, instituted at the veterinary school of Brussels by the Professor M. Thiernesse. We were quite prepared for so important a discovery as that of a means to render man and animals insensible to pain during operations quickly finding its way to our continental friends; who, perhaps, even more than ourselves, are disposed to resort to the use of the surgeon's knife,

and, perhaps, to wield it with greater dexterity. We enter not here upon the consideration of the question, if it is not sometimes unnecessarily had recourse to by them. Our business is with the advantages and disadvantages resulting from the use of an agent which, doubtlessly, mitigates suffering, but which we fear, from cogent reasons, cannot be employed by the practitioner of veterinary medicine with the same facility and certainty and safety as by the human surgeon.

We have before expressed our conviction, that ere the ether vapour can, without fear of any ill consequences, be resorted to for the horse, a method must be devised by which he shall not injure himself in falling, or by which he may be placed in such a position that the required operation may be performed. To "cast" the animal, previous to the inhalation of ether by the aid of hobbles, &c., which appears to be the plan adopted at the veterinary school at Brussels, removes one of the advantages which we had hoped to derive from the use of ether, since this is a source—fortunately not a very fertile one—of very serious and annoying accidents.

We by no means consider the difficulties which present themselves insurmountable, but, as yet, we are not aware that any one has directed his attention to overcome them. We have before alluded to a suspensory band being passed under the animal's body, fastened over his back, and then connected with a pulley, by which he may be lifted from the ground when under etheric influence, and then let down on his side, or in any other position while in this state.

Another object of consideration is the expense incurred. From four to six ounces of ether are required for each operation on the horse; and this involves a heavy outlay in an extensive practice.

Thirdly; although "the merciful man is merciful to his beast," yet we fear this feeling does not extend itself to the necessary surgical operations on the lower animals; and, therefore, when the question of increased cost is mooted, the owner will be regardless of the momentary sufferings of his slave, and direct the operator to adopt the old method as heretofore.

The above remarks, it will be perceived, apply principally to the horse: the smaller animals may be very easily etherized, and with

them it is merely a question of expense, and which is of comparatively no amount, from the small quantity of ether consumed.

But to the pamphlets before us. The apparatus depicted resembles that generally employed in this country. A double-necked bottle—such at least it appears to be—is placed on a stand, and contains pieces of sponge saturated with ether. A stopple closes one opening, and the other has a bent tube inserted into it for the admission of air, which, before it can be inspired by the animal, has to pass through the sponge. From the lower part of the bottle, or ether vessel, a lengthened elastic tube proceeds, to which a nose-bag is attached to be placed over the horse's muzzle, and which is made of a material impervious to air, having a valve for the escape of the expired air. The drawing indicates that the animal has been "cast" before the apparatus is affixed. It is of very great moment that the ether-vapour be mixed with atmospheric air during inhalation, and that the air once expired be not again taken into the lungs, or asphyxia will be produced.

We now proceed to some of the experiments performed by M. Thiernesse, and to the inferences he deduces from them.

The first experiment was on a little dog of the spaniel breed, about two years old, affected with a tumour in the vulva, which it was found necessary to extirpate. The animal was rendered insensible in three minutes, but the inhalation was continued at intervals for about eleven minutes, the time occupied by the operation; during which the animal did not move, nor evince any sign of pain. There was also very little hæmorrhage, although several small vessels were divided.

The particulars of this case are given at length, but they present only one remarkable feature, namely, the closing of the urethra during cicatrization, on account of which an artificial passage was made for the urine. To prevent it from again becoming closed, however, proved very troublesome, but ultimately the animal seems to have perfectly recovered.

The second experiment was the amputation of the leg of a dog at the thigh, which likewise evinced no pain during the operation. He soon recovered from the effects of the ether, and walked away on three legs, not seeming to care about the loss of the fourth. There was no fever nor re-action present on the second day after

the operation; the muscles had contracted, and suppuration was quickly established. This dog is still at the establishment, and in perfect health.

The third experiment was on a horse thirteen years old, and in good condition. Being caused to inhale the vapour of sulphuric ether, in two minutes and a half he became insensible to the whip, to incisions, and to pricks of sharp instruments, all of which were made on different parts of the body. The inhalation was continued for ten minutes, after which the apparatus and hobbles were removed: still the animal remained insensible and motionless on the litter. The incisions were now repeated; his limbs were put in various positions; yet he remained motionless as if asleep. Five minutes after the horse endeavoured to get up, and by the assistance of several persons was made to stand, and in a few minutes he was led back to the stable; his walk, however, was unsteady, and it was found necessary to support him.

Two days after this the animal was again put under the influence of ether, and the parotid gland was dissected out without the least sign of pain, although in this difficult operation it is necessary to divide many of the nerves which intersect this gland.

The time occupied by the operation was thirty minutes. In twelve minutes the horse was insensible, but the apparatus was left on a few minutes longer; and during the operation it was reapplied several times, so as to keep the patient in a perfect state of insensibility, being careful not to keep it on too long. The appearance of the blood that spirted from the small arteries which were divided during the operation served as a guide in the etherization; for as soon as this was perceived of a darker colour, similar to venous blood, the apparatus was removed: and *vice versâ*, when the scarlet hue returned, it was re-applied. This horse respired air charged with ether-vapour for forty minutes, excepting eight minutes; during which, at different times, he was allowed to respire the pure air. Ten minutes after the operation he was able, with some difficulty, to return to his stable.

No pain was expressed, although cold water was freely applied to the parts for some hours after. He was no sooner in the stable than he manifested a strong desire for food. As it was desirable that his diet should be restricted, food was only sparingly allowed

him; but a short time after he was observed to be eating his litter. Neither fever, nor constitutional disturbance, nor any local pain, was perceived after this severe operation, and the respiration and circulation continued natural throughout. On the 24th healthy suppuration was established; and thirty days after the operation the cicatrix had formed, and the cure was complete.

The fourth experiment was on an aged dog of middle size; he was etherized in two minutes and a half. The thyroid glands were then extirpated, and the principal bloodvessels tied. This occupied two minutes, and was done without the least indication of suffering: in ten minutes after the dog had entirely recovered from the effects of the ether, and on the following day not the least unfavourable symptom was present. On the third day the dog was in a comatose state, which I have found to be the case with the majority of dogs in which the thyroid glands have been removed before the effects of the ether were known; and he continued in this state until the 29th (seven days after the operation), on which day he died of a cerebro-spinal affection.

The fifth experiment was on an entire horse, two years and a half old; the operation was castration. He was made to inhale the ether-vapour during five minutes, at the end of which time he still struggled, though feebly; the inhalation was, therefore, continued longer. I performed the operation on one side only, which was done in the ordinary way by means of the clams, occupying about six minutes; so that this horse must have inhaled the vapour during from eleven to twelve minutes.

One important peculiarity we must here notice; which is, that under the influence of the ether the testicles, instead, as might have been expected, of being more pendulous, were, on the contrary, more drawn up. One was close against the abdomen, the other in the inguinal ring; from which position it became impossible to dislodge it. The cremaster muscles were strongly contracted. The horse did not, as is the case after castration without the aid of ether, shew the least sign of pain or uneasiness, nor was there any loss of appetite afterwards.

The next experiment was on an old horse of great nervous irritability, having a quittor on one of his fore feet, complicated with caries of the os pedis, and ulceration of the lateral cartilage and

synovial capsule. The animal was in dreadful torture, and could not put his foot to the ground.

Encouraged by the absence of all fever from re-action by the foregoing experiments, Professor Delwart decided on etherizing the patient prior to the operation. The horse was affected by the ether in five minutes, nevertheless the inhalation was continued during the time the operation lasted. Professor Delwart extirpated the cartilage in ten minutes, the grooves in the hoof having been made previously, and the animal shewed no sign of pain whatever, not even in the evulsion of the hoof, the most painful of all operations. The time occupied in this operation, dressing subsequently included, was, as stated above, ten minutes; so that the horse inhaled the vapour of ether during fifteen minutes. In a short time he got up, walked to his stable, and even put the diseased foot gently to the ground. This animal had some little fever after the operation, which did not leave him until the tenth day.

The experiments which follow were made with a view to ascertain the physiological effects of the ether-vapour; but as they embrace vivisections, from which we hold no useful purpose can result, we refrain from making any extracts.

### *Injection of Ether per Rectum.*

Four ounces of fluid ether were given in the form of enema to a dog of large size. At the end of ten minutes he was completely insensible, but in half an hour after he got up, and walked with difficulty; he, however, soon recovered his natural state.

This first experiment inspired us with no small degree of confidence in this mode of etherization, it being advocated by Mons. Dupuy; but we were soon convinced of the dangers that follow ether thus employed.

The second experiment was performed on the same day on a spaniel of large size. The dog was in perfect health, and three ounces of ether were injected *per rectum*. He appeared inebriated in six minutes, and seemed to suffer considerably. Almost immediately after he lost all power of motion, became insensible to surrounding objects, the respiration was laborious, the air expired being strongly impregnated with the odour of ether; the pupils were dilated, and there was an abundant discharge of saliva from

the mouth. In thirty minutes after the sensibility returned, but the paralysis and dyspnœa continued, and within three hours life became extinct.

The autopsia disclosed the following changes:—The stomach was tympanitic, and contained a small quantity of undigested food; the vessels of the small intestines were slightly congested: in the large intestines was a small portion of excrement, with a large quantity of a blackish fluid; both the external and internal surfaces were of a dark red colour, and the subjacent cellular tissue was infiltrated with a sanguineous fluid of a syrupy consistence. The spleen was engorged with blood, while the liver contained but little; and the cavities of the heart were filled with this fluid, of a black colour. The lungs assumed a dark aspect, owing to sanguineous congestion, and melanotic matter was deposited in the interlobular tissue; while the encephalo-rachidian organs were the seat of a strongly-marked venous distention.

Several experiments were tried on birds and fishes, which offer little to interest us, nor are they of any utility. We may be permitted, however, to notice one experiment, which originated with M. Defays, Repetitor at the Veterinary School of Brussels, although we have made those extracts longer than we had intended. It is the introduction of the vapour of ether into beehives for the purpose of obtaining the honey, instead of destroying the bees by means of smoke, as generally practised. The vapour being introduced into the hive by a simple apparatus, invented by M. Defays, for a few seconds, the bees appeared to be greatly agitated, but their humming became more and more faint, and soon ceased altogether, and that before a minute had elapsed. The hive was now turned up, and all the bees were found completely stupified, so that the honey could be taken out with ease. We, however, contented ourselves by merely observing the bees in their state of inebriety. A quarter of an hour elapsed, and none seemed disposed to fly away. We could not ascertain the time it took to effect their perfect restoration, but the next morning they seemed as lively and as busy as before they were etherized. Mons. Thiernesse intends to continue his experiments under this head, as he considers that great advantages will result from them to countries in which honey is largely produced.

CONCLUSIONS.

The conclusions drawn from these experiments by the author are as follow:—

1. That by means of a proper apparatus, and care being exercised, a column of etherized atmospheric air may, without any inconvenience, be introduced into the lungs equal to the usual quantity of air inspired.

2. That animals may, with impunity, inhale large quantities of the vapour of sulphuric ether, and that for a considerable time, provided they are allowed to breathe the pure air at intervals.

3. That the influence of ether is not only useful in a surgical point of view, by facilitating the several operations and rendering the patient insensible to pain, but also by preventing the violent re-actions which so often render the result of the most carefully performed operations doubtful.

4. That healthy suppuration is quickly established in those animals which have been operated on when under the influence of ether.

5. That arterial blood becomes darker in its colour during etherization, so much as to nearly resemble venous blood; and that, if a few inspirations of pure air be allowed, the colour becomes quickly changed to scarlet.

6. That this change of colour may serve as a guide to the practitioner to remove and re-apply the apparatus in operations of long duration.

7. That the blood does not lose its power of coagulation during etherization; and, consequently, the patient is not liable to undue hæmorrhage.

8. That the dark colour of the arterial blood is the result of slow asphyxia, caused by the vapour of ether occupying a certain portion of the air cells, which otherwise would have been filled with atmospheric air, thus displacing oxygen.

9. That the ether inhaled produces its effects principally on the nerves, particularly those of the senses, which become at first excited and afterwards benumbed; without, however, destroying their influence over vitality.

10. That this agent temporarily paralyses the nerves of sensation and the spinal marrow.

11. That the functions of the brain are at the same time diminished.

12. That the function of the cerebellum relative to motion becomes subsequently paralysed.

13. That the spinal marrow and the inferior roots of the nerves simultaneously lose their principle of motion, and the nerves belonging to organic life (sympathetic nerves) somewhat later.

14. That the bulb of the spinal cord, which has been demonstrated by Mons. Flourens to be the seat of the principle of life, is the portion of the nervous system which resists longest the influence of ether.

15. That the inferior and superior portions of the spinal marrow are not, like the corresponding roots of the nerves springing from them, first affected especially as to sensation, and, secondly, as to motion, it being probable that these nervous origins possess fibres of independent motion and sensation.

16. That the ether applied to the surface of the nerves seems to paralyse them completely.

17. That the inhalation of ether does not entirely deprive the muscles of their contractility, as even under the most complete etherization, on incisions being made, they slightly contract.

18. That the benumbing effects of ether on the ganglionic system of nerves is not so perfect as to deprive them of all force, since the muscles they supply may be excited by the influence of direct agents; and then they remain in a spasmodic and contracted state.

19. That, taking into consideration this state of spasmodic contraction of the muscles of organic life under the influence of ether, it would be inadmissible in parturition.

20. That the effects of sulphuric ether are the same on birds, fishes, and reptiles as on mammalia. All recover from it more or less rapidly, and shew no symptoms of indisposition afterwards.

21. That, by the apparatus of Mons. Defay, the horse becomes sufficiently etherized in from eight to twelve minutes, dogs and rabbits in from one to two minutes, rooks in half a minute, frogs in sometimes less than half a minute, at other times one minute, or even more is required.

22. That in general frogs feel the effects of ether sooner,

it being, no doubt, absorbed by the pulmonary organs distributed over the skin.

23. That, after having been subjected to etherization, the batrachia remain much longer without breathing, and may be considered dead, though life still exists in a latent state.

24. That fishes are quickly affected by the injection of eight grammes of the ether in the mouth, but the effect is much slower when they are put into etherized water.

25. That the effects of ether generally cease in the horse in fifteen minutes, in the dog in three minutes, in birds in one minute, and in batrachia and fishes in from twenty to fifty minutes, when they are put into fresh water.

26. That eight grammes of ether injected into the jugular vein does not change the colour of the arterial blood, but it quickly causes the death of the animal, and the lesions resemble those of transfusion, there being considerable dilatation of the heart, emphysema of the lungs, &c.

27. That a small quantity of ether injected into the carotid of a dog kills instantaneously, without the slightest movement.

28. That animals killed from the effects of ether experience no convulsions.

Many of these inferences have been deduced from dissections carried on during life, and these experiments, for the reason before assigned, we have abstained from extracting.

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## Composition of Teeth.

*By M.* Lassaigne.

| | Organic Matters. | Phosph. Lime. | Carb. Lime. |
|---|---|---|---|
| Molares of a horse | 29.1 | 62. | 8.9 |
| Fore teeth of a horse | 31.8 | 58.3 | 10. |
| Fore teeth of an ox | 28.6 | 64. | 8. |

In the enamel, Berzelius has found the flouride of calcium. This part of the tooth in the ox was ascertained by him to consist of

| | |
|---|---|
| Phosphate of lime with flouride calcium | 85. |
| Carbonate of lime | 7.1 |
| Phosphate of magnesia | 3. |
| Soda | 1.4 |
| Brown matter, alkali, water, &c. | 3.5 |
| | 100. |

## DIPLOMAS.

NAMES OF THOSE WHO HAVE OBTAINED THEIR DIPLOMAS FROM THE ROYAL COLLEGE OF VETERINARY SURGEONS, LATE STUDENTS OF THE ROYAL VETERINARY COLLEGE, DURING THE SCHOLASTIC SESSION 1846-7.

To those before whose names a single asterisk appears, *Certificates of Membership* of the VETERINARY MEDICAL ASSOCIATION have been granted; and to those having two asterisks, *Certificates of Fellowship* have been also awarded for Essays introduced by them at the Meetings of the Association.

*April* 30, 1847.

*Mr. S. T. Harman, Arundel
Mr. G. Harris, Writtle, Essex
**Mr. R. Skelton, Leyton, Essex
Mr. H. Greening, Brixton
*Mr. W. Brown, London
*Mr. T. W. Gowing, Camden Town
*Mr. J. Coleman, Tilshead, Wilts
**Mr. F. Chamberlain, Bampton, Oxford
*Mr. G. South, London
Mr. H. H. Heraud, London
*Mr. R. Mead, London
*Mr. Walter Coley, Holloway.

*May* 5, 1847.

*Mr. J. T. McHugh, Bingham, Notts
**Mr. J. W. Nobbs, Cerne Abbas
**Mr. Chas. Connacher, Perth, N. B.
**Mr. Geo. T. Brown, London
*Mr. G. A. Statham, Derby
**Mr. Chas. Twist, Liverpool
*Mr. John Fahey, Nenagh
**Mr. Edw. Crundall, Badgeworth, Cheltenham
**Mr. Jos. S. Carter, Northowram, Halifax
**Mr. Thos. S. Merrick, Gloucester
*Mr. T. M. Harrison, Garthorpe.

*May* 12, 1847.

Mr. F. Hardman, Brighton
*Mr. J. Worm, Watton, Norfolk
Mr. A. Chalcraft, Headley, Hampshire
Mr. G. H. Darwell, Manchester
**Mr. W. G. Reeve, London
*Mr. G. Austin, London.

*August* 11, 1847.

**Mr. Thomas Pratt, London
*Mr. Geo. Yeomans, London
*Mr. J. M. Cullimore, Dublin
Mr. H. Priestman, Islington.

# TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION.

## The Anatomy, &c. of the Hock of the Pig.

*By Mr.* J. Mannington.

*(Continuation and conclusion of the Prize Thesis, from p. 276.)*

The pig has thirteen bones entering into the formation of his hock; viz. the tibia, fibula, astragalus, os calcis, navicular, cuboid, three cuneiform, and four metatarsals, besides a sessamoid bone.

The inferior articular surface of the tibia resembles that of the ox in most particulars. Its chief peculiarity is, that the outer part of the surface does not surmount the fibula. The inner malleolus is also like that of the ox.

The fibula is extended down the whole length of the tibia, and inferiorly supplies the place of the rudimental one of the ox, artilating with the convexity on the outer part of the calcis, and with the inner side of the astragalus, as does that bone: it, however, extends a little lower downwards.

The astragalus has the same number of articulations, and on the whole is shaped very much like the same bone in the ox.

The supero-anterior articulation corresponds exactly, and will, therefore, need no farther description.

The inferior is convex from before backward, and has much extent of motion on the bones supporting it. The greater part of its inner two-thirds is occupied by a concave groove, bounded on the inner side by a convexity, and on the outer by a projecting ridge, which forms the outer third; this is flattish, slightly sloped upwards and outwards, is continued anteriorly and superiorly farther than the inner part, but not so far posteriorly, having a sulcus on its posterior boundary. This outer ridge rests on the os naviculare, the inner part on the cuboid.

The posterior surface is convex, and articular about its inner half, which is notched, extends from the superior to the inferior

parts of the surface; is wider above than below, and allows the os calcis to rotate over it.

The inner half is projecting, narrow above, wide below, and terminates in a ridge which unites with the ridge on the outer third of the inferior surface.

The inner side resembles that of the ox, with the exception of its inferior part being sloped inward; the outer side is also sloped inward inferiorly, so that the bottom of the bone, and with it the inferior articulation, is twisted inward; and, in this respect, it somewhat resembles the same bone in the dog.

Its articulations are,

1. With the tibia and fibula.
2. With the navicular and cuboid.
3. With the calcis.
4. With the fibula.
5. 6. With the os calcis.

The os calcis resembles the same bone in the ox, as regards its articulations, except the infero-internal one, which does not extend so far inward; consequently, its supero-posterior part does not form so large a floor for the flexor perforans. The postero-inferior border rests on the os naviculare. A difference, however, exists in the comparative length of the bone, as its superior extremity is extremely projecting, and exceeds that of any of our domestic animals in length.

Articulations:

1. 2. With the fibula and astragalus (continuous).
3. With the navicular.
4. 5. With the astragalus.

The navicular bone somewhat resembles the same bone in the dog, as it regards its situation and general external form. It has a superior and inferior surface, inner and outer sides, and anterior and posterior non-articular surfaces.

The superior surface is irregular, being concave from behind forward about the extent of its inner half, which is bounded anteriorly and posteriorly by two prominences, the posterior one being highest; its outer half is sloped downwards and forwards, and supports the os calcis; the inner has the outer third of the astragalus resting on it.

The inferior surface has two articulations:

1. Anterior, is flattish, rounded on the outside border, and rests on the anterior articulation of the external true digit, and a small portion of the outer false one.

2. Posterior, is divided from the former by a deep notch, which admits of the passage of the tendon of the flexor externus. It is small, sloped downwards and outwards, and rests on the outer side of a projection at the posterior part of the outer true digit.

The inner side has two articulations.

1. Anterior, extends from the top to the bottom of the bone, articulating with the antero-external part of the cuboid and cuneiform magnum.

2. Posterior, extends from the upper part two-thirds of the way down, articulating with the postero-external part of the cuboid.

The outer side is non-articular: it is deep posteriorly, rounded off anteriorly; about the middle of its inferior part is a deep notch, somewhat dividing a process which extends from its posterior part from the body of the bone. This process is very large: it is present in the dog, but small.

The anterior surface is highest on the inside, being notched supero-externally, by the sloped outer part of the superior surface; the posterior is of great extent; it is flattish, extending highest supero-internally; lowest infero-externally, which latter part forms the posterior of the process named as existing on the outer side.

Its articulations are:

1. With the astragalus and calcis.
2. 3. With the external true and false digits
4. With the cuboid and cuneiform anterior.
5. With the cuboid.

The cuboid has superior and inferior surfaces, inner and outer sides, and anterior and posterior extremities.

The superior surface has a ridge extending across its middle from before backward; a concave surface slopes from this sharply downwards and outwards; another more gradually inwards: it is bounded anteriorly and posteriorly by a raised border, and supports the inner two-thirds of the astragalus.

The inferior surface is very irregular: it has two articulations:

1. Anterior, is slightly convex, broad anteriorly, narrow posteriorly, and rests on the cuneiform anterior.

2. Posterior, separated from the former by a small tubercle; it is rounded on its sides, and rests on the cuneiform posterior.

Behind this articulation is a tooth-like process, extending directly downwards, convex on its inner border, grooved anteriorly and posteriorly.

The outer side has three articulations; viz.

1. 2. Anterior; one being continuous with the superior, the other with the inferior surface: they are both small, and articulate with the inner side of the os naviculare, about its middle.

3. Posterior, is convex and narrow from above downwards, fitting into a concavity at the postero-internal part of the navicular bone.

Separating these is a non-articular concavity.

The inner border is rounded, but rather irregular.

The anterior extremity is flat on the greater part of its surface, but is sloped off infero-internally.

The posterior is irregular, and has the base of the odontoid process described on the inferior surface springing from it.

Its articulations are:

1. With the astragalus.
2. With the cuneiform anterior.
3. With the cuneiform posterior.

4. 5. 6. With the navicular.

The cuneiform anterior is a squarish shaped bone, having superior and inferior surfaces, inner and outer borders, base, and apex.

The superior surface is slightly concave, and supports the greater part of the cuboid; the inferior is rounded in the middle, sloped on its sides, and rests on the anterior part of the inner true digit.

The outer surface articulates with the infero-inner part of the navicular; the inner is for the most part non-articular, but has a small surface posteriorly articulating with the cuneiform medium.

The base is anteriorly placed; it is flat, sloped downwards and

inwards; the apex points backwards and outwards towards the middle of the joint.

Its articulations are:

1. With the cuboid.
2. With the inner true digit.
3. With the navicular.
4. With the cuneiform medium.

The cuneiform medium is the smallest bone of the hock: it is much longer than it is wide; it points downwards and backwards, tapering to a point at each extremity; it has an articulation on its superior part with the last bone, another infero-anteriorly with the inner false digit, and a third posteriorly with the cuneiform posterior.

Its articulations are:

1. With the cuneiform anterior.
2. With the inner false digit.
3. With the cuneiform posterior.

The cuneiform posterior is also longest in its perpendicular direction; it points downwards and backwards, and has superior and inferior surfaces, anterior and posterior borders, and inner and outer sides.

The superior surface is articular; it supports the posterior part of the cuboid, and is slightly concave.

The inferior has two small articulations; one with the inner true digit, sloping downwards and outwards; the other a very small one, with the inner false digit.

The anterior border is convex; it has one articulation with the cuneiform medium; the posterior is concave and non-articular.

The inner side is rounded, the outer (i. e. towards the middle of the joint) is concave, a large cavity existing in the interior of the joint in consequence of the bones being hollowed towards its middle. Both the sides are non-articular.

Its articulations are:

1. With the cuboid.
2. With the inner true digit.
3. With the inner false digit.
4. With the cuneiform medium.

*Upper Extremity of outer False Digit.*

Presents no peculiarity; it supports a small portion of the navicular bone, and has a small articulatory surface with the outer true metatarsis which communicates with the joint.

*The upper Extremity of the inner False Digit.*

Supports the cuneiform posterior slightly, and another articulation generally exists with the cuneiform medium, though I have found this wanting; it has two synovial articulations, also, with the inner true digit, both of which communicate with the joint.

*Upper Extremity of outer True Digit.*

Has a superior surface, an anterior and a posterior border, and external and internal sides.

The superior surface has two articulations:

1. Anteriorly placed, much the largest, slightly concave, and supporting the greater part of the weight of the os naviculare.

2. Posterior, is situated on a projecting portion of bone from the postero-internal part; it slopes downwards and outwards, and allows of a gliding motion between it and the posterior part of the navicular. A groove runs beween the two articulations.

The anterior border is flattish, the posterior has a remarkable prominence extending from it, which articulates with a sessamoid bone, at the superior part of which is the posterior articulation of the superior surface.

The outer border is rounded; the inner is deep from before backward; it has two articulations:

1. Anterior, articulating with the antero-external part of the inner true digit.

2. Posterior, is situated on the *inner* part of the prominence of the posterior border; it overlaps the posterior part of the inner true digit.

Its articulations are:

1. 2. With the navicular.
3. With the sessamoid.
4. 5. With the inner true digit.

*Upper Extremity of inner True Digit.*

Has a superior extremity, base, and apex, inner and outer borders.

The superior surface has three articulations:

1. Anterior concave, broader behind than in front; it supports the whole weight of the cuneiform anterior.

2. Postero-external, situated on the outer side of a prominence at the posterior part of the bone; it is sloped downwards and outwards, and is surmounted by the second articulation of the superior surface of the external true digit, which it partly supports.

3. Postero-internal, slopes downwards and inwards, meeting the latter on its outer edge; it supports the cuneiform posterior, which slides over it.

The base is rounded, it is anteriorly situated; the apex is pointed, looks backwards, and is situated between the two last articulations; it articulates slightly with the sessamoid, at the back of the hock.

The outer border has two articulations with the outer true digit, the inner has one articulation externally with the inner false digit: the one corresponding to the posterior articulation of the inner border of the outer true digit is described with the superior surface.

Thus, its articulations are:

1. With the cuneiform anterior.
2. 3. With the external true digit.
4. With the cuneiform posterior.
5. With the inner false digit.
6. With the sessamoid.

A sessamoid bone is situated at the infero-posterior part of the joint: it plays over the posterior parts of the true digits, having a larger articulation with the outer than with the inner.

LIGAMENTS.

*External Lateral.*

1st, 2d, 3d, 4th 5th. Are the same as the ligaments in the dog on the outside of the joint.

6th. From the inferior part of the navicular to the true and false outer digits.

Strong bands unite the tibia and fibula anteriorly and posteriorly; others join the true and false metatarsals.

*Internal Lateral.*

1st. A very broad ligament from the antero-inferior part of the tibia to the whole of the inside of the calcis, which is situated below its trochlear surface.

2d. From the antero-inferior part of the side of the tibia to the astragalus.

3d. From the middle of the inner side of the tibia behind the last to the astragalus, just above the insertion of the latter.

4th. From the middle of the side of the astragalus to the cuneiform medium, and to the inner true metatarsus.

5th. Situated under the latter at its superior attachment, it arises from the astragalus, and is inserted into the projection on the inside of the cuboid.

6th, 7th, 8th. Three ligaments arise in common from the inferior part of the os calcis, and, running downwards, one becomes inserted into the cuneiform posterior, the other two to the anterior and posterior parts of the side of the inner true metatarsus. These latter cover the inner division of the tendon of the flexor metatarsi medius.

10th. Small transverse ligaments unite the cuneiform bones.

11th. Small fasciculi unite the cuboid to cuneiform medius and posterior, and these latter to the inner true and false metatarsals.

Several small bands unite the true and false metatarsals.

*Anterior Ligaments.*

1st, 2d. Strong transverse bands uniting the calcis to the astragalus.

3d. From the inferior part of the calcis to the upper part of the navicular. It runs inwards.

4th. From the middle of the inner edge of the astragalus to the upper part of the cuboid and the inner edge of the navicular.

5th. Transverse ligaments uniting the navicular to the cuboid and cuneiform anterior.

6th. Several bands unite the cuboid with the anterior cuneiform, and this and the navicular with the metatarsals.

*Posterior Ligaments.*

1st. From the posterior part of the outer malleolus to the outside of the superior astragaloid ridge.

2d. Large posterior ligament arises from the whole of the posterior part of the calcis, under the perforatus tendon: it is attached by an outer division to the navicular and outer false digit, and by an inner slip to the cuboid and sessamoid bones. The perforans passes somewhat between these divisions.

3d. A small ligament from the posterior part of the cuboid to the posterior part of the cuneiform posticum.

4th. From the posterior part of the navicular to the back of the outer true metatarsus.

5th. From the sessamoid to the back of the true metatarsals.

THE MUSCLES

Are somewhat numerous, and extremely complex as regards their lower attachments and distribution. Many of them resemble those of the dog and the ox at their superior parts, and to the description of those animals I have referred when such has been the case.

The abductor and inferior rotator muscles of the thigh and the gastrocnemius externus have the same anatomical arrangement as regards the hock, and the same action on it; with the slight exception, that the gastrocnemius externus has a sessamoid bone at each head, and is a little more blended with the gastrocnemius internus.

Gastrocnemius internus is the counterpart of the same of the ox.

*Flexor pedis perforans.* Resembles that of the dog till it reaches the inferior part of the metatarsals, where it divides into four tendons, the two smaller run directly outward to the third phalanx of the false digits; the two larger become encased by the perforatus tendon, pass down the posterior part of the true digits, and become inserted into the third phalanx or ossa pedes.

*Use.* To assist in the extension of the leg, but more especially to flex and adduct the digits.

*Flexor Accessorius Internus.* Resembles that of the dog, until it

joins the perforans tendon, where it does not become so intimately blended but that it may be traced down it as forming its inner division, then it has a somewhat distinct action on the inner false digit.

*Use.* To assist the perforans.

*Flexor Accessorius Internus.* Resembles the same muscle in the ox, with the exception of an attachment to the fibula.

*Use.* To assist the perforans, pulling it upwards in action and preventing its tendon being pinched by the action of the hock.

*Flexor Inferior.* Arises from the long posterior ligament of the calcis and the sessamoid by two tendons, and is inserted into the supero-posterior part of the first phalanx of the true digits.

*Use.* To complete the flexion of the foot.

*Flexor Metatarsi Medium.* Wanting in the dog. Has the same origin as in the ox; its tendon becomes bifid; one division is inserted into the superior part of the large inner metatarsus, the other winds inwards and backwards to become attached to the inner part of the C. posterior.

*Use.* To flex the hock, and lift the lower part of the leg inwards when in action.

*Flexor Metatarsi Internus.* Exactly like that of the dog.

*Flexor Metatarsi Externus.* Is also like that of the dog, with the exception of being more powerful.

*Extensor Digitorum.* Arises as do those of the ox and dog, and continues the same until half way down the tibia, where it splits into three tendons which run under an annular ligament above and below the joint: after passing through the inferior one they diverge. The inner one crosses to the inside and is attached to the second bone of the inner true digit, and capsular ligament of the joint; the middle one runs down the centre of the leg until it reaches the inferior part of the metatarsals, where it bifurcates, each division running to the antero-superior part of each os pedis. The outer division is very complex: after passing under the inferior annular ligament it becomes flattened, and splits into two, the outer of which crosses the extensor digitorum externus to become attached to the first phalanx of the outer false digit; the inner crosses under the middle tendon of that muscle, and has the middle division of the extensor inferior firmly attached to it; it then bifurcates, the larger branch running to the first phalanx of the inner true digit

and to its capsular ligament; the smaller crosses under the extensor internus and goes to the third phalanx of the inner false digit, and to all the capsular ligaments in its course.

*Use.* To extend all the digits, more especially the inner true one: it also (acting as one muscle) adducts them, and, through the attachment of the inferior extensor, it completes the flexion of the hock. Each division of this muscle has an independent power of action so that the inner division, acting by itself, can abduct its digit.

*Abductor Digiti Spurii Externi.* Arises from the outer and upper part of the fibula, becomes tendinous half way down that bone, running behind the extensor digitorum externus down the leg and across the hock; from this it courses the side of the outer false digit to become attached to the outside of the second phalanx.

*Use.* To abduct and extend this digit and slightly assist in the flexion of the hock joint.

*Extensor Digiti Externi* resembles that of the dog as far as the middle of the outer true metatarsus: it here gives off a small tendon, which runs along the front of the outer false metatarsus to be attached to its third phalanx. The larger portion of the tendon continues along the antero-external part of the outer true digit to become attached to its second phalanx and capsular ligament.

*Use.* To extend the digits to which it is attached, and to adduct them; also to assist in flexing the hock.

*Abductor Digiti Spurii Interni* is very peculiar in its course; it arises from the superior and inner part of the fibula by a thin fleshy belly, which ends in an extremely fine tendon; at the front of the hock it dips into the tendon of the flexor medius on the inside, soon emerges on the same side, runs between the flexores internus and medius till near the termination of the former, when it crosses it and turns suddenly downward along the middle of the false inner digit, becoming attached to the outer side of its second phalanx.

*Use.* Although its muscle is small, yet by virtue of its two pulley-like synovial surfaces, viz. in its passage through the flexor tendon and its sudden turn downwards, it abducts and extends the false digit suddenly and rather powerfully. It may slightly assist in flexing the hock.

*Extensor Digitorum Inferior* is divided into three portions, which

arise from the antero-inferior part of the astragalus and capsular ligament: the outer and larger division is situated about the middle of the anterior part of the leg, and becomes attached to the middle tendon of the extensor digitorum before its bifurcation, it also sends off a tendon which becomes attached to the first phalanx of the outer true digit and capsular ligament. The middle division blends very intimately with the middle tendon of the outer part of the extensor digitorum; whilst the inner one goes to the inner tendon of the same division of the extensor.

*Use.* To complete the flexion of the hock by moving the lower bones on the astragalus and calcis; and to extend and adduct the digits, except the outer false one, which is adducted by the extensor digiti externus.

### Arteries.

The *External Iliac Artery*, after having given off a large branch which supplies the place of the obturator (this being absent in the horse) and a large branch to the adductor and rotator muscles of the thigh, takes the name of the femoral, and from it are derived the internal, anterior, and posterior tibial, which arise in the same situations as do those of the dog; the internal accompanying the crural nerve down the inside of the thigh; just over the hock it crosses obliquely to the posterior part of the leg, running under the inner metatarsal vein, and over the inner nerve, gaining the middle of the back of the leg between the false digit, and furnishes the back parts of the digits. In its course it gives numerous cutaneous twigs, and some of inosculation with the posterior tibial at the hock.

The *Anterior Tibial* dips between the heads of the gastrocnemius externus, and runs between the tibia and fibula, and down the front of the thigh, covered by muscles, as is that of the dog, but having two trunks, both of which give twigs to the anterior part of the hock; one then becomes subcutaneous, runs over the hock, and is continued to the lower part of the metatarsals, where it bifurcates, each digit receiving a division; the other dips under the annular ligaments above and below the hock, crossing to the inside, passing between the inner true and false digits, and is distributed to the back parts of the leg and foot, to the inferior flexor and interdigital space.

In its course the anterior gives numerous branches to the muscles on the outside of the thigh; some twigs to the hock, as before named, and a few before it gains the posterior part of the leg, to the inferior extensor.

The *Posterior Tibial* are given off in front of the gastrocnemius externus. They are generally two, one of which anastomoses with the internal tibial and assists in the supply of the inner part of the leg (and the adipose and glandular substances which are placed in great quantities thereabouts); the other branch runs between the gastrocnemius and perforans, and passes to the glandular and adipose structure at the back of the tibia.

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The veins so much resemble those of the dog that farther description is scarcely necessary: they differ a little in their origin at the digits, but are the same in their course over the hock; the outer metatarsal does not receive so much from the front of the hock, and the anterior tibial are generally a pair of veins.

THE NERVES are

The crural, and the divisions of the sciatic.

The crural nerve differs in no respect from that of the dog.

The branches of the sciatic are numerous; the principal are,

1. The external tibial, which runs to the outside of the gastrocnemii, distributing filaments to the abductor, and is continued over the outside of the hock.

2. A large branch pierces the outer head of the gastrocnemius externus, emerging at its front close to the posterior tibial artery; it then gives branches to the adductor and extensor digitorum externus, and other muscles hereabouts; it then splits into two trunks, one becomes subcutaneous, runs down the front of the metatarsal bones and divides into two branches, which furnish the digits; the other is continued over the hock under the annular ligament, and is principally distributed to the inferior extensor.

3. Branches to the gastrocnemius externus.

4. Numerous trunks dip between the heads of that muscle, all of which, with the exception of one, go to the flexor muscles; this runs down behind the perforans, bifurcating about the middle of the tibia.

*A* accompanies the perforans over the calcis, emerges on its

outer side, runs down the leg between the true and false digits, and is finally distributed to the outer true digit and lateral laminæ.

*B* divides into three, which run together on the inside of the leg a little behind the crural nerve, gradually crossing to the back of the leg as they descend; two of these cross the inner branch of the flexor tendon just after its division, and run to the heels of each os pedis; the remaining branch leaves the two latter at the inferior part of the inner false metatarsus, running on the inside of the perforans, and is distributed to the inner side of the os pedis and lateral laminæ of the inner true digit.

From its anatomical conformation, it is evident the hock of this animal possesses great power of mobility, and on that account is not well adapted for the support of weight, though this is, in some degree, counterbalanced by the very broad basis of support presented by the metatarsal bones; indeed the extremities of all the bones, and consequently their articulatory surfaces, are well developed in this animal. Were it not for this arrangement, he would not be enabled to support the immense weight imposed on his extremities when in that extreme and unnatural state of plethora we sometimes see him, and which, despite of this provisional aid, is borne with extreme difficulty.

The movements of the tibia and fibula on the astragalus and calcis, the calcis on the astragalus, and the astragalus on the navicular and cuboid, are so like those of the same bones in the ox (except that the astragalus moves on two bones instead of one) during both flexion and extension, that it would be entirely superfluous for me to recapitulate on this head. From the extreme length of the os calcis, and the rotundity of the extremities of the astragalus, more motion exists in this animal's hock than in that of any of those on which I have spoken; and the pig, in the wild state in which he is found in the immense jungles of India, is an extremely speedy and active animal, and this, coupled with his formidable tushes and savage disposition, renders boar-hunting one of the most exciting of the field-sports of the east. His speed depends much on the formation of his hind quarters, which are very angular; the femur and tibia are long, and the hock near the ground, and, as I have before stated, possesses much power of flexion and extension.

During flexion the true and false digits may be closely approximated by the extensores digitorum, or the false digits may be abducted by their proper abductor muscles, and the true ones by the contraction of the extensor digiti externus, and that of the division of the extensor digitorum, which is attached by the inner digit.

During extension of the hock the true and false digits are adducted by the flexor perforans, and it is assisted in this action on the true ones by the perforatus.

This animal has not the ungainly action of his hind extremities which the ox has, and I have endeavoured to explain the cause of this in the description of the action of the hock of the latter animal.

The small bones (viz. those below the astragalus and os calcis) possess some power of rotation over each other, as does the inner false metatarsus on the large one, on account of the attachment of the external flexor to it: this rotatory action materially assists in turning quickly and easily.

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MARCH 24th, 1846.

The TREASURER in the Chair.

## A SAFETY HOOK.

*By Mr.* YARE.

A SIMPLE but highly ingenious invention of the late Mr. Yare was exhibited. It consisted of a hook to be attached to the pole of a carriage, and in his prospectus he says "The difficulty of freeing a horse, when he falls, from the pole-chain of the metropolitan stage carriages occurs daily, the pressure of the animal precluding the possibility of unlinking him. This is entirely obviated by this invention, which instantly effects the desired object. Carriages on rail-roads are with the same facility detached at any speed in cases of danger."

Mr. Yare designated the invention "THE UNIVERSAL SAFETY HOOK;" and there is no doubt but that it is applicable to many

purposes, and among them it may, perhaps, with advantage be applied to the chains of head collars, so as to prevent the serious consequences that sometimes result from a horse being halter-cast and unable to extricate himself.

*Mr. Simonds* spoke in praise of the ingenuity displayed in the mechanism of this hook, and thought it might with advantage be applied to several uses by veterinary surgeons in fixing their patients for operations, &c.

*Mr. Gowing* also admired the simplicity and effectiveness of its mechanism, but doubted its applicability to hobbles or collar shanks, as it was so easily opened by a blow on the keeper; still he believed it might be advantageously applied in various ways.

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## Case of Disease of the Heart and Liver of a Horse, followed by Dropsy.

*By Mr.* A. B. Henderson, *M.R.C.V.S.*

On Saturday morning, February 7th, I was requested to look at a chestnut gelding, which I was given to understand had been ill for some time. His abdomen and sheath were œdematous, extremities and mouth very cold, membranes perfectly pallid, and no pulse could be felt at the jaw.

While endeavouring to take it, I perceived to my great surprise a peculiar and violent regurgitation in both jugular veins, and which were distended to an enormous size. This at once led me to suppose that the heart was not performing its functions in a proper manner, and, on applying my ear to the side, I found its pulsations exceedingly quick, strong, and intermittent. During the cessations of the beats there was a peculiar rustling sound, as if the blood were detained in some cavity and could not force its way out. The breathing was but slightly quickened, and the superficial veins in general were more or less distended.

The animal was removed with some difficulty from his stable to our infirmary, which was but a short distance. On his arrival he appeared very much exhausted; his respiration was more quickened, and his jugular veins much increased in size. I administered a

fever draught combined with two drachms of belladonna, bandaged his legs, and endeavoured to restore the warmth of the body; but all efforts were useless.

*Feb. 8th.*—The symptoms were the same as on the previous day, excepting that the quickness of the breathing had abated. He still appeared dull and heavy about the eyes. Towards the evening, as he had passed no fæces from the time I first saw him, although enemas were administered, I ordered him a mild laxative, with the fever medicine.

*Feb. 9th.*—The bowels acted; sheath and abdomen more swollen; he has staled freely, but the coldness of his body and extremities is still present, and the conjunctiva and buccal membranes are tinged yellow.

He continued much in the same state until Saturday evening, the 14th, when he purged violently. Up to this time, after the administration of the laxative, his bowels were in very good order. I instantly administered astringents, but the purging did not stop until the following evening.

After this attack, as might well be expected, he became gradually weaker and weaker: he ate little or nothing from the time I first saw him, but he was always very eager for water, and never offered to lie down.

*Feb. 16th.*—Heart's action exactly the same; respiration quite tranquil; coldness of the extremities, &c. still present; fæces natural.

*Feb. 17th.*—No alteration. Towards the evening he became very weak, and was unable to move round the box. On the following morning, between ten and eleven o'clock, he fell, and died instantly without a struggle.

*Post-mortem appearances.*—On opening the abdomen an immense quantity of serous fluid poured out: indeed, the cavity appeared to have been completely filled with it. The peritoneal coat of the large intestines was slightly inflamed; the mesentery very much so, and the glands were enlarged to an enormous size; the lacteals were increased in caliber, and of dark purple colour; in fact, all the absorbent vessels throughout the system partook more or less of this alteration.

The liver was immensely enlarged, weighing 55lbs. Its peritoneal covering was thickened, and on breaking through it the

internal substance was soft and of a very dark colour. The left kidney was very much enlarged, and slightly inflamed. The other abdominal viscera were apparently healthy.

The heart was greatly increased in size, and weighed 13 lbs. when perfectly clean. Its cavities were much dilated, and their lining membrane shewed traces of inflammation; the valves had their corpuscula aurantii enlarged, those of the tricuspid more than those of the bicuspid; but the valves themselves were not all increased in size: those of the aorta and pulmonary artery were perfectly healthy. The pericardium was inflamed, and the lungs also slightly.

*Mr. Henderson*, in reply to inquiries from Mr. Bass, stated that he knew the horse had been unwell for six weeks, and that he had been twice sold during that time; but that each successive purchaser found, on trial, that the animal could not do the work required of him in consequence of the swollen state of the extremities.

*Mr. Bass* said it was an interesting question as to whether the heart or the liver was the primary seat of disease, and also to know what was the immediate cause of death.

*Mr. Pearson Ferguson.*—This case is highly interesting, in a two-fold point of view; first, as furnishing another example of extensive disease of the central organ of circulation, the heart, whose pathological condition, I am sorry to be obliged to say, has not been so carefully investigated as it should be by veterinary surgeons. And as it regards the morbid alteration in the size of the organ in the case under consideration, I would attribute it to the nature of the work done by the animal in his hunting career, when the dilatation of its cavities was produced in consequence of the great resistance to be overcome in the systemic circulation of the blood, and which is owing to the muscular contraction having been kept up for a long-continued period, and thus acting as an impediment to the free circulation of the vital fluid in the deep-seated vessels. There was one symptom in Mr. Henderson's case which should be well impressed on the mind of the pathologist, insomuch as it is characteristic of dilatation of the cavities of the heart, and the imperfect action of the valvular circulation in this organ; I allude to the peculiar sound which is heard in the interval of the contractions, and which resembles a short blast from

a bellows; it has, therefore, been by French auscultators called "*bruit de soufflet*." Again, another symptom was present in this case worthy of remembrance, as denoting patency or imperfect action of the valves of the auriculo-ventricular openings, particularly the tricuspid. I allude to the powerful venous pulsation which took place in the jugulars.

Another remarkable symptom in connexion with imperfect action in the valves of the heart, whether as resulting from dilatation of the cavities of the organ or organic disease in the valves themselves, is a great disinclination, or fear even, to lie down.

This symptom was exceedingly well marked in a case which came under my observation in my private practice last year, in which the animal had not voluntarily lain down for years. And when he fell he was always obliged to be lifted up with ropes, as he was unable to rise by himself, on account of pressure on the brain. On one occasion he fell while at work in the street, and I saw him in a few minutes after. He was then perfectly comatose, with dilated pupil, and all the other symptoms of cerebral congestion. I at once used the lancet, made a very large orifice in the jugular as he lay on the ground, and it was only after the loss of about 28lbs. of blood that he became sensible and was able to rise with the assistance of six men.

So much for some of the pathognomonic symptoms of the heart. Now, with reference to Mr. Bass's problem, I think it must be clear that the heart was primarily diseased. As to the liver, I believe the acute disease of this organ was the cause of death. In fact, there was acute congestion of its parenchymatous and secretive structure: and it was at this stage that we had the pale and livid membranes. But the animal did not die in this stage; the disease continued, and merged into the second stage, in which there was absorption of bile into the system, and a consequent yellow state of the membranes, with the usual "suites"—functional derangement of the stomach and intestines, &c. I therefore should consider that hepatitis was the principal cause of death, assisted, however, in its operation by the chronic diseased state of the heart.

## Case of Pedunculated Tumours on the Mucous Membrane of the Bladder of a Cow.

*By Mr.* T. W. Gowing.

*Mr. Gowing.*—On the 20th inst. I was requested to attend a cow which had been ill for some days, and which presented all the symptoms of the prevailing epizootic in a marked degree. The head was protruded; the respiration laboured, and accompanied with a grunting noise; and the pulse varied from 85 to 90 in the minute. On auscultating the chest there was an absence of sound in the left lung, it having become consolidated. In the right lung the respiratory murmur was very loud, and resembled the distant roll of carriage wheels; there was also, occasionally, a rushing sound with crepitus. My diagnosis was the existence of pleuro-pneumonia in its worst form; and, from the urgency of the symptoms, my prognosis was unfavourable. I, therefore, advised the owner to have the animal slaughtered. However, just as she was being led away she was observed to strain violently, and to make many painful efforts to urinate, and which she ultimately effected with great difficulty; but the quantity of urine voided was inconsiderable, and of a dirty brown colour. Suspecting from this the existence of some disease of the urinary organs, I requested those parts might be sent to me for examination, which was done; and on laying open the bladder a number of pedunculated tumours were found attached to its lining membrane. There was, however, one which had become detached, and this was floating in about a quart of brown urinous fluid, similar to what had been passed by the animal previous to her death. When cut into, this detached tumour was perceived to be soft and fungoidal; and from this I presume it to be a fungoid polypus.

This animal had been milked for eight months, during the first three of which she gave twenty-two quarts of milk daily. She then had an attack of the pustular disease in the mouth and feet, which caused a considerable diminution in the quantity of milk. However, she soon recovered from this, and continued a good milker up to three or four days before her death, giving as much as fourteen quarts a-day.

*Mr. Pearson Ferguson* observed, that that which was most remarkable, and, therefore, worthy of notice respecting these tumours, was their peculiar situation; since this would, in all probability, enable the pathologist to arrive at a fair conclusion as to the causes which gave rise to their formation. They were exclusively situated at the upper region of the bladder, where it is in close connexion with the uterus, and did not at all occupy that part of the organ which lies on the floor of the pelvis, the lining membrane there being in a perfectly healthy state. It would consequently appear that those abnormal growths were referrible to some injury sustained by the bladder in the act of parturition, during which, owing to the ignorance of those persons who usually attend cattle in difficulty of birth from false presentations, &c., much force is often employed in their endeavours to drag away those parts of the fœtus that have passed into the vagina; thus the genital organs often become lacerated, and other serious injuries are inflicted; and the bladder, being in such intimate connexion with the vagina and uterus, may suffer extensively, and, ultimately, from its upper parietes growths such as these take place, which constitute a rare and beautiful specimen of morbid anatomy. He further remarked that, although tumours of this kind are very uncommon as occurring in the bladder, they were frequently met with in the vagina.

*Mr. Mannington* considered that the too frequent exhibition of powerful diuretics might also give rise to the production of these growths, the result of inflammation induced in the mucous coats of the bladder, and also an improper or incautious use of the catheter. He was, however, more inclined to consider the former cause as being the real one, as he knew that these agents are very often given in enormous quantities by cow-leeches in the country.

*Mr. P. B. Ferguson*, in reply, said, the situation of those tumours being borne in mind, it must be evident that neither diuretics nor the use of the catheter could be the exciting cause in this particular case, as the urethra and that part of the bladder inferiorly placed on the pubis were perfectly healthy.

*Mr. Buss* did not altogether agree with the observation that had fallen from Mr. Ferguson as to the causes which produced those tumours. He believed that they might be attributed to the pressure of the gravid uterus on the body of the bladder, which,

producing an impediment in the free circulation of the blood of those parts, gave rise to a varicose state of the capillaries, and, consequently, to a growth of these bodies.

*Mr. Ferguson* said, that when he considered the yielding nature of the bladder, and the facility with which its contents are voided when subjected to pressure, whether voluntary or otherwise, he could not concur with Mr. Bass in the opinion advanced by him, and he still maintained his view to be the correct one.

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## On the Combustibility of the Gases exhaled from the Lungs during the Employment of Ether.

Fears having been entertained lest the approximation of an ignited body to persons submitting to the inhalation of ether might lead to the explosion of the exhaled gases, and consequently to serious damage within the body, M. Landouzy has instituted some experiments for the purpose of ascertaining if these fears are well grounded. The experiments were performed on horses, rabbits, and dogs, and always furnished the same results. He found that when an ignited body was held near the mouth or nose of an animal immediately after the removal of the inhaling apparatus, the vapours exhaled by the animal suddenly took flame; the ignition did not at the longest last more than twenty seconds, and was then spontaneously extinguished without producing any inconvenience beyond slightly singeing the hair round the animal's mouth. When the apparatus had been removed from the mouth for more than a minute, the respired gases could no longer be inflamed.

These conclusions are opposed, on the one hand, to the fears which many physiologists have manifested lest an explosion of the etherealized vapours should take place and inflict serious injury to the internal parts of the body, and on the other hand, to the assertions of those experimenters who have stated their inability to ignite the vapours exhaled by animals undergoing the process of ethereal inhalation.—*Comptes Rendus*, Feb. 22, 1847.

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AND

## TRANSACTIONS

OF THE

# VETERINARY MEDICAL ASSOCIATION.

EDITED BY

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ROYAL VETERINARY COLLEGE.

VOLUME IV.

ILLUSTRATED BY ENGRAVINGS AND WOODCUTS.

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

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# VETERINARY RECORD, &c.

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## ROYAL VETERINARY COLLEGE.

THE scholastic session commenced at the above Institution on Monday, October 11, 1847. The Introductory Address was delivered by Mr. Morton to a full class.

The subject of the lecture was, "The necessity of pure air and proper food for the maintenance of the life and health of animals; also, that any alterations in these would be productive of disease."

The nature of the elements entering into the constitution of an animal body was first considered; then the relationship existing between the organic and inorganic kingdoms of nature pointed out; the lecturer observing that Nature does nothing abruptly. Where the one kingdom ends and the other begins, is not broadly marked: "'Tis hard to sever the chain that binds Prometheus to the rock." It is evident that, before the crude materials of the soil can become the luscious and tempting fruit, or the beauteous flower—the esculent and nutritious grain, or the grass that clothes the field in rich abundance—they must undergo certain transformations; become mixed and commixed; and although Science may fail to explain *how* these changes are effected, nevertheless her laws enable us to approximate truth. The change of matter from the inorganic state to that of organic is constantly going on; and, when life has ceased to exist in an organic body, the elements of which it was composed again became inorganic.

In the vegetable the elements first become organized. Here the more refined and complicated changes occur, altogether too subtle to be detected by art, and only occasionally to be imitated, by which fit alimentary matters are prepared for the animal. Here

what are called proximate organic principles are formed, which by assimilation become parts of the animal.

The connexion between the vegetable and animal kingdom was then dwelt upon; likewise the division of food into albuminous or nitrogenized, or the truly nutritive principles; and the respiratory or non-nitrogenized, or heat-giving principles; according to the arrangement by Baron Liebig.

The composition of the atmosphere was next shewn, and the different properties of its constituents demonstrated; its uniformity stated, and also its admirable adaptation to the œconomy of Nature. The otherwise too energetic oxygen is checked by the passive nitrogen; while the watery vapour and carbonic acid there existent have their respective uses, each contributing to the perfection of the whole, and yet all are but mechanically mixed together, not chemically combined.

The changes produced in this pabulum by respiration were explained, and the compensating process stated. Essentially a portion of the oxygen is removed from the atmosphere, and carbonic acid gas and watery vapour substituted. These, with nitrogen, derived from ammonia, become the food of plants; in the cellular tissue of whose leaves those beautiful transmutations occur which result in the formation of certain organic principles, and at the same time oxygen is eliminated, thus restoring that which was removed by the breathing of animals.

Now the amount of oxygen removed from the air during respiration will vary, it depending on certain conditional circumstances, such as the number of respirations taken in the minute, the temperature of the air, the state of the body, conformation of the animal, exercise, diet, &c. And since no portion of oxygen abstracted is given out in any other form than in combination with carbon or hydrogen, and as these elements, in a state of health, are replaced by food, it follows that the amount of nourishment required by an animal is in direct ratio with the quantity of oxygen absorbed.

It may give some idea of the immense consumption of oxygen by animals, if we take the following computation by Boussingault:—

An adult man consumes 13·9 oz. carbon daily in his food, and requires 37 oz. oxygen for its conversion into carbonic acid gas. A horse consumes 97½ oz. (more than 8 lbs. troy) of carbon

in 24 hours, and this requires 13 lbs. 3½ oz. oxygen for the same purpose; while a cow consumes 69$\frac{9}{10}$ oz. carbon (nearly 6 lbs. troy), which calls for 11 lbs. 10¾ oz. oxygen.

From this circumstance *alone* we see the necessity of VENTILATION in places where animals are kept; and the danger that results from crowding them together is heightened by the excretions being allowed to accumulate and to throw off their pestilential gases, which are necessarily those that are evolved by decomposing bodies. Hence, in ill-ventilated stables we meet with the compounds of hydrogen, sulphuretted and carburetted; ammonia and its carbonate, and the hydro-sulphate, besides the carbonic acid and free nitrogen given off by respiration: and from the inhalation of these compound gases, heated as such an atmosphere necessarily is by the congregating of animals, we have frequently inflammation and other diseases of those all-important organs, the lungs, set up; which, from the debility induced, is followed by farcy and glanders, and this more especially should the predisposing causes of hard work and bad food co-exist. Or we have ophthalmia, both local and constitutional, engendered; and often that insidious but too frequently fatal disease, phthisis pulmonalis.

This conversion of oxygen into carbonic acid, plain and obvious as the fact itself is, and all-important as it also is to the animal economy, has, unfortunately, awakened much difference of opinion among philosophers as to the manner in which it is brought about. Doubtless the change is effected through the medium of the blood; and the older chemists taught, that, the venous blood being returned to the lungs surcharged with carbon, this united in the lungs with the oxygen of the air, and was expelled as carbonic acid gas. This theory, simple and explanatory as it really is, unfortunately involved some insurmountable objections; and it at length gave way to that of *absorption* of oxygen by the blood in its transit through the lungs, and the gradual conversion of it into the compound gas—carbonic acid—during the circulation. Yet there was still much that remained inexplicable, until Liebig advanced the beautiful theory of the iron in the hæmatosine being the carrier of the oxygen. Thus this metal, it was taught by him, in arterial blood existed in the state of PEROXIDE *of iron*; but, as it yielded up its oxygen, it gradually became converted into the *carbonate of the* PROTOXIDE, and, as such, it was said to be found in the

venous blood; when in its passage through the lungs, by *endosmose*, a displacement of the carbonic acid by the oxygen of the air took place, and thus the necessary change became effected.

Unfortunately, Liebig himself *now* seems to doubt the validity of this theory, for he makes the phosphate of soda met with in the blood the carrier of the carbonic acid out of the system. "There is," he says, "in his lately published work on the *Chemistry of Food*, "no known salt, the chemical characters of which approach more closely to those of the serum of blood than the phosphate of soda: there is none more fitted for the absorption and entire removal from the organism of carbonic acid." So that the alteration in colour which the blood undergoes in its conversion from venous to arterial is not so much dependent on the iron it contains as on the saline matters which react on the *hæmatosine*.

Dr. G. O. Rees has lately stated that the venous corpuscles contain a fatty matter with phosphorus, which, on coming into contact with the oxygen of the inspired air and undergoing combustion, furnish carbonic acid, water, and phosphoric acid. The first two are expired; the last unites with the soda of the blood, forming a tribasic phosphate of soda, which salt has the property of so acting on the colouring principle of the blood—the hæmatosine —as to produce in it the bright arterial colour. Mulder contends that the carrier of the oxygen is *proteine*, the starting point of all the tissues of the frame, and which, in the passage of the blood through the lungs, becomes converted into the *bin* and *trit*-oxide of this animal principle. It is certainly to be regretted that, as yet, scientific men are by no means agreed on this point.

By the same means, the conversion of oxygen into carbonic acid, the heat of the body—animal heat—was accounted for; it being a well known fact that, whenever union takes place between oxygen and carbon, heat is eliminated; and this is the same in amount, whether the combination of these elements be rapid or slow.

Ingenious as this theory doubtlessly is, and supported as it has been by the splendid talents of Baron Liebig—for its origin is really with Laplace and Lavoisier—it does not account for all the heat generated in the living body. Dulong has proved that the combustion of the carbon of the food would account for only one-half the heat evolved by a carnivorous animal, and but for seven-

tenths of an herbivorous one. And even when the combustion of hydro-carbonaceous matters, taken in as aliment, according to the views of some chemists, is accepted, there yet remains one-fourth of the heat generated to be accounted for.

To meet this formidable objection, and to make even life itself dependent on the physical forces, it has been proposed to call in the aid of electricity, which, by becoming intercepted in its passage through imperfect conductors, gives rise to calorific vibrations. Now, there is little doubt but that the nervous energy has much to do with the bringing about of the union of the oxygen of the air with the carbon and the hydrogen of the food, during the nutritive and reparative processes carried on by the capillaries, and heat is then given out; and there have not been wanting those who have considered these forces identical: and if it be asked, Where is the source of the electricity which is constantly being developed in the animal frame? I suppose reference must be made to the free acid (the lactic) contained in the muscles of the body, and the alkaline fluid existing in the bloodvessels and lymphatics; the tissues of which being permeable, contact, if not union, takes place, when the conditional circumstance is established to produce an electrical current; it being well known, that whenever chemical action takes place this principle or force is eliminated. The nerves now become the conductors of this force, which is exerted to carry on those functions necessary for the maintenance of life, and the brain is its grand depository or organ, whence it is transmitted to all parts of the body; which, like "an electric pile," says Sir Wm. Herschel, "constantly in action, may be conceived to discharge itself at regular intervals, when the tension of the electricity developed reaches a certain point."

Thus much for the electro-physiological theory; but it must, at the same time, be confessed that, as yet, the identity of the electric and nervous fluids is not proved. Professor Matteucci, having deliberately weighed all the arguments advanced, and repeatedly performed the experiments said to be confirmative of their oneness, has come to this conclusion; "that *in the actual state of science, with the means of experimenting which we possess, we do not find any sign of an electric current in the nerves of living animals.*" Similarity, therefore, is not identity.

The effects of accumulated carbonic acid gas in the air having

been explained, other adventitious gases that may occasionally become diffused through the atmosphere were alluded to, especially sulphuretted hydrogen, which is so generally evolved during the decomposition of organic substances; the same compound being given off from grave-yards, cesspools, &c.; and hence the necessity of drainage, and extra-mural interments, since the unconscious dead have slain their thousands. The effects of vapours disengaged from copper smelting works, and the direful effects of malaria, were also commented on; endemics and epidemics frequently owing their origin to pestilential matters thus disseminated through the air. As illustrative of this, the peculiar change in the atmosphere that occurred during the prevalence of cholera was referred to, as recorded by Dr. Prout; and the effects of seleniuretted hydrogen on the organism, as given by Berzelius. Neither was it impossible, nor improbable, but that the epizoötic which had for so long a period existed, decimating our herds, and baffling all endeavours to stay its progress, with the diseases affecting the vegetable kingdom, has its origin in the same cause,—the generation of a morbific virus which may be corrected or destroyed by chemical agents, such as chlorine or carbon. The *modus operandi* of these elementary substances on the fœtid gases was then exhibited.

Before entering on the consideration of food, a cursory review was taken of the function of digestion, and the changes which alimentary matters undergo were briefly explained. There can be no doubt but that the less alteration required to be effected in the food taken into the stomach, the less will the vital powers be called upon, and the less complicated will be the required apparatus; hence the comparative simplicity of the digestive organs in the carnivora as compared with the herbivora: in the former the process has been considered as gastric, while in the latter it is, doubtlessly, partly intestinal.

The basis of the food of the granivora may be viewed as *amylum* or *starch*, which is tasteless and insoluble; but in the mouth it becomes changed into soluble and imperfectly formed sugar, or it undergoes the first transformation towards this. This appears to be effected by detached portions of the mucous membrane acting the part of a ferment. Bernard separated from the mouth of a dead horse several shreds of the mucous lining, and

found that, after prolonged desiccation, they still possessed the power of transforming starch into sugar. Lassaigne contends that farinaceous matters only become saccharified in the small intestines, from the action of the pancreatic juice on them; but the majority of experimenters are in favour of the change first taking place in the mouth through the influence of the saliva, and which becomes perfected in the stomach and intestines.

In ruminants, it is probable that the food is similarly acted upon while retained in the first and second stomachs. In the third it is said to undergo compression, and in the fourth a peculiar acid is met with, which was stated to be the hydrochloric, derived from the common salt of the blood, the chloride of sodium; it becoming an hydrochlorate of soda when dissolved. More recent investigations have, however, determined it to be LACTIC acid, a non-nitrogenized compound, consisting of $C_6$, $H_4$, $O_4$, analogous to acetic acid, and with which it was at one time confounded, but from which it is distinguished by its dissolving phosphate of lime. The same acid—the lactic—is met with free in the muscles, and combined in milk; and when gum, sugar, and starch, are brought in contact with animal matter, undergoing change, they are converted into this peculiar acid.

"These substances, gum, sugar, and starch, are converted in the blood," says Liebig, "into lactates, which are destroyed as fast as they are produced (the lactic acid being employed to support the respiratory process), and which only accumulate where the supply of oxygen is less, or where some other attraction is opposed to the agency of that element."

The composition of the various secretions, which, entering the intestinal tube, take part in the process of digestion, as the pancreatic, the biliary, and the enteric, was next given.

How the function of secretion is carried on, like many other vital phenomena, appears to be ill understood. Each gland seems to possess the power of selecting from the blood those elements which make up its peculiar and characteristic secretion. Now, as this is effected by *endosmose*, it has been suggested to be referrible to the different degrees of permeability in the membrane or cell in which the sanguineous fluid is for a time retained; and, possibly, the tortuosity given to the vessels assists in promoting both the

detention and the separation. As the manner in which the various secretions are separated from the blood is at best conjectural, so are the *uses* of many. Thus the PANCREATIC JUICE was said to resemble saliva, except that in it were found no sulpho-cyanides. Now, however, it is stated to contain a little free acid; and its use is supposed to be that of separating the pepsin from the chyme, which is necessary for its conversion into chyle.

The use of the biliary secretion appears to be only a very little better understood. That its removal is of considerable importance to the living organism is unquestionable, since by its withdrawal the blood becomes depurated; moreover, it has not been met with in the egesta. It is formed from the effete nitrogenized tissues, and is often found very complex in its nature. Tiedemann and Gmelin extracted no less than twenty-three different substances from ox-bile. This complexity will not so much surprise us if we view the liver as an excretory organ as well as a secreting one, its function being that of assisting the lungs to eliminate hydrogen and carbon from the system; hence, whensoever the latter are unable to perform their part in the evolution of these elements in the form of carbonic acid and watery vapour, this organ, the liver, becomes affected. In this way its fatty degeneration may possibly be accounted for, as well as its condition in the first stages of rot in sheep, and many other changes to which it is obnoxious. On the other hand, if the bile be prevented from flowing into the intestines, animals become emaciated, and ultimately die.

Its principal and essential office appears to be that of neutralizing the acid chymous mass by the soda it contains in combination with an animal acid called the *choleic*, and at the same time causing it to separate into two parts, *chyle* and *excrementitious matter*. The first named, being the soluble nutrient parts, is taken up by the lacteals, carried into the receptaculum chyli, and afterwards in its passage through the lungs it becomes converted into blood, from which all parts of the body are formed.

There can be no question that it is of the first importance to keep this last-named fluid in a sanatory state; for although the doctrine of humours has been for a long time repudiated, we seem to be fast returning to it (robbed, it is true, of its absurdities);

yet a vitiated state of the blood will induce an alteration in both the solids and fluids of the body; while it will also be influenced both by the food we eat and the air we breathe.

To improper diet, or a mal-assimilation of the ingesta, may be referred the formation of intestinal calculi. Three causes may be said to be in operation to produce these concretions:—

1st. *A want of proportion between the proximate principles of the food.* This will give rise to the first kind, the ammonio-magnesian phosphate calculus. And hence the reason why millers' horses, from being fed on refuse bran and pollard, are very liable to these formations.

2d. *Bad or innutritious provender.* This will produce the oat-hair concretion; poor and thin oats, having a considerable quantity of hair at the extremity of the grain, giving rise to this formation.

3d. *An animal is a foul or voracious feeder.* To this we trace those masses met with in the intestines vulgarly designated dung-balls; elsewhere called by me mixed calculi.

But it must not be thought that each kind of calculus originates precisely and only in one or other of these three ways. The first division may be truly applicable, but in the formation of the second kind the first cause obtains also; and in the third, all three causes are in operation, and the accumulations, therefore, become very heterogeneous.

Tympanitis, or Hoove, is an affection wholly dependent on changes induced in the food. During healthy digestion gaseous elimination does not take place in the alimentary canal; all that occurs is a solution of the caseous and albuminous parts of the food, by which they are rendered fit for absorption. But let the vital force be stayed, or the function of digestion rendered abnormal, and then precisely the same changes follow in the food that would occur in it out of the body; in other words, we have fermentation set up, with its attendant phenomena.

The stages of fermentation are three;—1, *Vinous;* 2, *Acetous;* 3, *Putrefactive.* During the first stage we have carbonic acid gas evolved in large quantities, and then the compounds of ammonia will be our correctives, from their forming definite solid compounds with it. But it very often happens that the aid of the prac-

titioner is not called for until that transformation has been set up in the ingesta which is characterised by the disengagement of the fetid compounds of hydrogen, and then we avail ourselves of the use of chlorine, which immediately decomposes them.

When proper care has not been exercised in the making of hay, it is well known that certain changes occur in it; and a very general result is the generation of so much heat that the rick "fires," as it is called. But should this not take place, we have the hay in that state designated "mow-burnt," when we have fermentation induced in the saccharine matter, which becomes converted into alcohol and carbonic acid.

| | | | |
|---|---|---|---|
| 1 Atom Sugar ..... | $C_{12}$ | $H_{12}$ | $O_{12}$ |
| or | | | |
| 4 Atoms Alcohol ..... | $C_8$ | $H_{12}$ | $O_4$ |
| 2 Atoms Carbonic Acid.. | $C_4$ | .. | $O_8$ |
| | $C_{12}$ | $H_{12}$ | $O_{12}$ |

The integrity of the vegetable matter being thus destroyed, on the application of any disturbing force, and provided the circumstances be favourable to it, it quickly runs on to the next stage of fermentation, the *acetous;* and in the stomach are the conditions necessary for this transmutation; namely, an *elevated temperature* and *oxygen* taken in with the saliva. Moreover, *decaying* vegetable substances more readily yield up their saline constituents, soda and potash, than others do; and these, combining with the acetic acid, form soluble acetates, which pass on to the kidneys for elimination. Hence we obtain a clue to the origin of many nephritic diseases; the function of the kidneys being that of "preserving the equilibrium in the quality of the blood by the removal of products resulting from the change of matter, as well as substances that would affect the normal character of this fluid:" therefore, in the urine, the soluble salts of the effete materials of the frame are met with, the *in*soluble ones being thrown out with the egesta.

In like manner, horses that have been long kept in marshy districts contiguous to the sea often become the subjects of œdema, general or local, and sometimes of farcy, and other diseases resulting from debility, diuresis being a general accompaniment. It may not be too much to look to the origin of these in the saline

matters there abounding, and which, being partaken of in undue quantities, induce functional derangement leading to organic changes.

The disease termed DIABETES MELLITUS unquestionably originates in a peculiar condition of the food or the change induced in it. Although, perhaps, this form of diabetes is not so commonly met with in the horse as DIABETES INSIPIDUS, the cause of which has probably been already traced to the existence of the acetates in the provender, yet, that sugar should exist in the urine of our patients is not at all surprising, when we reflect on the nature of their food, and that farinaceous matters quickly undergo conversion into this principle. Horses, says Majendie, that have been fed exclusively on oats will be found to possess sugar in their blood; and, if a solution of starch be injected into the veins of an herbivorous animal, it soon becomes so completely transformed into this saccharine principle that iodine fails to indicate the presence of the least particle of starch.

Oats that have been too highly kiln-dried, and especially after they have become wet by a sea voyage, are frequently productive of derangement in the urinary organs, the cause of which is obvious: those changes have been induced in the grain which interfere with its assimilation; hence digestion becomes impaired, and, for aught we know, some deleterious principle has been developed which is passed onwards to the kidneys for elimination.

Wheat and barley, it is well known, unless caused to undergo germination, frequently become the causes of disease; the one producing laminitis as a sequela of gastritis, and the other giving rise to depilation of the skin. This last-named admits of an easy solution, if we view the lining of the stomach and the envelope of the body as the continuation of one and the same membrane.

The formation of URINARY CALCULI may also be traced to the food. The water drunk by animals has generally been considered as the source; but it is by no means proved that those localities where lime is more abundantly met with in water, as Matlock, Scarborough, Carlsbad, and other lime-stone districts, that in these calculous affections are most prevalent; whereas we do know that animals kept on any of the lime-plants for a long time, or pastured where lime has recently been laid, become the subjects of these accumulations. Nevertheless, excess of lime in water will readily

furnish the requisite calcareous matter; and in our patients these formations meet with a ready solution. The salts of lime are carried to the kidneys for excretion, and, diseased action being set up in them, the urine is retained in the pelvis of these organs or in the bladder, and, becomes ammoniacal from the urea undergoing transformation into carbonate of ammonia on the contact of water:—

| | |
|---|---|
| 1 Atom Urea ..... | $C_2$ $H_4$ $N_2$ $O_2$ |
| 2 Atoms Water ..... | — $H_2$ — $O_2$ |
| 2 Atoms Carbonate Ammonia | $C_2$ $H_6$ $N_2$ $O_4$ |

By the addition of the salts of lime to this, immediate decomposition takes place; a carbonate of lime, the usual constituent of these concretions, being thrown down. And this transformation of urea into carbonate of ammonia is facilitated by the presence of mucus in the urine, a condition very commonly existing in animals.

Even red-water in cattle, a disease among the *questiones vexatæ* of the bovine pathologist, receives some elucidation by a reference to an alteration which takes place in the biliary secretion; while dyspepsia, with its consequences, more particularly as it is productive of affections of the skin, can alone be explained by the alterations that occur in the food, or the function of digestion. Hence the necessity of DIETETICS in common with HYGIENE, or the regulation of external conditions, forming parts of the curriculum of the veterinary student.

The Lecturer closed by offering some advice to the pupils as to the arrangement of their studies, adverting to the different position in which they are placed from those who have preceded them; the community justly expecting more from the veterinary surgeon now than when instructions based on science were not afforded him. Each has his duties to perform, and the value of co-operation is too obvious to need commenting on. Unity of purpose, connected with a well-devised plan, he said, is imperatively called for in the pursuit of every science, and we *must* labour if we wish to obtain knowledge, since "there is no royal road to it."

Every increment, however, fructifies in its turn, and contributes to swell the general amount; and thus it is that knowledge proves accumulative to its possessor. You know the alchemists

untiringly sought for that which would transmute every thing it touched to gold; but each one of us, fortunately, possesses this talisman, if he will only use it, and it is comprised in one word—INDUSTRY. Nevertheless, this, too, has its adjuvants, for, unless method be adopted, much labour will be uselessly expended.

Principles are to practice what the fountain is to the stream, or the foundation to the building, which, if not securely laid, will, on the day of trial, fail to support the superstructure. Many there are who affect to contemn science: with such persons we profess to have no feelings in common. It is in seasons of emergency that the advantages resulting from the possession of sound principles will be experienced. In your after-pursuits in life you may have to contend with these persons; but, depend on it, the struggle between truth and science and ignorance and empiricism is as the morning dawn contending with the shades of the passing night. For a little while, perhaps, the former may be obscured; but the brightness of the noon-tide light will assuredly appear, even though it may seem to tarry.

Be solicitous, then, to possess true principles, and be assiduous in your acquirement of them. Set your standard high, and in proportion will be your aspirations. But should you, at any time, unfortunately feel disposed to become vain of your acquirements, *look to those above you*: this, while it checks mental pride, will, at the same time, awaken in you a fresh spirit of emulation.

On the other hand, do not despond if so be the progress you make does not equal that of others. All, it is well known, have not the same abilities. Yet the mind, like the body, becomes strengthened by exercise; and perseverance will enable you to achieve that which otherwise you could not have accomplished. Rarely is it the case that the industrious man fails: when he does, it is the exception to the rule.

Those who feel that they have this difficulty to contend with, will do well to vary their studies. When the mind is fatigued by the pursuit of one division of science, turn to another. The relief thus afforded will be found to be great; and although this method must not be allowed to take the place of continuous study, yet will it often prove the means of invigorating thought and of furnishing the mind with valuable information.

In conclusion, there are two little words, big with importance,

I would commend to your notice—TRY and TRUST. Let not the soul-impoverishing thought for a moment obtain, that it is no use to TRY. Few of us know what we may accomplish without *trying;* and a well-grounded confidence in our own abilities, coupled with a reliance on that Power without whose aid all our efforts will prove unavailing, will enable us to remove mountains of imaginary obstacles, and render that facile which before appeared insurmountably difficult. Thus it is that the "wise man scaleth the city of the mighty," and

"KNOWLEDGE BECOMES POWER."

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## COMMUNICATIONS AND EXTRACTS.

### THE HEPATIC AFFERENT VESSEL.

*By* J. JACKSON, *Esq., Surgeon.*

THE third or systemic afferent vessel, i. e. the vessel which takes the blood to the systemic capillaries, is an artery—the aorta and its ramifications—to which is prefixed a heart, the left auricle and ventricle; and the second or pulmonic afferent vessel, i. e. the vessel which takes the blood to the pulmonic capillaries, is also an artery—the pulmonary and its ramifications—to which is also prefixed a heart, the right auricle and ventricle; but the *First* or *Hepatic Afferent Vessel*, i. e. the vessel which takes the blood to the hepatic capillaries, is not an artery but a vein—the splenic and portal vein and its ramifications—and has prefixed to it not a heart but a spleen. Now if this vein, in the middle of which the mesenteric veins terminate, which veins convey from the alimentary tube not merely the blood supplied to it by the gastro-intestinal arteries, but the food eaten and the fluids drank, both of which are imbibed not by the lacteals but by the gastro-intestinal capillaries—if this vein were an artery, like the pulmonary or the aorta, and had prefixed to it in lieu of a spleen a heart, i. e. an auricle and ventricle, in the former of which (auricle) the mesenteric veins terminated, the hepatic afferent vessel would be similar to the pulmonic and systemic afferent vessels, and would therefore cause a similar kind of motion of the blood through the hepatic capillaries to that which they cause through the pulmonic and

systemic capillaries, that is, a constant and rapid motion. But the hepatic afferent vessel is not similar to but different from the pulmonic and systemic afferent vessels: from which fact—the most important of all anatomical facts—what are we to infer? That the hepatic afferent vessel causes no motion at all of the blood through the hepatic capillaries? Or that the motion of the blood through those capillaries is caused by the *systemic* afferent vessel? Or that the hepatic afferent vessel causes a similar kind of motion of the blood through the hepatic capillaries to that which the pulmonic and systemic afferent vessels cause through the pulmonic and systemic capillaries? Certainly not. The natural inference is, that as the hepatic afferent vessel is different from the pulmonic and systemic afferent vessels, it causes a different kind of motion of the blood through the hepatic capillaries to that which they cause through the pulmonic and systemic capillaries; and that, as the latter motion is *constant* and *rapid*, the former is *intermittent* and *slow*. Now, if this hepatic afferent vessel consisting of a spleen and vein be—and it is very evident that it is—as perfectly adapted for effecting an intermittent and slow motion of the blood through the hepatic capillaries as the pulmonic afferent vessel consisting of a heart and artery is for effecting a constant and rapid motion of the blood through the pulmonic capillaries, or as the systemic afferent vessel consisting of a heart and artery is for effecting a constant and rapid motion of the blood through the systemic capillaries, what sort of a doctrine of the circulation is that which physiologists have been worshipping for the last two centuries? which teaches that the heart is the only organ subservient to the motion of the blood! which recognises only two vascular systems, a lesser or pulmonic, and a greater or systemic! and which explains the function of the second or pulmonic and of the third or systemic afferent vessel, but not that of the first or hepatic.

*To the Editors of "The Veterinary Record."*

## On Variola Ovina.

### *By Mr.* J. B. Simonds.

In the closing number of the last volume we gave an account of the appearance of the above disease in this country, with its progress, and some experiments that had been instituted with a view to ascertain its peculiar nature. These experiments, we then stated, were necessarily incomplete, and we have now the satisfaction of resuming and perfecting them.

It was our intention to have placed the matter more immediately before the members of the veterinary profession through the medium of this Journal; but the increase of the disease, coupled with the interest it has excited in the minds of the agricultural community, have caused us to determine to publish a distinct treatise on it. We shall, therefore, confine our remarks simply to the continuation of the experiments adverted to, and have the gratification of introducing two plates, shewing the disease in its first and second stages.

In refering to p. 353, vol. iii, it will be seen that the sheep inoculated with pus was suffering more than the other, and to facilitate our further description, we shall distinguish this sheep by the letter A, and the other by the letter B.

#### Sheep A.

*Sept.* 24.—Has rather less fever this morning, but the injection of the visible mucous membranes is greater than yesterday, and their secretions are augmented; the sides of the face are also swollen; the eruption continues unchanged in character, but there are fewer patches to be seen.

*Sept.* 25.—The eruption is principally confined to the hairless parts of the animal's body, and the inner side of its arms and thighs. The fever has increased in intensity.

*Sept.* 26.—Papulæ can be seen here and there; the roseola is disappearing.

#### Sheep B.

*Sept.* 24. — Presents the same condition of skin: but the fever has abated somewhat in severity.

*Sept.* 25.—The integumental inflammation is more diffused; the constitutional symptoms are mitigated, and the appetite returning.

*Sept.* 26. — The roseola is less visible; no papulæ can, however, be detected.

*Sept.* 27. — Papulæ are present, existing principally on the inside of the thighs, around the arms, and on the under surface of the tail. The constitutional symptoms are likewise aggravated.

*Sept.* 28.—The respiration is pain-

SHEEP A.

*Sept.* 27.—There is great increase in the severity of the symptoms, associated with prostration of strength; the skin is hot, and the wool comes off easily; the papulæ or nodules are more elevated and extended. Sp. Æther Nitr. et Liq. Amm. Acet. were given, and ordered to be repeated daily. Careful nursing, and the administration of gruel, were prescribed for both patients.

*Sept.* 28.—This sheep still suffers more than the other, and the fever has taken on the typhoid character; the eyelids are swollen so as to close the eyes; the lachrymal secretion is thickened by an admixture of mucus, and runs down the cheeks; the muzzle and sides of the face are likewise swollen; a discharge of *sanguineous* mucus flows from the nostrils; the respirations number 44 in the minute, and are accompanied with painful moans; the breath and exhalations are fetid; the pulse is rapid and wavering; the poor animal takes but little notice, and is generally found lying down. Every part of the skin is studded with papulæ, which are becoming more confluent.

*Sept.* 29.—The patient died this morning. The *post-mortem* examination shewed the skin to be thickly covered with confluent papulæ, especially on the inferior parts of the abdomen, where they had formed large patches; the wool could be separated very easily from the cutaneous follicles; the exposed integument was of a dull-red colour; the subcutaneous structure was highly congested, more

SHEEP B.

ful and laboured, and 33 in the minute; the discharge from the conjunctival and Schneiderian membranes is of a mucous character, but free from any sanguineous hue; the pulse varies from 108 to 112. At times the animal takes a little food, and does not lie down so much as the other sheep. The papulæ, although existing all over the body, are distinct from each other.

*Sept.* 29.—The same symptoms continue, but they are increased in severity.

*Sept.* 30.—On the whole this sheep is better, although the papulæ have increased in number and begun to take on the *confluent type.* (A lamb was this day confined in the same shed with this patient, that we might satisfy ourselves respecting the time of the incubation of the malady, and whether this really differs in natural and inoculated cases, as was found in the preceding instances.)

*Oct.* 1.—The patient has experienced another relapse, and now presents a very dejected appearance: all food is refused; the breath is fœtid; the respiration painful; and the pulse too feeble to be numbered with accuracy.

*Oct.* 2.—The fever has more the character of typhus than yesterday, and the vital powers are becoming exhausted. The papulæ are mostly confluent, but, in some places, they are distinct; *no vesicles, however, are to be detected on any of them**. The animal was seen by Dr. Gregory, Physician to the Small-Pox Hospital; by Mr. Ceely, of Aylesbury,

* PLATE No. I gives a correct representation of a portion of this animal's skin as it appeared on this day: it shews both the papular and confluent form of the disease.

SHEEP A.

particularly beneath the larger collections of the papulæ; the mucous membrane of the respiratory organs was inflamed throughout, presenting here and there, in the course of the trachea, accumulations of *viscid mucus of a dirty greenish hue.* On the lining membrane of the larynx there were *spots* analogous to cutaneous nodules, *but of a yellowish or blanched appearance, upon a surface of deep Modena red;* the parenchyma of the lungs was infiltrated with blood; and the viscera of the abdomen shewed more or less sanguineous engorgement. The fore extremity, which had been inoculated with the *pus,* was much inflamed and enlarged: lymph was also effused into the cellular tissue, and other morbid alterations had taken place in the muscles, tendons, and ligaments.

SHEEP B.

and others; all of whom recognized the disease as ovine variola, and remarked on its great *similarity to small-pox in the human subject.*

*Oct.* 3.—Death has put an end to the sufferings of this poor animal. The autopsy was made in the presence of Dr. Gregory, &c. The appearances on dissection varied but little from those described as existing in the other sheep, but we give them at length for the purpose of comparison. Externally, the skin is thickly beset with papulæ; the subcutaneous areolar tissue is much engorged with blood; and on the borders of the lower jaw, the sides of the face and neck, especially just behind the ears, small accumulations of purulent fluid are present, occupying the central internal portion of the confluent nodules. *The Schneiderian membrane has many yellowish patches situated on its dark red surface, being slightly raised therefrom; the same are also observed on the mucous lining of the larynx, trachea, and bronchi.* The cavity of the thorax contains a small quantity of sero-sanguineous effusion; the lungs are congested, and the air-cells and tubes filled with a dark frothy mucus. The viscera of the abdomen are but little altered; the general congestion of the vessels, has, however, changed their normal appearance.

The capability of transmitting VARIOLA OVINA, both by inoculation and the exposure of healthy to infected sheep, being proved by the preceding experiments, it was resolved to adopt a different method of inoculation, as throughout the progress of the disease, in Experiments 2 and 3, the animals suffered so much as to render their recovery very doubtful, even from the commence-

ment of their illness. That the death of these sheep resulted from the intensity of the fever which accompanied the variolous eruption; and that the matter used for ovination was probably a cause of this aggravated febrile excitement, will, doubtless, be admitted; yet we had to ascertain whether the *plan* of ovinating produced these unfavourable results, or if the same danger to animals operated on would follow inoculation performed on more strictly surgical principles. Without loss of time, therefore, we had recourse to the following experiment.

*Experiment* 4.

[Even at the risk of incurring the charge of repetition, we have preferred to reprint that which has already appeared, conceiving that an advantage will be gained from continuity of the subject.]

*Sept.* 21*st.*—Assisted by Mr. Ceely, we inoculated a sheep on the inside of the fore arm. Several very small scratches were made with the point of a lancet, through the epidermis only, in different places; and upon these some transparent dry lymph, procured from vesicles five days previously, and moistened with a little water, was rubbed; the limb was kept extended afterwards until the blood which had exuded became dry.

22*d.*—The skin is inflamed, thickened, and raised in a fold, extending a short distance from the places of inoculation to the front of the leg.

23*d.*—The integumental inflammation is somewhat less, the scratched cuticle is elevated, has a yellow aspect, and contains a whitish purulent secretion. The animal's general health appears to be unaffected.

24*th.*—Distinct pustules exist on the ovinated places.

25*th.*—The pustules have assumed a darker colour, arising partly from a drying up of their contents and partly from approaching desquamation of the epidermis.

27*th.*—Many of the scabs have fallen off, and the exposed sores have a healthy appearance.

*Oct.* 2*d.*—A slight inflammatory blush alone marks the places of ovination. The effects have been only local, and the animal's general health throughout has continued unimpaired.

In the above experiment we have a proof that inflammation, accompanied with the early formation of vesicles or pustules, is to

be regarded as unfavourable to the success of inoculation. It appears that when the lymph soon excites inflammation in the vessels of the dermis, it is likely to be mingled with the exudations that fill either the vesicles or pustules, the result of such inflammation, and, consequently, to be thrown off by the bursting of the pustules, or by the drying up of their contents, and subsequent rejection with the epidermis in the form of a scab.

Although the conveyance of the lymph into the circulation within a short time after its introduction beneath the cuticle may not be absolutely necessary to bring about, first the local, and ultimately the constitutional effects, still the *corded* state of the absorbents which follows ovination, when successfully performed, shews that the lymph has produced a morbid condition in those vessels.

The virus used in ovine inoculation should produce its more immediate and irritative effects on the lymphatics, and not on the capillaries, for us to be satisfied that variola will follow its introduction.

Several causes for non-success in this particular instance may be assigned. Besides that just named, it should be stated that the quantity of lymph employed was small; moreover, it had been kept several days, and its *quality* may also be doubted. The peculiar state of the system might likewise render the sheep less susceptible of the action of the virus at that time, as we succeeded, subsequently, in ovinating the same animal. But whatever cause, or combination of causes, produced the failure of this experiment, it is, nevertheless, not without its value.

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## EXPLANATION OF THE PLATES.

PLATE 1 shews the papular and confluent character of variola ovina.

PLATE 2 represents the disease in its vesicular or second stage. It will be observed that all the papulæ are not covered by vesicles.

## On Chloroform.

*By Mr.* W. J. T. Morton.

The new anæsthetic agent, Chloroform, has been tried at the College with but equivocal success on the larger animals. A horse about to be destroyed on account of an incurable open joint was cast, and the "bladder apparatus," containing two ounces of Chloroform, applied to one nostril by Professor Sewell. After inhaling the vapour for twelve minutes its influence began to be manifested. The pupillary openings became dilated, perspiration bedewed the anterior parts of the body, and the respiration and pulsation were accelerated, but insensibility was not produced. Another ounce of chloroform was therefore introduced into the apparatus, and its inhalation continued. In fifteen minutes the action of the agent seemed to have attained its maximum, and yet even now perfect insensibility could not to be said to be present; still it was evident the animal was under the depressing influence of the vapour. He laid in a state of unconsciousness, exhibiting no disposition whatever to rise, the eye was fixed, and the pulse became tranquil; the breathing, however, was irregular, the inspirations being at times deep, and the expirations sudden and jerking; the muscles of the hind quarters and neck were also rigid, as if affected with a tetanic spasm; and in this state the animal remained above twenty minutes. Before he recovered consciousness he was killed by a blow on the head. No marked appearances were observable after death, except that the lungs were considerably gorged with blood. The man who opened the animal, on incautiously inhaling the vapour given off from the abdominal cavity, was very sensibly affected by it, even to nearly falling.

A heifer was next experimented on. Four ounces of chloroform were now used. In two minutes the animal was evidently under its action; she staggered, and partially fell on her hind quarters; yet she was sensible of the infliction of pain. Although the whole of the chloroform was vapourized and inhaled, the experiment occupying nearly thirty minutes, still no greater degree of insensibility was produced; the heifer appearing only in a state of intoxication from it.

The large quantity of this agent necessary to produce insensibility in these animals, coupled with its cost or expensiveness, will, doubtlessly, preclude its general use.

As further confirmation, we extract the following from *The Medical Times*:—

"A few days ago, an interesting and successful experiment with this agent was tried on a lame horse, belonging to Mr. Reid, Drem, East Lothian. Dr. Robertson and Mr. F. Imlach, from Edinburgh, Dr. Lorimer from Haddington, and others, were present. About two ounces of the chloroform were poured on a piece of flannel cloth, below which was a sponge, the whole being placed in a tin case, which was tied over the horse's nose, and surrounded with a flannel bag. In three minutes and a half the animal fell over, and in five minutes it was perfectly insensible. When in that condition, Mr. Cockburn, veterinary surgeon, Haddington, performed the usually painful operation of cutting the nerves of sensation in both of its fore feet. On cutting the second nerve, the poor beast made a slight movement, shewing the chloroform was beginning to lose its effect; but a second application of another ounce allowed the other two remaining nerves to be cut without a quiver. In twenty-five minutes from the commencement, the animal was again on its legs, now perfectly sound. Had it not been thus reduced to insensibility, it would have been bathed in perspiration by violent struggling from intense agony; while in this case there was not a turned hair on it, the operation, too, being much more easily and quickly performed."

On the smaller animals the influence of this agent is more marked. Half an ounce of chloroform being poured on a piece of sponge, and held under the nostrils of a sheep, in five minutes she fell in a state of partial insensibility, and remained in this condition sufficiently long for the performance of any ordinary operation. On recovering, she appeared lively, and commenced eating immediately afterwards.

Rabbits are affected by it within four minutes, the quantity of a drachm placed on a piece of sponge being more than sufficient; and fowls and ducks are hypnotized by it in about two minutes, from which they quickly recover, apparently experiencing no inconvenience.

Among our readers may be those who wish to know the nature

and composition of this agent. Chemically, it is constituted of $C_2 H + Cl_3$, or is, technically, a terchloride of formule. Professor Brande states, "Soubeiran and Liebig, by distilling chloral mixed with lime and water, or with solution of potassa, obtained a liquid, which when shaken with sulphuric acid, and then separated, and rectified over baryta, in a perfectly dry retort, yielded a dense limpid fluid, which has been designated *chloroforme*. The same compound is obtained more easily by distilling a mixture of 1 pound of chloride of lime, 3 of water, and 3 ounces of alcohol, in a capacious retort; about 3 ounces of chloroforme pass over.

"The specific gravity of chloroforme is 1.480 at 65°: its boiling-point about 140°: the density of its vapour = 4.2. It is decomposed when passed over red-hot iron and copper, and, when passed through a red-hot glass tube, deposits crystals, apparently of chloride of carbon."

Soubeiran appears to be the discoverer of this compound, and M. Flourens to be the first person who pointed out its anæsthetic properties; while to Dr. Simpson, of Edinburgh, belongs the honour of demonstrating its superiority over ether in its application to the human subject, from a less quantity being required to produce the desired effect; its action also being more rapid and complete, and generally more persistent, and from its being more agreeable than ether; while no apparatus is called for in its use, a piece of sponge containing it, or some of it sprinkled on a napkin made into a cone, being all that is necessary.

It is a pellucid fluid, without colour, having a sweetish taste, and an agreeable etherial odour; it is nearly insoluble in water, and burns with difficulty: these last two properties distinguish it from chloric ether, which has been occasionally substituted for it.

As this agent bids fair to supersede the use of ether for diminishing human suffering during the performance of surgical operations, doubtless, in time, we shall be able to procure it at a moderate cost, and also of a uniform constitution. In the "Pharmaceutical Times," Professor Soubeiran's plan for obtaining it is thus laid down:—

"Take ten pounds of commercial bleaching powder or chloride of lime (which consists of a mixture of equal parts of protochloride of calcium and tribasic hypochlorite of lime); mix carefully with 120 pounds of water, of about 90 degrees, and pour the resulting lime water into a capacious copper retort (the fluid should occupy

two-thirds of the retort, at the most): add to the fluid in the retort four pounds of alcohol of 85°. Place the helmet on the retort, adapt a worm to it, lute the joints carefully, and expose the retort to the action of a brisk fire. At about 176° Fahrenheit the mass in the retort becomes tumultuously agitated; at this juncture the fire must be speedily withdrawn, otherwise the contents of the retort will be thrown into the receiver. This is the only difficult part of the operation. The operator is, however, warned of the approach of the danger by the heat gaining the neck of the helmet. The operator has, accordingly, to watch the neck, and the moment he perceives indications of intense heat (previously to the appearance of the products of distillation) he must remove the fire. Professor Soubeiran recommends wood-fire, since this will admit most readily of removing. A few moments after this the distillation commences, and proceeds briskly nearly to the end, without requiring further interference on the part of the operator.

"Professor Soubeiran recommends, however, to revive the fire when the distillatory action appears to slacken. The process may be considered at an end when the last portions of the distillate flowing into the receiver exhibit only a slight saccharine taste. The whole of the distillate will be found to amount to about two or three quarts. The distillate consists of two distinct layers, of which the lower is dense and slightly yellowish*: this consists of chloroform mixed with alcohol, and coloured by a small admixture of chlorine. The upper layer, which presents a more copious mass than the lower, is a compound of water, alcohol, and chloroform, and appears in some instances milky. In the course of from twelve to sixteen hours it deposits a certain amount of chloroform.

"The chloroform is separated from the water and alcohol by decantation, subsequently washed by agitation with water, and afterwards with a weak solution of carbonate of soda, which serves to free it from chlorine. The washed product is then rectified by distillation over chloride of calcium; this process is conducted in the water-bath. The purified product may be rectified once more by distillation with sulphuric acid. However, Professor Soubeiran deems this last proceeding superfluous for chloroform intended for medicinal purposes.

* Dr. Mialhe states, however, that this is not invariably the case, and that in many instances a perfectly colourless product is obtained.

"The decanted fluid and the washings are to be collected, mixed with water, and distilled in the water-bath, when the rest of the chloroform will distil over in conjunction with a trifling quantity of alcoholized water, from which it may be freed by the process of purification and rectification described above.

"This method of preparing chloroform has one drawback, viz., it requires a copious amount of water. Were less water used in the distillation than recommended by Professor Soubeiran, other substances would be formed in the process besides chloroform, and among these more particularly certain acetic products, which it would be almost impossible to separate from the chloroform."

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## On Ossification of Synovial Bursæ.

*By Mr.* G. Varnell, *M.R.C.V.S., Demonstrator of Anatomy, Royal Veterinary College.*

I generally avail myself of the opportunity of examining most of the diseased parts that come under my notice in horses that die or are destroyed in the infirmary; and also in the dissecting-room I frequently meet with many valuable morbid specimens. A description of some of these I have thought might not prove uninteresting to the members of the veterinary profession.

The first abnormal deviation I shall allude to existed in an ass, the fore leg of which I was dissecting for my demonstrations. On removing the common integument from below the knee, I detected, at the seat of windgall, as it is commonly called, a very hard tumour, which was moveable. I then proceeded to remove the cellular tissue, so as to expose the perforatus and perforans tendons, together with the suspensory ligament. Having done this, I exposed to view an osseous deposit, ovoid in form, and as large as a walnut, it being unattached either to bone, tendon, or ligament; but it seemed to be enclosed in fibrous tissue, which, no doubt, prior to the deposit of ossific matter, formed the outer surface of the walls of a large bursæ mucosæ. I then dissected the other side of the same leg, and found a similar osseous deposit, although not quite so large

as the former. Their situation was immediately between the perforans tendon and the suspensory ligament, a little above the fetlock joint. The other leg was similarly affected; and, in addition, in this limb several small deposits of bone, varying in size from that of a nut to a horsebean, were found in the structure of the ligaments and tendons. It was evident that a remarkable predisposition to the deposit of osseous matter existed in this animal, as several bony granules were met with imbedded in the superficial fascia investing the muscles of the haunch, lumbar region, and other parts of the body; which predisposition, connected with the exciting cause, no doubt dependent upon external violence inflicted by some unmerciful brute, gave rise to the above-named abnormal productions. My attention, however, was more especially directed to those large bursæ mucosæ, commonly called windgalls, which in their normal state contain synovial fluid; but in this case they were found to be filled with ossific matter, forming, as I have before stated, isolated moveable tumours.

The Museum of the College, rich as it is in morbid specimens, contains not one like this, nor the one I am now about to describe.

Mr. Clarke, a pupil at the College, for the period of two years had his eye on a horse, of the cart breed, with an enlarged hock, the joint being so extensively diseased as to prevent the leg being flexed. The animal was a short time since slaughtered, and Mr. Clarke obtained the diseased joint and brought it to the College. In size it was half as large again as natural, and rounded in form. I dissected the parts carefully, and found the lesions to be as follow:—After removing several dense layers of fibrous tissue, and exposing the tendons which pass over the hock and those which have attachment to the bones, all of them presented a healthy appearance, except the tendon of the flexor pedis muscle, which was extensively diseased where it passes over the posterior part of the os calcis, and strong adhesions had taken place to the theca, through which it runs, by bands of lymph, in several places forming false membranes. In the structure of the tendon also, for the space of six or seven inches, there were as many as five or six osseous concretions, varying in size from that of half a walnut to a pea, their form being that of an irregular, flattened oval. I next proceeded to examine those parts which are implicated in the dis-

eases usually called bog-spavin and thoroughpin, and strange it is that such names should still be retained among us.

Bog-spavin, I think I may venture to assert, at all times consists of an increased secretion of synovia within the joint formed by the articulation of the tibia with the astragalus, and distending the capsular ligament; it may, therefore, more appropriately be termed "Hydrops Articuli."

Thoroughpin is only an enlarged synovial bursæ. Sometimes, however, it is found to communicate with the joint.

The distended capsular ligament at the inner and anterior part of the hock was considerably thickened; and, after dissecting off a dense outer fibrous layer, I found the inner surface of its walls to consist of an osseous structure in three separate pieces, one as large as half-a-crown, another the size of a shilling, and the third not larger than a sixpence. They were irregular in form, concave, and roughened on their inner surface, and convex on their outer one; forming, partly a bony, and partly a membranous cavity. The inner surface of the latter was studded with calcareous granules. Extending from one side of this cavity to the other, I found a projecting portion of bone, as large as an ordinary-sized quill, and about an inch and a half in length, slightly roughened on its surface; this I conceive to have been a band of lymph that had become ossified. The sac also contained coagulated synovia and bands of false membrane, forming together a mass of a dark brown colour. Upon the outer and anterior part of the hock, a superficial bursæ had become distended, and two similar osseous productions were observed on its walls. But in this specimen the most remarkable feature consisted in an enlarged bursæ situated between the upper and anterior part of the os calcis and the posterior and inferior part of the tibia communicating with the joint capsule, presenting a rounded appearance on either side as large as an orange, the walls of which were composed, three parts out of four, of bone. On one side there were four pieces of bone, and on the other five pieces, all of which were moveable. Upon laying open this sac, a considerable quantity of dark spurious synovia escaped. I then passed my finger into the opening, and detected a long piece of bone, extending nearly from one side to the other of the cavity, as large as my little finger, and two and

a half inches in length, being attached at one extremity to one of the larger pieces, which formed the outer part of the wall of the sac. All the bones of the hock were anchylosed, with the exception of the junction of the tibia with the astragalus.

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## On Chronic Hoove in the Cow.

*By Mr.* W. Cox, *M.R.C.V.S.*

Dear Sir, *Ashbourne, Nov. 8th,* 1847.

Be pleased to accept my thanks for your prompt reply to the questions I put to you with reference to the case of chronic hoove which was published in the July number of your excellent Periodical. According to your suggestion, I passed a probang down the œsophagus, but could not detect any stricture or mechanical obstruction interfering with the function of that organ. The medicinal compound recommended by you also failed to afford relief, and the patient gradually became more emaciated. For the last week or ten days I was obliged to keep the canula in the rumen, as, without this, the cow would have sunk much earlier. On the 16th of May I received a message from her owner, informing me that he had sold the animal, and that she would be killed early on the following morning. I attended, but the butcher failed to keep his appointment; and, as Mr. Hodkinson objected to my making a *post-mortem* examination without the person being present who had bought the cow, after waiting some time, I was obliged to depart. I, however, left instructions for the viscera to be carefully preserved for my inspection. On the following day I again called, and then found that the cow had been killed, and removed to Carsington, a few miles distant, without being opened. I rode over to the latter place, and had the mortification of finding the abdominal viscera cut to pieces and piled into a wheelbarrow. I examined these portions, but could not detect any disease, and the butcher informed me that every part appeared healthy. I have entered into these particulars for the purpose of shewing the

difficulty country practitioners often have to contend with in their endeavours to obtain an examination after death. I rode upwards of sixteen miles for this purpose, when I could ill afford to devote any time at all to it.

These cases of chronic hoove are very interesting, and their cause or causes being so obscure, I much regretted my inability to make a satisfactory autopsy. I incline to the opinion that partial paralysis of the rumen gives rise to these long-continued cases of functional derangement of that viscus, and hence the disengagement of gaseous compounds from the ingesta; it being well known that in our domesticated ruminants any cause which interferes with rumination will produce fermentation of the aliment, from its being exposed to both heat and moisture in the rumen.

Another case, somewhat similar, may not prove uninteresting to your readers.

In the month of April last, while attending some horses suffering from influenza, belonging to Mr. Gallimere, my attention was directed to a cow which had been unwell for some time. The digestive organs were evidently affected, as the owner had observed that, during the greater part of the preceding winter, diarrhœa was often present, and sometimes the animal was hoven. Mr. G. had bled and administered purgative medicine several times to the patient.

At the time I examined her both tympanitis and diarrhœa existed; the pulse was iregular, but very weak; the coat was staring, and the skin deficient in pliability, usually called hide-bound; the secretion of milk was lessened; the appetite impaired, and rumination suspended; the animal was emaciated, and presented a very dejected appearance. The treatment had recourse to consisted of the exhibition of diffusible stimulants and tonics; with the occasional use of ant-acids and astringents when the state of the digestive organs required such agents. Temporary relief followed these remedial measures; but after a time they ceased to be attended with any benefit; I therefore recommended the owner to have the cow killed; but she being insured, another practitioner was requested to see the case by the Inspector of the Cattle Insurance Society. Ultimately, however, the animal was destroyed, and the particulars of the post-mortem examination are given by

Mr. Leech, in the last number of THE RECORD; but the account I consider to be imperfect, as it does not explain the true cause of chronic tympanitis; for the state of the stomachs and the interior of the intestinal canal is not even alluded to.

I am, &c.

*To Mr. J. B. Simonds.*

P.S.—I have two cases, now under treatment, in which long-continued tympanitis has been present: one is going on satisfactorily. Before long I will send you the particulars of a case of hemiplegia, and also one of erysipelas in cows: in the latter case the symptoms were ambiguous, and accompanied with great nervous excitement.

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## CASE OF CHRONIC PERICARDITIS IN A COLT.

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

*To the Editors of "The Veterinary Record."*

My dear Sirs,

BEING this morning called to see a filly affected with "surfeit," my attention was directed to a colt then lying dead in the yard. On making some inquiries respecting it, the coachman informed me that he died suddenly on the previous evening. The history of the case was given by him as follows:—

The colt was eighteen months old, thorough bred, and castrated last spring. He had been kept in a loose box on corn from the time of weaning till the last week in August, when both he and the filly were turned into a meadow, which was in a cold damp situation, and the grass rather scanty; consequently they became greatly impoverished. There they were allowed to remain till last week, when they were found, to use my informant's own words, "breaking out from head to foot, and hide bound." On this account they were housed, and pretty liberally dieted; the owner considering that this change of living would make them all right again. The colt fed well, and not the least illness was observed

up to the time of his death, except a slight swelling of the belly and sheath; in fact, he was in better condition than his companion. On the coachman's going to him last evening he was found lying down, and on causing him to rise, the breathing became very labored for a few minutes, when he suddenly fell, and died instantaneously.

I availed myself of this opportunity of making a post-mortem examination. The appearances presented were—belly and sheath œdematous. On laying open the cavity of the abdomen, a large quantity of serous fluid escaped. The viscera of the abdomen had a healthy appearance, except the liver, which was considerably enlarged, softened, and of a dark colour. The mesenteric glands were of the usual size, and the lacteals also. On opening the thorax, I was astonished at the enormously distended state of the pericardial sac, on making a section of which about six quarts of yellow turbid serous fluid escaped, in which floated several large flocculi of lymph. The pleuræ and lungs were slightly inflamed, and many patches of ecchymosis were visible on the pleura pulmonalis et p. costalis. The heart, &c. I have forwarded you; therefore it is unnecessary for me to give any description of these parts. This case is interesting, more especially so on account of the absence of the usual premonitory symptoms of this disease.

I am,

*Keynsham*, 17*th Nov.* 1847. Your's, very truly.

[The lesions were doubtlessly the result of an attack of pericarditis, which had become chronic. Such cases are comparatively rare. The amount of fibrine thrown out over the heart was considerable, the false membrane being in places full half an inch in thickness. The substance of the heart was softened, but the lining membrane of the organ was unaffected. The pericardial sac itself was as extensively diseased as the membrane investing the heart. Such an effusion of lymph must necessarily have interfered with the functions of this all-important organ; but it would seem that the progress of disease had been most insidious.]

## On Strangulation of the Intestines in Cattle, commonly called "Gut-tie."

*By Mr.* E. T. Bass, *M.R.C.V.S.*

As the malady thus designated is of somewhat rare occurrence, it is necessary for me, in order to make myself understood, to briefly state what I conceive to be its nature; premising that the subject is still involved in much obscurity, and requires many well-conducted post-mortem examinations in order that its pathology may be satisfactorily and correctly made out.

"Gut-tie" most frequently attacks working cattle, although at times others may be affected by it. It never attacks the female nor the uncastrated male. These facts have led practitioners to the inference, that castration is the indirect cause of the affection, and I think correctly so.

Castration in calves is generally performed by first letting out the testicle from the scrotum, then dividing the vas deferens and the reflexion of the peritoneum which connect it with the vascular portion of the cord, thus isolating the vessels; these are then torn asunder, and by their contraction hemorrhage is prevented. But in other cases the vas deferens is also ruptured with the vessels, and thus, in my opinion, the foundation of this disease is laid. The vas deferens, in its course from the internal ring to the part where it crosses to the inside of the round ligaments of the bladder, forms an arch, the concave portion of which is situated inferiorly, or towards the abdomen. This portion of it is closely bound down by peritoneum to the abdominal walls, and also to the brim of the pelvis. On the application of traction to the inferior extremity of the vas deferens, it is evident that the peritoneum which binds down this part of it will be put on the stretch, by reason of the tendency of the tube under these circumstances to assume a straight line; and, if the force be sufficiently great, rupture of the peritoneum will ensue: this may be proved by experiment on the dead animal. The divided portion of the seminal duct will now form adhesions to some part of the inguinal canal, but it cannot recede into the abdomen, as has generally been stated by those who have described this affection. The rupture of the peritoneum leaves a loop existing in the abdominal cavity: this loop, as I have said,

being formed by the detachment of the vas deferens from the pelvis—and into which a portion of the intestine, insinuates itself, constituting hernia. This hernia generally follows some violent exertion of the animal, at a period more or less remote from the time of castration.

*Symptoms.*—In the first stage dulness of the animal is all that is observed; then follow slight febrile symptoms, accompanied by abdominal pains, though not severe, shewn by the animal shifting his position, kicking at the abdomen, switching the tail, and all this time small portions of fæces are being constantly passed. After from twelve to twenty-four hours, the symptoms become more aggravated, but not so much as to give any uneasiness to the owner of the animal. The pain is rather more severe, the animal has a peculiar expression of countenance, the fæcal discharge becomes arrested, notwithstanding aperients have been administered; there is a bowing of the back, more especially in the lumbar region, a voiding of masses of clear mucus per rectum, and a straddling, unsteady gait, with constant endeavours to evacuate fæces. These symptoms, which indicate mechanical impediment to the passage of the alimentary matter, will, if occurring in a castrated animal, be sufficiently indicative of the nature of the affection; more especially so when we recollect the peculiar arrangement of the intestines of this class of animals; so that it is almost impossible for any of those causes which give rise to strangulation, introsusception, &c. in the horse, to produce the same effect in cattle, on account of this peculiarity.

*Operation.*—This is imperatively necessary; for if not thus relieved, symptoms of strangulation, attended with violent abdominal pain, and hard and quickened pulse, would ensue, which would be speedily followed by death, resulting from gangrene. It is very easily performed, and the following is the method adopted by Mr. Lepper, of Aylesbury, with almost uniform success. It essentially consists in dividing that portion of the vas deferens which holds the knuckle of intestine; for this purpose the animal is thrown on the left side, an incision is made in the right flank, in the direction of the fibres of the internal oblique muscle; the peritoneum being thus laid bare, it is cautiously opened; the opening is then dilated, care being taken to avoid wounding the intestines. The omentum is to be then pushed on one side, or, if it protrude,

it may be divided without fear, as no evil consequences will result from this division. The hand of the operator is to be then directed towards the pelvic region of the abdomen, and the mass of fæcal matter contained within that portion of intestine anterior to the stricture is to be felt for: by this means the cord which produces it will be readily detected, and is then to be brought as nearly as possible to the external opening and divided, and if any slight adhesions should have taken place between it and the intestine, these must be broken down. The peritoneum, muscles, and skin are now to be brought together, and the animal allowed to rise. In the course of an hour or two copious evacuations generally take place, and the beast may be considered convalescent. Of course, the animal should for a little time be kept short of food, and that which is given should be of a soft nature.

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## Case of Endocarditis in a Heifer, and of Abscess in the Muscular Structure of the Heart of a Cow.

*By Mr.* T. W. Gowing, *M.R.C.V.S.*

Unfortunately, the history of the first case is brief, as I was not called professionally to attend it. All I could gather from the proprietor was, that the animal had been purchased by him about five months since. She was of the short-horn breed, and had calved a few days previous to purchase. When in possession of her owner three or four days, the milk was perceived to assume a peculiar red appearance, as if blood had been mingled with it; and this continued till the animal died. At this time she fed well, and was improving in condition, and it was anticipated the milk would resume its natural state, and likewise increase in quantity; instead of which it diminished, the appetite became impaired, and the animal was observed by the dairyman suddenly to fall down. She was raised, and the body and extremities rubbed, and she apparently recovered, remaining seemingly in health for the period of five or six weeks, when she again as suddenly fell. Being raised, and the same means adopted as at first, she soon after again recovered; but she now lost flesh rapidly, and although the owner resorted to the aid of medicines, it was evident she was fast sinking: he therefore determined to sell her in the state she was,

rather than to incur any further expense. On going into the cow-house on Thursday morning last, he perceived the animal was again down; but remembering she had fallen twice before, he took little notice of it: on a closer examination, however, she was found to be dead.

*Morbid Changes in the Heart.*

The organ, viewed externally, presented the left auricle prominent, and of a rounded form. The heart itself was somewhat elongated, and smaller than natural. On making a section of the auricle just at its base, a solid mass of matter, of a dark colour, and as large as a man's fist, was perceived, filling up the cavity, and also passing into the auriculo-ventricular opening, adhering slightly to the bicuspid valve. Superiorly, a portion of it had entered two of the pulmonary veins. On its upper and outer part a cup-like cavity existed, which evidently had contained pus. The mass itself was adherent only to the supero-external part of the auricle, and thus a passage was formed for the blood from the pulmonary veins into the auricle, the muscular walls of which were much dilated and attenuated.

Examining the points of attachment, the nature of the abnormal deposit was disclosed, and also the causes that must have been in operation to produce it. The serous lining membrane had evidently been intensely inflamed, and depositions of lymph, which had become organized, had taken place, giving rise to a considerable thickening of this membrane. Layer after layer of fibrine had become separated from the blood as it passed over this diseased membrane, and thus the mass was gradually formed. Through the continuation of the inflammatory action the pus was secreted, which filled up the cup-like cavity, the walls of which had been formed by the separated fibrine, as already described.

The great peculiarity of case is, the existence of inflammation in one part only of the lining membrane of the auricle. It is also singular that this diseased action is more commonly met with on the left side of the heart than on the right. The sudden and repeated falling down of the animal will be, of course, referred to an unequal or iregular supply of arterial blood to the brain.

The case of abscess in the walls of the heart of a cow is even less interesting than that I have recorded, as, during life, the only

symptom indicative of diseased action going on was, the animal's always turning to one side when moved or caused to progress. This would rather have awakened a suspicion of the brain being implicated. She, however, died suddenly, when the last-named organ was found to be perfectly normal; but an abscess existed in the muscular structure of the heart, containing more than a tea-cupful of pus.

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## Cases of Pseudo-Glanders and of Farcy in the Horse.

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

### Case I.

The subject of the first-named disease was a brown colt, which had been purchased of a dealer in London, and taken at once to the owner's residence, near Reigate. He had been used chiefly for the saddle, and about a fortnight after purchase was attacked with influenza, which, being improperly treated, left the animal extremely debilitated. At that period we received a letter, stating that the horse had been examined by a veterinary surgeon, who condemned him as being glandered, and recommended his being destroyed.

On my seeing the animal he presented the following symptoms:—

All the extremities were swollen below the hocks and knees; a few small buds resembling farcy existed inside of the hocks: a discharge of a transparent though somewhat discoloured mucus took place from both nostrils, copious at times but without the slightest fœtor; the membrane of the left nostril was streaked with lines of a leaden hue; the right nostril was more healthy in appearance, though somewhat paler than natural; the discharge had a tendency to adhere about the alæ of the nostrils; the submaxillary glands were slightly tumefied, but not tender to the touch.

I determined in this case to try the plan of treatment advocated by Professor Morton; namely, the administration of the diniodide of copper in conjunction with the inhalation of chlorine gas. Accordingly, on Thursday, July 1st, I proceeded to disengage chlorine into the loose box in which my patient was placed, allowing him to inhale it for five or six hours in the day, and administered cupri diniod. ʒss, pulv. gentianæ, pulv. zingib. āā ʒij, in bol. bis in die.

*Saturday, July 3d.*—After the inhalation of the gas the discharge from the nostrils during yesterday was copious, thick, and white in colour; but this morning it is scarcely perceptible; there is, however, a little more from the near nostril than the off; but the lining membrane has lost its leaden hue; and the swelling of the legs has likewise almost subsided. Continue the treatment as before; feed liberally, allowing plenty of green food; and give exercise twice in the day.

As there is some cough present, which is seemingly dependent on an irritable state of the larynx, apply a blister to the throat. This morning a large œdematous swelling was observed in front of the chest.

*Wednesday, July 7th.*—The swelling of the limbs has entirely subsided; the discharge from the nostrils is still considerable at times, but the membrane has assumed a more healthy colour, and the appetite, general appearance, and condition of the animal have improved. Repeat the inhalation of the chlorine, and give ferri carbonatis ʒss, pulv. gent. et zingib. āā ʒij, in ball daily.

*Thursday, July 15th.*—The discharge from the nostrils subsided yesterday, and otherwise the animal continues to go on favourably: give daily for about a week, cupri diniodi ℈j, mass. commun. q. s. fiat bolus, then every other day for the same period, after which gradually discontinue its use. The chlorine need no longer be resorted to. Increase exercise, and allow the animal to be ridden.

I did not see the horse again until December following, when he was in a state of perfect health, and had been regularly used from the time I last saw him, without the return of any unfavourable symptom.

## Case II.

### Farcy supervening on an Injury.

A chestnut mare had been purchased by a gentleman at West Drayton from the field, and, after a dose of physic, she was sent to work in an omnibus, when she received an injury on the off hind leg, by which the tendo-perforatus was exposed. The owner had been using fomentations and poultices, and also rubbing the limb with a stimulating liniment.

I first saw the case on Wednesday, August 18th, and found the limb much tumefied throughout, the wound of a pale colour, and unhealthy in appearance, with a single farcy ulcer inside of the hock, and one or two ulcers higher up, discharging pus of an ichorous character. The owner told me he had given the animal a dose of physic in the morning; I therefore ordered dry food, not wishing purgation to be set up; applied digestive ointment to the wound; injected the ulcers with sol. cupri sulph., and gave ferri sulph. ʒij, mass. commun. q. s. in a ball daily.

*Tuesday, August 24th.*—The animal is decidedly much worse. A chain of farcy ulcers extends from the mammary gland, which is also much tumefied, to the foot; the whole limb is swollen, tense, and painful to the touch: the respiration is much hurried, and the constitutional disturbance great. I ordered the animal to be sent to my infirmary, where she arrived on Wednesday, August 25th. I at once commenced the administration of cupri diniod. in scruple doses three times a-day, and dressed the ulcers with the solution left after the obtainment of this compound. Up to September 20th she took these balls regularly. The appetite being then somewhat impaired, I discontinued the agent for a time, giving in place of it ferri carb. ʒss, in the form of ball. The animal, up to this period, has markedly improved, and the ulcers are merely dry scales; the only thing, in fact, now required is, to reduce as much as possible the enlargement of the leg. I therefore applied the vinegar of cantharides to it, which had the desired effect, at least to a considerable extent.

*Friday, October 1st.*—The animal was discharged from my infirmary this day, her general health being apparently restored, although the limb still continued somewhat enlarged, and which seemed likely to be permanent. Orders were given that she might be put to work.

The iodine was easily detected in the urine after the agent had been administered a few days only; and I cannot but think that both these cases prove the compound to be one of great value when judiciously administered.

*London, Dec. 7th*, 1847.

## Poisoning of Horses by the Carbonate of Lead.

*By Mr.* R. Mead, *M.R.C.V.S.*

*To the Editors of the "Veterinary Record."*

Gentlemen, *London, Dec. 7th,* 1847.

Some cases of poisoning by lead having lately come under my notice, I have deemed them not without interest, and therefore forward them for insertion in your Journal.

I am your's, &c.

On Saturday, the 4th of September, a brown gelding, six years old, was attacked, according to the carter's statement, with pain and tremors of the fore extremities as he was going to work in the morning. The man thought it merely spasm of the bowels, and that it would go off with exercise; he accordingly put the horse in the wagon and drove him about a quarter of a mile, when he observed that the animal worked rather dull, and suddenly the tremors again appeared. The horse then fell, and all efforts on the man's part to raise him were ineffectual. My father was then called, who found the animal down, with a pulse about 70; the visible mucous membranes were pale, trembling of the fore legs was present, and colicky pains were evinced. He also thinking it a case of colic, bled to the extent of about two quarts, and, with assistance, got him up, and endeavoured to lead him to our infirmary. When he had walked about a hundred yards, the animal again fell. At this period I examined the horse, and found the pulse to be still 70 in the minute, but very weak; profuse perspiration bedewed the surface of the body, and the excitement was great. I too mistook it for a violent attack of spasm, and administered a draught, consisting of linseed oil, spirit of nitric ether, and tincture of opium; and, with assistance, he was led to our infirmary. When there, I ordered friction to be applied, chiefly to the abdomen. He stood for about half an hour, when he again fell down, still shewing the muscular tremors. I then gave him another antispasmodic draught, omitting the opium, and half doses were repeated every two or three hours, with gruel and frequent enemas.

*Sunday, Sept. 5th.*—Not feeling satisfied with the progress the

case was making, I requested the professional assistance of Mr. South. The horse was still down, and I related the symptoms that had been present otherwise to him. Finding there was no sensation, he considered it to be a case of paralysis, and advised the application of stimulating compounds along the spine, consisting of the liniment of turpentine and water of ammonia. By this time the pulse had risen to about 100, and was still very weak. We placed the animal in the slings, and repeated the draught, with the addition of turpentine. The horse, however, became so violent in the slings that we were obliged to remove him, when he fell down, and lay very quiet. His breathing became hurried, and the pulse scarcely perceptible, and he died about one o'clock the same day, almost without a struggle. Unfortunately, I was called out the same afternoon, and was not able to attend the *post-mortem* examination.

The second case was a bay gelding, seven years old, which shewed precisely the same symptoms as those above recorded. The animal was down when I first saw him. It was then we suspected that the horses were poisoned by lead, as they worked at a white lead manufactory. We immediately placed this horse in the slings and supported him to our infirmary; and when there administered the usual antidotes, consisting of the sulphate of magnesia and the phosphate of soda, with oil. We gave a diffusible stimulant once or twice a-day, and continued this treatment for three or four days. The bowels being still constipated, I gave a purgative, consisting principally of croton oil, by which the bowels were acted on. The pulse regained the natural standard, and the animal could walk about; but if he laid down he was unable again to rise. We were, therefore, again obliged to sling him, and in this state he continued, being occasionally let out of the slings. Sometimes he would fall down, but was altogether unable to get up again without assistance. To all appearance, when up, he was perfectly healthy; his appetite being good, and all the animal functions performed naturally. But when he was startled, or suddenly approached, a kind of tremor attacked him, and were it not for the slings he would drop.

The horse, latterly, had so much improved that he had been out to exercise several times, and seemed to walk very well; however, all our endeavours at length proved fruitless, for the last time he

went out he fell in the street, and could not be got up again; and when in this state he knocked himself about so violently, that it was considered most advisable to have him killed.

*Post-mortem appearances.*—The stomach was inflamed in patches, which was most perceptible on the villous portion of it. The coats of this viscus were thin, and where indications of inflammation did not exist, a greyish tint prevailed. The mucous lining membrane of the intestines was of a light brown colour, and slightly inflamed here and there; the liver was normal, and the brain and spinal marrow seemed to be in a healthy state; nor could I find any alteration in the structure of the nerves to account for the loss of power.

The last case is a chestnut horse, eight years old. He was observed by the carter to be very dull, and off his appetite, and trembling on his fore legs. On examination of him, I found his pulse about 60, the mucous membranes pale; colicky pains were evinced, and the bowels were constipated. I administered a dose of linseed oil with sulphate of magnesia; threw up an enema; ordered diet to be restricted to mashes; and left him for the night. The next morning we had him led to our infirmary. Repeated the purgative and the enema, as the symptoms remained the same. This treatment was continued, giving half-doses every three hours for a day, when an aloetic purge was administered. The bowels at length responding, a remission of the symptoms took place, and the horse went to work. He, however, remains very dull in his work, and generally falls down once or twice a day in the street. With a view to destroy the poisonous influence of the lead, we have lately given him sulphuric acid in his water, interposing an occasional laxative, and hopes are now entertained that he will ultimately get well.

An analysis of some of the food partaken of by these animals was kindly made by Mr. Morton, the result of which I will leave to that gentleman to acquaint you with.

I have given you simply the facts of these cases, as far as my remembrance serves me; and not having seen cases of the kind before, I have taken the liberty thus to lay them before the members of the profession.

[Analysis afforded indubitable proofs of the presence of lead; while the recorded symptoms are indicative of the influence of the same agent. The obstinately constipated state of the bowels, the paleness of the visible mucous membranes, the loss of power, and the muscular tremors, being characteristic of poisoning by the compounds of lead].

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## Poisoning of Horses by Arsenious Acid.

*By Mr.* G. B. Webb.

Gentlemen, *Balsham, Oct.* 13, 1847.

It is but a meagre history connected with these cases that I shall have to offer you, yet they appear to me not unworthy of being placed on record.

On the morning of the Introductory Lecture at the College, the 11th instant, I was hastily summoned to attend a horse reported to be dying, and in that state I found him. It was evident he was beyond the reach of all remedial measures, therefore, all that I could do was to advise that means should be adopted to prevent him injuring himself, and otherwise to minister to his wants so as to alleviate his sufferings, by giving occasionally a little warm gruel, allowing a soft bed, &c. On my return from the College, as I had anticipated, the animal was dead.

The horse-keeper, I was told, had given to this animal and four others on Saturday night last, a pipe full, as he stated, of arsenic. The quantity, probably, will have been between two and and three drachms; but whether any had been administered by him before, or what was the object he had in view in giving it, I know not. However, at seven o'clock in the morning of Sunday, two of the horses were found dead in the stable, and the other three exhibited most unfavourable symptoms. Two of them were purging violently, as if a powerful carthartic had been administered; the pulse was 75 in the minute, and full; the respiration 60, and painful. The pulse of the other, which was an old horse, was only 50. It quickly, however, rose to 80, and that of the others to 100, when they began to evince much acute suffering. They laid down, but quickly got up again, which they continued to do; cold sweats covered their bodies; the breathing became

laboured, the countenance anxious, and the exacerbations continued till death put an end to the poor animals' sufferings.

They had the poison given to them at six o'clock on Saturday evening. Two of the horses, I have said, were found dead in the stable on Sunday morning; a third died about six o'clock the evening of the same day; a fourth about twelve o'clock at night; and the fifth on the morning of Monday, during my absence.

*Post-mortem appearances.*—The whole of the lining membrane of the stomach highly inflamed, and corroded in patches, which were dark coloured and the size of the palm of a man's hand. The organ itself was distended with gaseous matters, the little food it contained being in a fluid state; the intestines were nearly empty, but highly inflamed throughout, especially the cæcum; and the vessels of the lungs were much gorged with blood.

I regret the brevity of this; but I was not called in till "mischief had done its work."

I am,

*To the Editors, &c.* Your's respectfully.

## REVIEWS.

*On Ring-worm; its Causes, Pathology, and Treatment. By* Erasmus Wilson, *F.R.S. With a steel Engraving.* London. Churchill, 1847, pp. 102.

As comparative physiologists the members of the veterinary profession are naturally interested in observing the phenomena of disease presented by the human subject, particularly when such observations admit of application to the animals which properly belong to their own domain. It may be trite to remark upon the analogy which subsists between the diseases of man and of the domestic creatures that minister to his wants, his comforts, and his pleasures; but this remark applies with double force when the disease has reference to the outer surface of the body. The diseased manifestations of the skin and hair in animals are wrapped in much obscurity: the subject is one of much interest, and, indeed, of importance, since beauty of surface among domestic animals is a needful consideration. We therefore greet with pleasure a new essay, from the

pen of our learned Honorary Associate, on the pathology of the skin; the more particularly as it embodies some new and interesting views, and places the subject of the morbid phenomena of the hair in a plain and rational point of view.

The origin of the term "ring-worm," says Mr. Wilson, which is attributed to Sauvages, is in the first place the appearance of the hair which is "broken off near the skin," and looks as if it had been "eaten away by the moth-grub or moth-worm;" and, secondly, the common occurrence of diseases of the skin in a "circular" or ring-like form. Mr. Wilson's present treatise is limited to the consideration of the hairy scalp, but the entire skin of animals may be regarded as analogous to the hairy scalp of man: hence the simple division of diseases which is announced by the author in reference to the scalp, admits of useful application in the instance of animals naturally clothed with a hairy vesture. "The diseases of the scalp," writes Mr. Wilson, "admit of a natural division into the moist and the dry; the dry eruptions, with an exception presently to be mentioned, being the ring-worms; and the moist eruptions comprising eczema, impetigo, and ecthyma. The moist eruptions are universally acknowledged to be simple in their nature, and non-contagious; so that those which fall under the suspicion of contagion, and those which carry with them the stamp of popular opprobrium, are the dry eruptions. Two of the dry eruptions affecting the scalp constitute the exception to which I have just alluded; they are pityriasis capitis and psoriasis capitis, members of the family of the squamous diseases, and distinguished from ring-worm, firstly, by causing no alteration in the hair; and, secondly, by being generally found on other parts of the body at the same time as on the head."

Mr. Wilson describes two kinds of ring-worm, namely, favus or honeycomb ring-worm, which is rare in this country, and, though frequently spoken of, is seldom seen; and trichonosis furfuracea, or common ring-worm. The author also traces an analogy between the common ring-worm of this country and plica polonica, both of which diseases he classes under the same generic appellation.

After describing the matter of favus to be situated between the epiderma and derma, Mr. Wilson observes:—"In its essential nature I believe the peculiar matter of favus to be a modification of the elements of the epiderma." Heretofore, this morbid matter

has been regarded as a substance essentially different from and indeed foreign to the tissues of the body, as being, in fact, a vegetable organism, taking its origin from without, and conveyed accidentally to the hair follicles, where it takes root and grows, like moss upon a house-top. We must confess that such an hypothesis always jarred with our belief, and we are more ready to accept an explanation which, without introducing any new element, shews in what manner this substance may be produced.

"The blood-cell, the mucus-cell, the pus-cell, the pigment-cell, the epithelial or epidermal-cell, for example, resemble each other closely in construction, and, in some instances, appear to be convertible the one into the other. The cells or corpuscles of favus possess a striking resemblance to pus-cells, and, excepting in their form, are closely allied to young epidermal cells; so that it would require no stretch of imagination to suppose the epidermal-cell, altered in its actions by disease, capable of assuming the character of the pus-cell; or the latter, from a similar cause, passing into the likeness of a favus-cell." Further on Mr. Wilson observes:—"We have evidence that the same tissue may produce, one while, epidermal-cells; another while, pus-cells; and, thirdly, favus-cells;" and he asks the question—"Can we close our minds against the signification of so remarkable a phenomenon?"

The peculiar matter of favus being then, according to Mr. Wilson, an abnormal modification of the growing cells of the epiderma, let us now turn to the causes which he thinks capable of producing such a change. "Favus," he writes, "is a disease of deranged nutrition, and generally occurs in childhood, at a period of life when the nutritive functions are most active, and when, as a consequence, they are most susceptible of disturbance. At this age, any circumstance which may tend to reduce the powers of the system may become a predisposing cause of favous disease. Favus is generally met with among the children of the poor, and in those institutions of the children of a better class, that are so mismanaged in respect of diet, clothing, ventilation, and cleanliness, as to engender a disposition to disease." How strongly this paragraph points out the necessity of wholesome food, proper ventilation, and a careful attention to cleanliness, for the maintenance of health and condition of animals!

Whilst the process of cell-formation in the epiderma is thus

running riot under the influence of disease, we are not to be surprised at finding that an epidermal product, the hair, so entirely dependent on the health of the skin for its proper growth, should also suffer in its structure. "When a hair from the midst of a crust of favus," says Mr. Wilson, "is placed under the microscope, it is seen to be traversed in the direction of its length by a number of cylindrical tubes measuring in diameter $\frac{1}{10000}$ of an inch." When numerous, these tubes occasion a "lightness of colour of the hairs, and a shrivelled appearance."

In respect of the important social question of the contagion of favus, the author observes—"Whether we regard favus in its origin, in its development, or in its essential nature, or whether we look at its phenomena in a social point of view, its extreme rarity, and the indisposition to transmission which it evinces when closely observed; in each and every of these features of the disease we shall find reasonable ground for doubting its propagation by contagion. My own careful investigations of the subject have forced on my mind the conclusion tnat *favus is not contagious.*"

The treatment proposed by Mr. Wilson for the cure of favus accords with the idea which he promulgates with regard to its pathological nature and cause. "The indications for the treatment of this disease," he observes, "are two in number; the first being to restore the defective powers of the constitution, the second to restore the local power of the skin. The fulfilment of the first indication calls for improved hygienic conditions, improved diet, and tonic alterative medicines; that of the second requires the aid of local remedies belonging to the class of abluents and stimulants."

The description given by Mr. Wilson of trichonosis furfuracea, or common ring-worm, reminds us of what we sometimes see in the horse and in the dog. "Common ring-worm of the scalp is characterised by a dry and furfuraceous state of the skin, occurring in circular or oval patches of variable size. The patches are slightly elevated, papillated, and spangled, or, as it were, dusted over with minute epidermal scales. The hairs growing on the patches are whitish, twisted or bent, shrivelled and brittle; in some instances broken off near the skin, in others matted into conical prostrate bundles, or, when augmented in thickness by an accumulation of scurf, condensed into thin yellowish grey and fissured crust. When heads affected with this disease are kept

clean, the patches looked parched, and the hair covering them withered and dried up. At a later period the patches are left more or less bald, but never completely so as in alopecia areata."

"The seat of disease in common ring-worm," writes Mr. Wilson, "is the hair and the epidermal lining of the hair follicles." The hair, instead of presenting its natural texture, has entering into its structure an abundance of "transparent, globular, nucleated granules, closely packed together, and constituting a tesselated structure." Further on he observes, "if the destruction of the natural tissue of the hair be considered," the morbid change "may be described as a *granular degeneration* of the hair." "The mode in which these nucleated granules are formed appears to be identical with that of the production of the analogous granules of favus."

In reference to the cause of common ring-worm, the author remarks that it is a "disease of deranged nutrition, its cause being debility of the organization, originating, probably, in defective innervation. In popular language, the disease may be said to depend on 'poorness of blood.'" Mr. Wilson believes that common ring-worm is no more contagious than favus; and with respect to its treatment observes, that "the indications for treatment are precisely similar to those recommended for the latter disease."

We regret that our space will not permit us to make further quotations from this little work, particularly with respect to the hygienic conditions mentioned in the treatment of common ring-worm.

There are also some points in the description of alopecia areata, and in the diagnosis of the general and special diseases of the scalp, that we might have quoted usefully; but we must leave these to the independent research of our readers, to whom we warmly recommend a perusal of the work, feeling assured that they cannot fail to derive pleasure and instruction from its pages. Mr. Erasmus Wilson has shewn in his numerous works a thorough knowledge and a masterly handling of the diseases of the skin, and is fast attaining the eminence to which his persevering labour and zeal justly entitle him.

In conclusion, we have no hesitation in saying that this is a work which all parents and guardians should carefully study.

AN ESSAY ON THE DISEASES OF THE JAWS, AND THEIR TREATMENT. *By Leonard Koecker*, Surgeon-dentist. London: Churchill, 1847. Pp. 95.

IN a previous review we have adverted to the advantages derivable from comparative physiology, and, doubtless, we have much to learn from our brethren in the sister profession as it respects the application of principles in medicine, especially to pathology.

The work before us is certainly not one written for the veterinary profession, yet in it we find many observations bearing upon diseases to which the maxillæ of the horse are obnoxious. It appears to us—although we acknowledge ourselves but incompetent judges—to be a volume replete with valuable information of a practical nature.—At page 13 the author says,

"The diseases of the maxillæ rarely, if ever, have their origin in the cavity or antrum; but, almost without exception, where the mucous membrane lining the cavity is affected, this will be found the consequence of disease, or necrosis of some part of the osseous structure surrounding it; these diseases have, therefore, very incorrectly received the general denomination of diseases of the maxillary antrum; a mistake which has led to both erroneous theory and practice with respect to them.

"Incorrect nomenclature is, without doubt, injurious to science; and it is surprising how the most enlightened and celebrated pathologists have sometimes been misled by improper names, and, notwithstanding they have been sensible of the inconvenience, have exerted themselves to justify error rather than correct it. Indeed, not a small number of the best curative remedies in surgery, as well as in medicine, may be proved to have been frequently misapplied, or rendered injurious, by the improper technicalities which have been gradually admitted into pathological science.

"That the upper and under jaws are equally subject to the diseases in question, is sufficiently evident * * * * * *; nor do they seem to be less dangerous in the one than in the other, nor to differ materially in their progress of ravage and destruction; for, while it may be justly supposed that this progress in the upper

jaw is facilitated by its greater vascularity and more spongy structure, it must also be considered that this difference of structure, as well as the situation of the upper jaw, affords a greater chance of natural palliation, by the more convenient absorption or discharge of the matter formed by the disease; and while the more dense osseous construction of the under maxilla and the greater activity of the absorbents in one way retards the progress of the malady, from the lesser curative activity possessed by these parts and their inconvenient situation for the discharge of the matter, it is less counteracted by the former, and more aggravated by the latter, in the under than in the upper jaw.

"In the same way we may account for the fact, that, when the upper jaw is affected, the soft parts connected with the disease are more frequently subject to cancerous ulcerations without much tumefaction; while, in the under jaw, sarcomatous and osteo-sarcomatous tumours are more liable to occur, and ultimately prove fatal by the supervention of carcinoma.

"Such tumours ought always to be regarded as consequences of some other primary affections, the tumefaction taking place at any period of the primary disease; and it is probable that the sooner or later occurrence of the swelling, or the formation of excrescences, depends as much upon the state of the constitution as on the local affection itself.

"In delicate but otherwise not vitiated constitutions, the bones are much less dense in their structure; and the disease more generally proceeds in a chronic state than in those that are strong and robust: the matter perforates the bony structure with more facility, and is discharged sooner, and more conveniently; and the disease is thereby constantly relieving itself when arrived at an acute state, and returns to its chronic form; and thus tumefaction is much retarded."

With this extract we close our short review of the work, commending it to the careful perusal of our readers, not doubting but that they will glean from it many useful facts connected with diseases of the maxillæ, instances of which are constantly coming under the notice of the veterinary surgeon; and the consequences of which so frequently prove extremely difficult to remove, and sometimes even fatal.

## TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION,

### TWELFTH SESSION, 1847-8.

*October* 19, 1847.

THE Members held their first meeting for the session in the Theatre of the College this evening,

The President, Professor SPOONER, in the Chair.

The minutes of the meeting of the Council having been read and confirmed, the President presented to the successful candidates the silver medals and certificates of merit, accompanying each with some apposite and pertinent remarks.

From those members who were not present personally to receive the reward of their industry and talents, letters of acknowledgment were read by the Secretary.

The following officers were elected for the Session :—

*President*—Professor Spooner.

*Vice-Presidents:*

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| Mr. J. Turner. | Mr. C. N. Carter. |
| Mr. T. Turner. | Mr. H. J. Fitter. |
| Mr. J. Wilkinson. | Mr. J. Worthington. |
| Mr. W. Ernes. | Mr. W. B. Lord. |
| Mr. G. Varnell. | Mr. W. Clements. |
| Mr. T. W. Gowing. | Mr. W. R. Hilton. |

*Treasurer*—Professor Simonds.

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

The Secretary having acknowledged his re-election to office, proceeded to read his Report for the past Session, as follows :—

### THE SECRETARY'S REPORT FOR THE ELEVENTH SESSION.

"Zeal and duty are not slow;
But on occasion's forelock watchful wait."

It is but the iteration of a remark before made, that a review of the past may be pleasing or otherwise, but it is always profitable; since the past, it has been truly said, derives fresh interest from narration, while the pleasures of the future are enhanced by hope.

The return of the commencement of another session brings with

it the performance of a duty which is entered upon with strangely mingled feelings. Much there is to record that the mind reverts to with gratification from a kindred response it meets with in the breast, and the nobler sentiments it awakens; but some little cause also exists for regret. How these feelings are balanced the sequel will best shew.

Having harmoniously existed as a society for now several years, it would be strange indeed could we not enumerate a *few* friends; and yet we are sometimes inclined to believe they are not few, but many, for the retrospect points to the fact that most of those with whom we commenced our career are with us still. At times we are cheered by the support they afford us, and at others guided by the counsel they give us: in the latter, as much as in the former, they prove the interest they take in our well-being and advancement, and our desire is that we may ever merit their continuance with us. It is likewise true that a few have withdrawn themselves from us. While we may regret their having done so, we cannot now stop to ask the cause. The opening of the past session afforded abundant proof that we had not been quite forgotten by our friends. Several of the earlier meetings were entirely occupied by the consideration of subjects forwarded to us during the vacation, and from which much valuable information was derived.

It is, moreover, extremely gratifying to be enabled to add, that, in a far distant and highly fertile field, from which already much fruit has been obtained, an interest of no ordinary kind is awakened in our favour; and of which our Journal adduces satisfactory evidence, its pages having been enriched by several communications from members of the profession in the East Indies, containing cases of great practical worth, though necessarily tersely given; but "a word to the wise is sufficient." They have laboured, and we, in common with them, have reaped the reward of their labours,—the acquirement of knowledge. But in order more clearly to trace the progress that has been made, the subdivisions heretofore attempted will be again adopted in this Report.

## Essays.

Among these, mention may be made of the prize thesis, "On the Comparative Anatomy of the Tarsus of the Hock of the Horse, Ox, Sheep, Pig, and Dog," by Mr. J. Mannington; a production

that redounds to his credit as a student, and is, it is hoped, only a precursor of that which awaits him in his professional career, since such zeal and industry as he has manifested cannot fail to ensure their reward.

Before this was read, however, an essay on "Crassamenturia," or red-water in cattle, from the pen of Mr. Read, V.S., claimed the attention of the members of the Association, from the novel views taken by him of the etiology of this disease, and the manner in which the organism becomes affected by it. The demonstrating of blood in an altered form existing in the urine of animals when labouring under this affection, was not claimed by him, it having been before contended for and satisfactorily proved; but the pathognomonic explanation, founded on chemical principles, is wholly his own.

The paper that immediately followed, "On Quittor," by Mr. Twist, was not one calculated to awaken much argument, although it emanated from one practically conversant with the disease. The subject of "Corn," introduced by Mr. Reeve, cognate though these affections be, at once aroused the spirit of discussion and elicited an animated debate. This, perhaps, may in part be attributed to the pleasing style in which the paper was written, while, at the same time, it embodied many valuable truths in connexion with so important an organ as the foot. The paper on the "Physiology of Vision," by Mr. Merrick, that followed this, was elaborate; and from the care manifested in the drawing of it up, as well as the neatness of the diagrams with which it was illustrated, its author merits high commendation. The debate that it gave rise to was short, yet not altogether worthless or uninteresting.

Much useful matter was contained in the "Essay on Parturition," by Mr. E. Crundall; in which he likewise gave proof not merely of a retention of a knowledge of the principles inculcated in the school by the teacher in this division of science, but also of their practical application. It was succeeded by papers on the diseases that generally supervene on Parturition, by Mr. J. S. Carter and Mr. F. Chamberlain; thus perfecting the subject, by producing an entirety, and, at the same time, adding much valuable information.

The Essay on the Constitution of the Atmosphere, and the Changes it undergoes during Respiration, by Mr. D. R. Foy, gave rise to a scientific discussion, although not one likely to set the

questions that arise from it at rest: *e.g.*, How is it that that which was once inorganic becomes endowed with vitality? and, What is life? Still, although the solution of these inquiries is, perhaps, for ever "hidden from the ken of man," yet we are not aware that they may not be propounded.

The paper on Exostosis, by Mr. R. Skelton, contained much practical matter, and elicited, during its consideration, many useful facts. The subject of "Roaring," introduced by Mr. Connacter, led to a somewhat desultory argument, there being the absence of that order which it is always so desirable to maintain in a debate. The Essay on Enteritis, by Mr. Nobbs, although it awakened a useful conversation, produced little that was novel or worthy of recording. The meetings were closed by an admirable paper on the "Reproduction of the Tissues," by Mr. G. T. Brown, the speculative and abstruse nature of which elicited much that awakened reflection, and gave proof of thought and study on the part of those who entered into its consideration.

From among these the Council have considered the following to merit the ESPECIAL THANKS of the Association, by the possession of which their authors rank as Honorary Fellows:—

On the Physiology of Vision, by Mr. T. J. Merrick.

On Parturition in the Cow, by Mr. E. Crundall.

On Exostoses in the Horse, by Mr. R. Skelton.

On Parturient Apoplexy, by Mr. J. S. Carter.

On Diseases to which the Cow is obnoxious after Parturition, by Mr. F. Chamberlain.

On the Reproduction of the Tissues, by Mr. G. T. Brown.

And to Mr. T. W. Gowing the THANKS of the Association were also unanimously awarded, for his several contributions to veterinary science, in reports of cases that had occurred in his practice, and the presentation of morbid parts and newly-invented instruments.

The gratification which the Council experienced on being thus called upon to adjudge so many CERTIFICATES of APPROBATION was considerably increased by the Prize Thesis from a practitioner, as well as that from a student, being both so meritorious as to deserve the *larger* silver medals; although it is to be regretted there was no competition for either.

The Essay from the practitioner was by Mr. Samuel Fisher, of

Stamford: subject—"*Diseases of the Bursæ Mucosæ of the Hock and Fetlock Joints of the Horse.*"

That from the student was by Mr. G. T. Brown, of London: subject—"*The Anatomy and Physiology of the Foot of the Ox and Sheep;*" which also received the highest commendations of the Council.

For the best anatomical preparation competitors did enter the list, and the reward of merit—a silver medal—fell to the lot of Mr. B. Cartledge, a pupil of the first year. It is confidently hoped that these rewards will act as incentives to renewed exertions on the part of the students; for the spirit of emulation being once aroused, it cannot fail, when rightly directed, to be followed by benefiting, in its best sense, the profession as a body.

The following are the subjects chosen by the Council for the coming session:—

Prize Essay for Practitioners. "Parturition, Natural and Difficult, in the Mare. The Means of ascertaining Pregnancy in in all its Stages, the Period of Gestation, and Signs of approaching Delivery."

Prize Essay for Students. "The Anatomy of the Tongue, Larynx, and Pharynx, of the Ox."

Anatomical Prize Preparation. "The Hind Leg of the Horse, shewing the Muscles, Bloodvessels, and Nerves."

## PATHOLOGICAL CONTRIBUTIONS.

In this division we have always been rich. To Mr. W. Robinson, V.S., we were indebted, during the vacation, for a ruptured stomach of a horse, with the history of the case in which it occurred. The lesions that had taken place were described, and some elucidatory observations offered, by Mr. Pearson B. Ferguson. About the same time a similar instance occurred in the practice of Mr. Gowing; and, subsequently, Mr. Allan and Mr. Ernes forwarded analogous cases.

The brain of a horse in a highly diseased state retained within its cranial cavity, and also accompanied with the history of the case, was forwarded to us by Mr. Copeman.

It led to the recording of somewhat similar affections of the encephalon, and which, in all probability, would terminate in the like manner, by Mr. Broad and Mr. Cartledge. Allied to it, but occurring in another of our patients, the dog, was the case of hydrocephalus, by Mr. Kent. The instance of concussion of the brain of a horse, related by Mr. South, may also be placed under this head.

The very uncommon specimen of an ulcerated uterus of a bitch was laid before the members by Mr. Yeomans: to him we were likewise subsequently obliged by his placing before the members several lambs affected with ulceration of the joints.

Mr. Wilkinson, V. S. 2d Life Guards, early directed the attention of the Association to a fractured metatarsal bone, the blow which had been the cause of it having been inflicted nineteen days before the slightest indication of a fracture manifested itself. It elicited the recital of several somewhat similar cases from Messrs. Reeve, Simonds, and Woodger. A transversely fractured metacarpal bone was afterwards presented by Mr. Teat; and an extensively fractured os corona by Mr. W. Brown. Mr. Turner also placed before the members a fractured metacarpal bone of a horse, the accident occurring during a hunt; and Mr. Wilkinson related a similar case. To what an extent ossific deposition may go on was strikingly shewn in the anchylosed spine exhibited by Mr. South, who also forwarded the ilium of a horse in a state of complete strangulation in two places, by the entwining around it of a pedunculated fatty tumour. Similar to this was the history of a case, with the tumour, forwarded by Mr. J. Tombs.

The fractured pedal bones of the fore feet of a horse, after the operation of neurotomy had been performed by Mr. H. Taylor, may not be without its useful lesson.

The splendid specimen, and also very unusual one, of melanosis affecting the pleural covering of the lungs, and the pericardial sac of a horse, forwarded by Mr. Beeson, may well have excited some astonishment. To him also we were indebted for two cases of diseased heart in the cow.

The somewhat rare specimen of a ruptured uterus of a cow was sent by Mr. Brand Garner. Nor less uncommon was the laceration of the pleura covering the diaphragm, occurring in a case of hæmoptysis in the horse, which was transmitted by Mr. Wilson.

The salivary calculi presented by Mr. Teat were valuable, since it is but rarely these concretions are met with. An unusual instance of fracture of the os innominatum, within the acetabulum, was communicated by Mr. Pearson B. Ferguson, and a not less rare specimen of ossification of a portion of the spleen was presented by Mr. Edwin Taylor. The bladder of an ox, with the pervious urachus attached to it, was forwarded by Mr. W. Wright.

The intestines of a horse affected with chronic diarrhœa arising from an altered state of the glands of Peyer, and the history of the case as related by Mr. Dunsford, proved instructive; shewing as they did the changes that sometimes occur in visceral diseases, the progress of which is often insidious. The strange and unaccountable deposit of bony matter on the serous tissues within the thorax and abdomen of a cow, a specimen of which was sent by Mr. J. Jekyll, may well awaken inquiry on the part both of the physiologist and pathologist as to the causes in operation which give rise to these abnormal growths.

A ruptured heart of a horse was received from Mr. White; and Mr. Brown laid on the table the lungs and portions of the head of a horse affected with acute glanders, which disease had made extremely rapid progress and produced sad ravages.

The new anæsthetic agent, new at least in its present application, which in the hands of the practitioner of human medicine seems so likely to be the means of mitigating the sufferings of our fellow-creatures when subjected to surgical operations, namely the inhalation of the vapour of ether, was early applied to the lower animals by some members of the Association. Mr. R. Lucas, of Liverpool, was, we believe, the first veterinary surgeon who placed a successful case on record, in which this means proved most effectual in producing insensibility to pain in the dog. He was quickly followed by Mr. W. Plomley, who kindly communicated to the Association an account of the performance of a very painful operation on the same animal, or rather several operations, without the manifestation of any suffering whatever. Mr. R. Barrow and Mr. E. Taylor also forwarded illustrative cases, nor was the College slow in contributing its quota to this important subject. Since which many contributors have appeared, whose communications have found place in The Veterinary Record, and Transactions of the Association: yet are there objections to

be raised against its employment for the horse. These having been dwelt upon elsewhere, will preclude the necessity of any further comment under this head.

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Among the new and improved instruments, those essential aids to the veterinary surgeon in his professional avocation, the "truss-harness," invented by Mr. Gowing, for preventing the return of the uterus, &c. after parturition in cows, claims the first place. To him we are likewise indebted for an ingenious pair of forceps for passing metallic sutures.

Mr. W. G. Robinson gave proof of his acquaintance with the principles of mechanics by a new form of "calculus-crusher," the action of which was novel, while the calculated force it possesses renders it most effective.

Mr. J. Thacker presented an improved form of muzzle for the dog, and Mr. Varnell suggested an important alteration in the wooden clams used for castration.

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Again are we called on to record the loss of those with whom we were once associated. It is certainly no pleasing duty, yet it may teach a profitable and a lasting lesson; for on us, too, the change must shortly pass; and who can tell us what it is to die? One in particular, since we last met, has left this sublunary scene with all its sorrows and its cares. To him the Association at its commencement owed much. He became its earliest supporter and advocate, and by his literary talents placed it high in the estimation of the professional public. The writer of this Report was entrusted by him with the arrangement of the greater part of the later "Proceedings of the Association" when they were published in junction with "The Veterinarian;" from which he derived that information which, to him, has subsequently proved of no little worth. Oft, too, has the friendly advice been given and the depressing doubt dispelled.

From out the list of those departed we could select the old, the young, and the middle aged; those who by labouring hard had become veterans in the cause, and those who were just entering on their career of usefulness, flushed with bright hopes of the future.

But, death levels all distinctions. Alike they slumber together in the silent tomb, and there await our coming. How soon this may be we know not, since to some, perhaps, the lines of the poet even now may be applicable :—

> "The soul's dark cottage, battered and decayed,
> Lets in new light through chinks that time has made."

And of all it may be said, without any hesitation, the earthly house of this our tabernacle will be soon dissolved.

> "Change is our portion here,
> Soon fades the summer sky;
> The landscape droops in autumn sear,
> And spring-flowers bloom to die."

Whilst we have thus been enabled with every returning year to present a report indicative of our onward progress, there have not been wanting those who have affected to contemn our efforts, and to stigmatize them as nothing-worth; yet do we humbly conceive that, among the means instituted for the acquirement of principles connected with our scientific art, the Veterinary Medical Association presents advantages that may be compared with the noblest and the best. Instructions by lectures, and recorded experience in books, have doubtlessly their peculiar usefulness: still knowledge would often lie dormant, and be of little use either to the individual possessing it or to the community at large, if not called forth by the interchange of ideas in debate. Then, like seed scattered on the fertile soil, it "takes root downward, and, springing upward," brings forth fruit in rich abundance. Well has it been remarked by Dr. Barlow* "that, in the conversational intercourse of a number of persons engaged in similar investigations, questions are often asked of the narrator of any observation which recal to his remembrance circumstances which he would otherwise have forgotten; and thus it happens not only that a greater degree of accuracy is obtained for any particular observation, but the power of observing in the individual is immensely increased. Whilst, then, recorded experience is the main engine by which the knowledge of any art or

* On the Application of Inductive Philosophy to Medicine, in the Medical Gazette.

science resting chiefly upon experience is rendered traditive, it is in a great measure by oral communications (opportunities for which are furnished by associations like this society) that it is rendered cumulative; and it must be both cumulative and traditive in order that it may be progressive."

Still, although thus neglected and contemned, we have persevered in our endeavours, and will continue to do so, believing that the "boy is oft father to the man," while the elasticity of the body has hitherto rendered all these extern efforts abortive: and we do exult in having no feelings in common with those who aim to depreciate an Institution so eminently calculated to be productive of good to the junior members of our common profession as THE VETERINARY MEDICAL ASSOCIATION.

W. J. T. MORTON.

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# PRIZE THESIS.

## ON THE PATHOLOGY AND TREATMENT OF THE BURSÆ MUCOSÆ OF THE HOCK AND PASTERN JOINTS OF THE HORSE.

*By Mr.* SAMUEL FISHER, *M.R.C.V.S.*

*To the Council of the Veterinary Medical Association.*

Gentlemen,—IF I understand you aright, the object aimed at, in offering a prize-medal to practitioners, is the attainment and diffusion of that species of information which is based upon experience rather than the speculations of the theorist. The Thesis here submitted to your consideration is simply a digest of my own observations during some years of country practice. It may be, and no doubt is, deficient in many of the graces of style, for to such I make no pretensions; and having been composed at intervals, amid the hurry of professional avocations, very likely it wants the finish which a more experienced writer would have given to it. As it is, however, it is only original, I have

pirated from no one, but have been satisfied with writing down my own observations and sentiments in my own language. In the hope that I have not written in vain,

I am,

Gentlemen,

Your obedient servant,

THE AUTHOR.

"INDOCTE DISCANT, ET AMENT MEMINISSE PERITIS."

## PRELIMINARY OBSERVATIONS.

THE subject of this Thesis being simply "The Pathology and Treatment" of bursal diseases, it is not necessary for me to occupy much space with observations upon their anatomy and physiology; but, by calling attention to the structure and functions of these organs in the first place, I shall render more intelligible the observations I may have to make, and the theories I may advance hereafter. I will start, then, with the inquiry—"WHAT ARE BURSÆ MUCOSÆ?

In the neighbourhood of all joints which possess a considerable angle, all, in fact, that have a free hinge-like action, and especially of those whose motions are dependent more directly upon the tendinous continuations of muscles than of the muscles themselves, it must be clear that these tendons, moving freely over such dense substances as bones, ligaments, and contiguous tendons, will require some provision similar to that for the lubrication of joints themselves; something to ward off the unpleasant effects of pressure and friction; and accordingly it will be found that, wherever such an arrangement has rendered it necessary there, on portions of tendon will be found distinct joints. These are encysted synovial membranes, having the strongest relation in all respects to those we call joint capsules. In structure and in function they are similar, and pathologically they are, in degree, equally important. These, then, are the structures to which has been given the name of *bursæ mucosæ*, or mucous capsules. This is, in some respects, a misnomer, since they do not, as the term seems to imply, bear the least resemblance to any of the *mucous* membranes of the body, being with

more propriety ranked under the head of those structures called *serous*.

THE STRUCTURE OF BURSÆ MUCOSÆ is by no means complex. They consist externally of a coat of cellular membrane exceedingly dense at its connexion with the inner tunic, but becoming looser as it approaches the surrounding cellular structure, until the two become identified. This outer or investing membrane is attached firmly to the edges of the tendon, and ligament, or bone, or other tendon, as may happen, and with those membranes it seems to become incorporated; and thus, although affording a complete protection to the delicate secretory surface, it must be considered as forming an interrupted and not a perfect tunic. Internally the *bursa* is a complete circumscribed sac, formed of an exceedingly dense white glistening membrane, whose function it is to secrete the *synovia*, or joint oil. The uses of this fluid are apparent. The simplest mechanic can appreciate it. It lubricates all dense surfaces which have considerable motion; and thus in some measure, while it facilitates this motion, lessens the wear and tear of a portion of the most delicate mechanism in existence,—that of the animal frame.

From what has already been stated, it will be readily observed that mucous capsules are most numerous in the regions of the *hock* and *fetlock joints* of that animal which comes most frequently under the consideration of the veterinary surgeon. Their positions are various, but they are found most abundant near the extremities of tendons, and particularly a little before these become attached to the bones. Of course, they vary in size, according to the importance of their situations, and are more large and abundant on the anterior than on the posterior surface of the hock; whilst the reverse obtains with respect to the fetlock joint.

It will not be considered necessary for me to particularize individual bursæ until I come to speak of their pathology. The general view which I have taken of their situation and structure will, I hope, be considered sufficient.

The importance of the synovial fluid and its connexion with the subject of this essay render it necessary to state that it is composed chiefly of the substance which chemists call *albumen*, and that it bears much resemblance to the white of egg. When secreted it is a limpid yellowish fluid, having a smooth oily

feel, and coagulating somewhat readily on exposure to the atmosphere. The knowledge of its composition has been of much service to the veterinary surgeon, and affords an instance of the *dependance of surgery on chemical science*, since it enables us to coagulate the synovia, where we have an open capsule within the lips of the wound; and thus affords us a powerful aid in one of the most frequent and fatal accidents to which our noble patient is liable.

Having thus briefly reviewed the nature of those organs whose derangements form the subject of my Thesis, I will proceed at once to the first division of our subject.

## Pathology.

The disease to which mucous capsules are most commonly subject, and to which, I apprehend, it is the intention of the Council of the Veterinary Medical Association (in the proposal of this subject) to direct particular attention, is simply distention of the sac from a superabundance of the synovial fluid.

To this affection no scientific name has yet been applied. Veterinary writers have hitherto been satisfied with using the barbarous terms of the farriers of by-gone days; and hence it will be necessary for me to make frequent use of the words *windgall*, *thoroughpin*, and *bog-spavin*. Pathologically, however, I will consider the disease as *bursal dropsy*.

Bursal dropsy, then, manifests itself by the appearance of a round ganglionic swelling in the neighbourhood of a joint, coming on sometimes suddenly, on other occasions gradually, and mostly without either pain or lameness. The tumour is soft and yielding to the feel, and its nature may generally be presumed from its position. It is always distinguished from purulent abscess by its ready mobility, as well as by the previous history of the case, and generally also by the absence of heat and pain. With serous abscess, however, it is more likely to be confounded, although it fluctuates less beneath the finger, and possesses the characteristic of yielding to pressure, and re-appearing mostly on the opposite side of the tendon. I consider the diagnosis important; because, as will be seen presently, I strongly object, under any circumstances, to the opening of a distended bursa. The mistake has been committed within my own observation, and the most dis-

astrous consequences have resulted. The contents of the ganglion being synovial fluid, it is the result of an excessive secretion, the consequence frequently of a greater stimulus given to the organ by inordinate motion of the tendons, and occasionally of an inflamed state of the sacs; but, perhaps, more commonly than is conjectured, by debile vascular action of the parts, which may be most satisfactorily assigned to hereditary predisposition.

I believe it is an admitted fact, that effusion may take place into a serous cavity without previous inflammation of the secreting membrane. Many cases of ascites prove the position; and the sudden appearance of anasarcous swellings without previous disease, or, perhaps, from actual debility, confirms it.

If this, then, be admitted, why should we always look to inflammation or extraordinary exertion as the causes of bursal enlargements? The most natural inquiry will here be—How far are we supported by experience in these opinions—do we find either inflammatory symptoms or hard work *always* the preludes to this disease—or does it not often occur to the young horse which has never had a bit in his mouth? The practical veterinarian will have no hesitation in answering such questions; his experience will call up scores of cases confirmatory of the views here laid down,—that bursal dropsy is a malady often dependent on other causes than increased local circulation. These, I believe to be the relaxation, the debility, the want of vascular energy of the parts; a consequence perhaps of peculiarity of conformation, or an inheritance from either sire or dam. Frequently have I seen colts foaled with thoroughpins and bog-spavins; whilst, on the other hand, I am acquainted with horses that have done fast work for nearly twenty years, on hard roads, and whose legs continue to be as clean of bursal enlargements as ever they were.

It must be borne in mind, however, that I am only seeking to account for this affection in those animals where it cannot be a consequence of work, for they have never done any; nor of inflammation, since none has ever existed. I do not deny that windgalls and thoroughpins are generally indications of work; I merely protest against their being *always* considered so.

Human pathology throws but little light on our present subject. Bursal dropsy is not common in man or woman. Occasionally,

however, it does exist, as, for instance, in the wrists of washer-women, miners' elbows, and housemaids' knees;—facts which sufficiently explain its origin here.

## The Hock.

As the hinder extremities are the organs chiefly concerned in the propulsion of the body, and as the hock is by far the most complex of its joints, it is scarcely to be wondered at that hock diseases are so common. Its anatomical construction is exceedingly beautiful; but as this forms no part of my subject, and more particularly as I am anxious to get at the practical division of my Thesis, I will pass it over in as few words as possible. There are no less than ten bones entering into its composition, with which are connected in some way the tendons of eight muscles,—five extensors and three flexors: it will be seen, therefore, that the synovial sacs must here be large and frequent. Where motion is so extensive, the demand for a lubricating fluid to obviate the consequences of attrition must be considerable, and wonderful indeed has nature supplied the desideratum. Of the most important of these capsules I shall speak presently.

When viewed laterally, the perfect hock should present a considerable angle, and have its situation not too far from the ground. It should also be big, flat, and bony; and as an indispensable quality, the bone forming its point, the os calcis, should be large, to give room for the attachment and passage of tendons, and also mechanically to add to the power of leverage. Examined from behind, the hocks should be perfectly straight, a moderate distance apart, and the metatarsals, as nearly as possible, parallel with each other. Such is the conformation that will be found strongest and least liable to disease, whilst any deviations from it cannot fail to impair, in some measure, the power or functions of the joint. Where the joint is small, there is neither sufficient surface for tendinous attachment nor to obviate concussion; and horses that are "cow-hocked," that is, having their hocks bent in towards each other, although often speedy in some paces, are of necessity weak, and will invariably be found subject to thoroughpins and spavins.

THOROUGHPIN.—When bursal dropsy exists at the posterior and superior part of the hock, it is distinguished amongst horsemen by the barbarous and unmeaning term of *thoroughpin*. All attempts to trace out the origin of these stupid phrases are idle, and therefore I shall content myself with making use of them, when necessary, without further comment. Thoroughpin, then, is not always existent in precisely the same situation; it is sometimes an enlargement of the capsule between the tendons of the gastrocnemii, and, at other times, of one between these and the flexor perforans; but I do not agree with those writers who consider it, at any time, a distention of the capsular ligament of the joint itself. Although thoroughpins sometimes attain a great size, they seldom give rise to lameness, and, therefore, when not strongly developed, are perhaps but slightly objectionable.

BOG-SPAVIN.—This affection, although generally ranked under the head of bursal enlargements, is one whose pathology is still a matter of dispute; and I am free to confess that, although I have paid some little attention to the subject myself, I am not yet fully satisfied whether it is just to consider it *as simply bursal disease*, or otherwise as a *distention of the capsular ligament of the joint itself*. I am certainly inclined to yield to the latter opinion. The matter, however, is one which certainly ought to be set at rest; and future examinations, when opportunity serves, will, I think, enable me to do so. It must be taken into consideration, when inquiring into the nature of bog-spavin, that it exists at a part where there seems to be little else besides skin and capsular ligament, and also that the articulating surface of the *astragalus* being much more extensive than that of the *tibia*, this ligament must of necessity be highly elastic; and hence it is scarcely to be wondered at if its fibres do occasionally give way under the extraordinary action to which it has been subjected. More than this, experience teaches us that bog-spavin is a more obstinate disease than either thoroughpins or windgalls; that it much more frequently produces lameness; and that, when it exists to a very great extent, it is quite incurable, and the sufferer useless, since the least exertion will be sufficient to incapacitate him from the slightest work for several days, or perhaps even weeks. I have known such horses within the limits of my practice, chiefly of the cart breed, where the lesion was produced by pulling heavy loads up hilly fields or roads.

I think it but just to state, that Mr. Spooner (of Southampton) has taken a somewhat similar view of the nature of this enlargement; but, as I have not his work at present in my possession, I cannot say to what extent our opinions coincide.

Capped Hock.—Occasionally, though very rarely, capped hock may be found to be a distention of the capsule that surrounds the passage of the tendons of the *gastrocnemius internus* over the point of the hock. Generally, however, the history of a capped hock is sufficient to teach us that it has nothing to do with bursal distention. It is the result of a blow or bruise commonly obtained from kicking against the stall or walls of a box, and is at first a considerable swelling, arising clearly from serous infiltration under the skin. If this swelling do not subside speedily under antiphlogistic treatment, it will be found more difficult of removal even than a windgall or thoroughpin; and the remedies usually had recourse to in these cases will be without any effect on the capped hock. Of this, however, I shall speak presently.

Besides those already spoken of, bursal enlargements will frequently be found in other parts of the hock, although they are not distinguished by any specific term. Two or three times I have met with a considerable distention of the capsule that forms the passage of the tendon of the *flexor accessorius* over the inner malleolus, in all of which there was considerable lameness. Sometimes also these ganglia will be observed on the outer side of the joint; but I have never found any bad consequences from such appearances.

What the old writers on farriery called *blood spavin*, and for which they used to recommend the operation of taking up the vein in front of the hock, is altogether a disease of the imagination in farriers themselves, and therefore I will pass it over without further comment.

## The Fetlock.

As the fetlock joints receive the whole superincumbent weight of the body, they are scarcely inferior in importance even to the hocks themselves. Their motion, however, is less extensive, and their structure less complicated, as there are fewer bones and ligaments entering into their composition. Connected with this joint are those beautiful structures, the sesamoid bones and the sus-

pensory ligament, by the aid of which the horse is able to support himself so long a time in a standing position without any expenditure of muscular power. The tendons of four muscles pass over the fetlock, two of which extend, whilst the others flex the leg. As in the hock, the mucous capsules are very abundant.

A good pastern should neither be too short nor too upright: one moderately long and oblique is always to be preferred where fast work is required, although we should be careful, in selecting a hackney, not to have too much obliquity of pastern; for, however much such conformation may tend to produce ease and elasticity of motion, it must be remembered that these are only obtained at the expense of strength of the tendinous and ligamentous connexions of the joint. We therefore find that, wherever we have a deviation from the medium here spoken of, the diseases under consideration will with most certainty be found to follow an exciting cause.

WINDGALLS.—Whenever bursal distentions exist in the vicinity of the fetlocks, they are called windgalls. These are, in every respect, of the same nature as the thoroughpins of the hock. They are found in all parts of the fetlock, sometimes immediately on the front and on the sides, when they are apt to produce lameness; but most frequently at the back, on each side of the sinews, when they are less serious, and where they are formed by engorgements of the mucous capsules between the tendons of the *flexor perforans* and *flexor perforatus* muscles. So common, indeed, are windgalls in this situation, that it is scarcely possible to find a horse that has done any amount of work in which they are not present to a greater or lesser extent.

The veterinary surgeon occasionally meets with an enlarged mucous capsule, nearly as large as a pullet's egg, a little higher up on the sinews than windgalls are generally found, and which often produces severe lameness. I shall have more to say on this malady when I come to the subject of treatment. We will now take a general view of the various causes which tend to excite bursal dropsy.

## CAUSES.

That an extraordinary call upon the functions of the delicate secretory surface of mucous capsules, such as must result from extreme exertion, should be most likely to produce their derange-

ment, will be readily admitted; and, accordingly, we find that there are few horses, of a particular conformation, able to perform any amount of road work without displaying gorged sinews. In the roadster, therefore, in the great majority of cases, we will be correct in attributing his windgalls to hard and fast work, and in looking upon him as a stale horse. Again, the facts that, in this sort of horse, windgalls are most abundant, whilst it is to the racer, the hunter, and the draught horse, we are to look for thoroughpins and bog-spavins, sufficiently prove that an excessive demand for the lubricating fluid consequent upon extraordinary action of the joints is by far the most common cause of the disease. This is the more likely to be the result when an animal is taken to work whilst too young. The bursal tunics yield more readily to the pressure of the fluid, because, like other structures, they have not received that firmness and consolidation which only age can give. Care should, therefore, always be taken when it is particularly desirable to steer clear of these enlargements, as, in the case of valuable young horses, to avoid a great degree of exertion, either on the road or against a hill. A gallop on the former may produce his first windgall, and on the latter he may receive a bog-spavin or a thoroughpin.

Concussion must also be here considered one of the chief causes of disease. Some proof of the correctness of this assertion exists in the fact that exercise on hard unyielding surfaces will most certainly produce it. Again, we invariably find that the horses most subject to it are those whose conformation is least adapted to obviate the jar of speedy action—animals with straight joints and short pasterns. Conjointly with hard work, there can be little doubt but that we have here the most fertile producer of the bursal engorgements, about the fetlock at least, whatever may be the views entertained of the origin of similar affections in the region of the hock.

Plethora is also not unfrequently an exciting cause of bursal dropsy, and particularly of the hock. I have frequently known young horses in high condition, and denied a proper amount of exercise, suddenly become exceedingly full in the seat of thoroughpin or bog-spavin, or perhaps both, and when such a circumstance could be attributed only to the general fulness of the vascular system. More than this, horses of a plethoric habit are pro-

verbially subject to give way about the joints. "His legs cannot carry his carcass," is a common observation of the groom.

SPRAINS AND OTHER INJURIES of the joints often also produce the disease under consideration, and such I look upon as cases where distention of the sac is the consequence of an actual inflammatory state of the secreting membrane. When such a condition exists, it is most commonly, indeed, the result of violence. As a consequence of open joint (when we are fortunate enough to succeed in curing this terrific accident), especially in the hock, and also after severe kicks, we frequently meet with a species of acute bursal dropsy that requires, as will be seen hereafter, a plan of treatment very different to the ordinary windgall. Occasionally, however, I admit we meet with acute inflammation of mucous capsules existing as an idiopathic affection, although such cases are somewhat rare.

The observant practitioner will still find that there are many cases of bursal enlargement which cannot be referred to any of the causes already enumerated, either separately or conjointly. His patient never having done hard work nor road work, shall be in proper condition, and yet, without any accidental occurrence to induce the malady, he shall throw out most obstinate windgalls, or thoroughpins, or perhaps both; for where this disposition exists, it will be likely to manifest itself in several parts of the body. These are cases which, under the head of pathology, I have sought to account for by referring them to *hereditary predisposition* or *congenital debility* of the organs themselves; and they will be found practically by far the most difficult to cure. The breeder of horses ought, therefore, to be careful in the selection both of mare and stallion. There are few diseases, a tendency to which may not be propagated thus; and *none with greater certainty than those at present under consideration.*

If any one of the causes above enumerated be of itself sufficient to excite bursal dropsy, it may be readily supposed that their co-operation will, with greater certainty, induce such an effect. Accordingly we find that horses with a plethoric habit stand less work than those in condition. Where there is an hereditary tendency to the disease, even moderate exertion will be found to aggravate it; whilst horses with the peculiar conformations of hock or fetlock already described will be the first to shew the ill-effects of concussion and inordinate action. Indeed, it will be

found, in most cases, that where we are called upon to treat these affections, they have arisen rather from a combination of events than from any one particular exciting cause.

## PROGRESS AND TERMINATION.

"Once a spavin always a spavin," was the remark, I believe, of the late Professor Coleman; and some have affirmed that the same may be observed with almost equal propriety of windgalls and thoroughpins. I think it will be seen, however, as we proceed, that such is not the real state of the case.

So common are bursal distentions, and so seldom is it that we find horses to have worked a year or two without displaying them, although no lameness may result, that some have questioned the propriety even of considering them as *diseases* at all in these cases. Still it must be admitted that where the exciting causes are maintained, and their progress uninterrupted by treatment of any kind, they are eventually found to produce in all cases at least a stiffness of the parts, and, in many, incurable lameness; so that we are perfectly justified in always looking upon them as deviations from healthy normal condition, and viewing them, at all events, with a suspicious eye. In our professional capacity, in examinations as regards soundness, we must neither pass them over lightly nor overestimate their importance. Where they are small, and without heat or tenderness, I take no notice of them; but when they exist to any extent, I suffer the animal to rest until he is perfectly cool, and then have him, if possible, brought out and trotted suddenly over a hard-paved surface. Here he will mostly be found to exhibit some degree of imperfection in his gait. Mr. Percivall is, therefore, in error when he asserts that "*hypertrophic bursæ mucosæ*, originating in congestion and augmented secretion induced by the frequent or undue exertion of parts, are not, by any one of the present day, considered unsoundness—simply *indications of work*." The assertion is too wide.

Bursal diseases, and especially windgalls, may not, at any time, interfere much with the ordinary usefulness of an animal; and this may, perhaps, be considered the general rule *where they are not large*. The exceptions are, when they gradually increase in numbers and size, until, materially interfering with the functions of those parts where they are situated, the veterinary surgeon is at

last called upon to remedy the disease. Such is the case frequently when windgalls appear on the sides or in the front of the fetlock; more frequently still in thoroughpins; and most commonly of all in cases of bog-spavin.

Occasionally, bursal dropsy will terminate in resolution—by absorption of the excess of fluid and the gradual return of the sac to its normal condition; sometimes, either naturally or owing to treatment, in a degree of inflammation by which the synovial fluid becomes coagulated or otherwise altered in character to inspissated pus. Another termination is into obliteration of the bursæ, by adhesion of the sides of the sac. We will now consider the means by which these results are most safely and readily effected.

## TREATMENT.

The treatment of enlarged bursæ will, of course, vary somewhat, not only with the stage, but also with the situation of the disease. Where they are recent, and when they exist about the fetlocks, the most simple as also the most efficacious plan consists in the frequent use of bandages. The patient should never be without them in the stable, and the elastic bandage should be as often made use of as possible when at work or exercise. Should any heat exist about the parts, the stable bandage will be best made of chamois leather, which may be dipped in cold water or weak Goulard water, previous to its application, and frequently wetted whilst the heat continues. Even where no heat is present, the use of some medicament to the bandage is advantageous; and in such cases I make use of the following lotion:—

℞. Ammon. hydrochlor. ..... ʒj
Aq. font. et acet. āā. ..... Oss

M. Fiat lotio.

The gentle stimulus which is thus given to the parts will be found to act most powerfully in exciting absorption and promoting the resolution of the disease; and I am of opinion that there are few cases of windgalls which, if thus treated in the earliest stages of the complaint, might not be removed. In horses of inferior value the disease is not considered deserving of attention; and in others it has often been allowed to become settled before veterinary aid is solicited. In some districts, however, where valuable horses

are bred entirely with a view to sale, and where their owners are anxious to avoid the slightest blemishes, we are occasionally called upon, even thus early. I have myself removed many windgalls by this system of treatment.

In the hock we labour under the disadvantage of not being able to apply a bandage with any degree of satisfaction. Many plans have been suggested for this purpose, and as many I have tried, but found all alike inefficacious. We are, therefore, deprived of one of the most powerful remedial agents when we come to the treatment of bog-spavins and thoroughpins. If, however, the bandage can have little effect in bracing or supporting the parts, it may, at least, serve as a medium for keeping medicaments in contact with them; and hence it is advisable always to apply one. Should the distention appear without much inflammation, I content myself with using the sal-ammoniac lotion, applying it frequently by wetting the bandage, or otherwise by gentle friction with a sponge or piece of linen rag; but if inflammation be present, the acute stage is best combatted by venesection from the thigh, and frequent wettings with the weak Goulard water. The stimulating lotion will always be found most efficacious, and, therefore, as soon as the state of the disease will admit of its use, I would advise its application. I think it of importance that these means here advised should always have a fair trial; and I am of opinion that the indiscriminate use of the blister is often productive of much harm, although I admit that, when it is properly used, it is one of our most powerful remedies.

Should the means already spoken of have been tried without perfect success, or the affection have existed some time, there being no tenderness or other inflammatory symptoms present, we have now arrived at the proper stage for having recourse to a more stimulating treatment; and the common plan is to blister and turn out. But to command success from even this system, much as it has been recommended, we ought either to follow up or precede the action of the blister with the use of iodine or mercury, or, what is still better, a combination of the two. The ointment of the biniodide of mercury is, perhaps, the best application when made of the strength of half a drachm to the ounce. At this strength it produces slight vesication, but, made stronger, there is some danger of its blemishing. The fear of

this has led me lately, more especially when my patient is of great value, to use a compound iodine liniment, made as follows :—

℞. Lin. saponis moll.* ..... ʒvj
Potass. iodid. ..... ʒij
M. Fiat Linimentum.

I order the parts affected to be well rubbed with this preparation twice a-day for, at least, a fortnight previous to the application of a blister, and have my patient kept in the house a week afterwards, when, if necessary, he may be turned loose; but I always take care that, if possible, his pasture shall be on a light, sandy, or elastic soil, as, should the ground be dry and hard, he can scarcely be expected to benefit much from "his run at grass." This process may be repeated if necessary *ad libitum*, as it will be generally productive of great benefit; sometimes, indeed, the enlargements will be by such means entirely removed.

Often, however, with the return to hard work will be found the re-appearance of bursal engorgement; for where the disposition to this disease once exists it is readily reproduced, and a second attack will be found more obstinate.

Failing all this, what are the other remedial agents that remain to be employed? Three others have been spoken of, and we will consider them separately. They are, *firing*, *setoning*, and *puncturing the bursa*.

Of these, I believe *firing* to be by far the most efficacious; indeed, notwithstanding the prejudice against this operation in certain high quarters, I must still hold that wonders are more frequently worked with the firing-iron than any other instrument, and I fancy I have performed a few miracles with it in my own time. Of the theory of its action, I shall only say that I believe all that has been said in favour of it,—a counter-irritant, a depletent, and, mechanically, a brace to the parts, with perhaps one

* The *linimentum saponis mollis* will be found an excellent substitute for the lin. saponis comp. (L. P.), and is prepared at about one-sixth of the expense—always a consideration with the veterinary surgeon. I prepare it as follows:—℞. Sapo. moll. ʒv, ol. origani ʒiv, liq. ammon. ʒiv, aquæ moll. Oij. Mix the first two ingredients together in a mortar, then gradually add the third, and, lastly, the fourth. Let it stand for seven or eight days, and then strain off.

*specific action* into the bargain. It is a blister, a seton, and a bandage, all in one; only ten times better than the three put together. Do not, however, let it be supposed that I am an advocate for the frequent and indiscriminate use which some practitioners make of the firing-iron. I allow its seeming cruelty, and I admit its abuses; but I cannot look upon these things as any argument against its occasional employment. *Light firing* I consider a barbarity that ought to be punished with the pillory. It is no better than a blister, and not half so good as a seton. "*When you do fire*, FIRE!" is, I think, the observation of Professor Spooner, and it is not more laconic than just. Although I believe (experience has convinced me) that Mr. Turner's views of the effective powers of the deep cautery lesions are correct, I am not now about to advocate firing to such an extent. In all cases of bursal distentions, where other remedies have failed, when this operation is had recourse to, I fire as deeply as possible without dividing the skin, taking care at the same time that the lines shall not be so near each other as to cause the intermediate skin to slough away; and always, when practicable, fire *round the leg**. By doing this I conceive that several advantages are gained: in the first place, we have less blemish from deep lines, insomuch as the hair is found to cover them more perfectly; there is also a much greater appearance of neatness about the limb thus fired; and, lastly, I am satisfied that such firing is most effectual. I know I shall be met with the old argument in favour of perpendicular lines (which, by the way, is quite out of fashion), but this I consider only specious. The greater effectiveness of horizontal firing consists not only in the fact, which is indisputable, that our lesions may be carried to a greater depth in this than in any other system, but also in the circumstance that bursal enlargements, being mostly of an ovoid shape, *more lines may thus be made directly over the seat of disease.* I may here remark, that in all diseases where this operation is called for (ringbone excepted) I have adopted the system of level firing with the greatest success, and I much wonder that it is not generally followed.

* It is but just to state that this method I first borrowed from Mr. Fryer, V.S., Fleetham, Yorkshire, who has long adopted this plan in preference to any other, and the experience I have had proves the value of his round firing over any other; for the which I beg thus publicly to thank him.

Immediately after the firing has been performed I apply a blister, but care must be taken, when the lesions are deep, that this agent be not too strong. Equal parts of the common blistering liniment and olive oil, put on with a feather, will be sufficient to produce vesication, and at the same time hasten the sloughing from the lines. When the parts have become clean, and the healing process is fully established, I apply, in very severe cases, a charge, which I keep in my surgery, prepared as follows:—

R. Picis nig. vel Burgund. ..... ℔jss
Ceræ flav. ..... ℔jss
Ung. hyd. fort. ..... ʒvj
Iodini ..... ʒvj

Melt the wax and pitch together, and as the mixture cools blend it well with the iodine and mercurial ointment, which should be previously rubbed up together. This charge having been applied, and the animal allowed to rest until it drops off, if he comes up no better for the operation the case is, indeed, a hopeless one.

THE SETON is, with many practitioners, a very favourite remedial agent in these affections; and it is, perhaps, only inferior in efficacy to the firing-iron. Unfortunately, however, it will not admit of such general application; but wherever it can be readily applied, as in the case of solitary enlargements of particular bursæ, the insertion of a seton on each side between the skin and the sac itself will often be found to induce such a degree of inflammatory action in the capsule as only terminates in absorption of the fluid and adhesion of its sides. In thoroughpins I have used it with great success, and also in bog-spavin, when there has been an objection to the use of the iron.

I commonly allow the tapes to remain in about three weeks, dressing them daily with common digestive ointment; but if this fail to produce the necessary irritation, the *unguentum sabinæ* of the London Pharmacopœia may be substituted. As a preliminary operation to firing, where the case is desperate, the seton is vastly preferable to the blister. I will give an illustration:—

*Case* 1.—My patient was a six-years-old chestnut mare, half bred, and had been hard ridden for the past two years on hilly ground. She was admitted extremely lame from a large bog-spavin and considerable thoroughpins, for which she had been blistered repeatedly

without the least benefit. The hock was kept wet with the *lotio plumbi* for about two days, when she was cast, and a seton introduced immediately over the enlargement, and care taken that the skin should be separated from the sac over its entire surface. At the expiration of three weeks, when the seton was removed, although much of the enlargement and lameness still remained, the tumour had lost its peculiar fluctuating feel, and become hard and tense. Firing was performed in the manner I have just described, and the subsequent treatment already recommended was had recourse to, when, at the expiration of ten weeks, the mare was taken up with her hock as clean and sound as possible; and she has done good work ever since (more than a twelvemonth) without the least re-appearance of the disease.

This is by no means a solitary instance of the extraordinary effects of the combined operations of the seton and firing-iron. I have met with many such. Indeed, I am of opinion that, where bog-spavin has become so large as to produce severe lameness, no other treatment is of any avail.

One or two more remarks still remain to be made on the efficacy of firing before I take leave of the subject.

When we meet with disease of a single bursa, as occasionally we do, especially in the back sinews of old horses, as large perhaps as an egg, and producing excessive lameness, we must be particularly careful that the inflammatory symptoms are subdued before recourse is had to other treatment. But once we get rid of these, let no time be lost in going actively to work. My own plan is to fire without delay. If the tumour has become hard, as it often does, nothing else will be of any use; and if it should still be soft and synovial, nothing is so likely to remove it. I have had one patient by such treatment sound and at his work from disease of this character; whilst another in the same stable, attacked about the same time, but treated with *iodine* stimulants and blisters, was as lame at the end of two months as ever he had been.

Again, where bursal distentions seem to be constitutional, that is, where they appear without work or any other exciting cause, I believe it is only time and labour lost to attempt their removal by any other means than the firing-iron. They want something to give a permanent support to the parts, or, as the late Mr. John Field used to remark, something "to act as a laced stocking."

This position will, perhaps, be best illustrated by the relation of a case in point.

*Case* 2.—A well bred and exceedingly handsome chestnut horse, rising five years old, recently taken up for the purpose of being broken in, was observed to have thoroughpins forming in both hocks. I was consulted, and, finding no inflammatory symptoms present, prescribed the use of the biniodide of mercury. A six weeks' trial having been given to this agent, and the disease having increased rather than diminished, blistering was had recourse to several times, but without effect. In addition to the thoroughpins, bog-spavins were now making their appearance, and the hocks were altogether too large, what grooms term "gummy." Firing was, of course, indicated, and performed accordingly; and, three months afterwards, the horse was broken in, his hocks standing sound and clean. He was afterwards sold as a hunter, and I cannot continue his history; but one little fact remains to be mentioned. *He was the third horse out of the same mare that had been fired for bursal disease of the hock before becoming five years old.*

It now only remains for me to consider the subject of PUNCTURING THE BURSÆ as a remedial means: it is the plan recommended by many of the old writers on farriery, and one which I have even heard advocated by scientific men. From what I myself have experienced on the subject, however, I am inclined to think that those who advocate it have never given it a fair trial. One successful case, even if one such has ever occurred, which I much doubt, is no proof of its advantages; and those authors who confess to having never proved the matter, yet still speak of it as "well worth a trial," are much to blame. My advice to the young practitioner, upon whose success at first so much of his future prosperity is dependent, is never, under any circumstances, to venture upon opening a distended bursa. A note or two from my case book will satisfy any one on this subject.

*Case* 3.—A grey cart mare had been under my care for some time with diseased *os pedis* of the near hind foot, when the off hock became affected to an extraordinary degree with immense bursal distention. The case being already a hopeless one, as the disease of the coffin-bone was looked upon as incurable, I requested her owner to allow me to try the experiment of puncturing the en-

larged bursæ, to which he kindly consented. The operation was performed with a very small trochar, and the skin was drawn aside with much care, so that when the instrument was withdrawn the integument would resume its natural position, and thus mechanically plug up the opening. I injected a solution of the nitrate of potass, which seemed to produce some amount of constitutional disturbance. This gradually increased, and reached such a degree of exacerbation about the second day, that I was apprehensive for the life of my patient. The use of sedatives, both externally and internally, was without effect; but, as the bursæ again filled towards the sixth day, the pain seemed to subside. The operation was repeated, but with the same effect, when humanity dictated that she be put out of pain, and the mare was accordingly destroyed about four days after the second application of the trochar.

This case, however appalling it may seem to some, did not deter me from another trial. The mare was unable to give any rest to the limb operated upon—the disease was in the hock, and might possibly communicate with the joint itself; and the patient was not in a state of body to warrant us in expecting beneficial results from a serious operation. The plan must be further tested. Let us look then to :—

*Case* 4.—A delicately framed bay gelding that had done much road work was admitted with lameness arising from enormous windgalls. This was certainly a good case for again testing the virtues of the trochar, and accordingly the horse was properly prepared for the operation, which was performed in exactly the same manner as in Case 3. Both legs were subjected to this process, and a solution of *ferri iodidum* (as recommended by some medical writers for ganglia in the wrists, &c.) was injected into each wound. The symptomatic fever here induced was so great that the animal died within a week, after an incredible amount of suffering, and in spite of every thing that could be done to allay it.

In another case of windgalls, I made use of no injection whatever; yet still there was great fever and pain until the bursæ again filled. This case was, however, more satisfactory in some respects; for, after three operations, the bursæ became obliterated, but the functions of the joint were never perfectly restored, and the animal was little or no better for the treatment at last. Of course, I never again ventured upon the opening of either thorough-

pin or windgall, and with this my experience of the matter ends; but I am quite satisfied that, of all the modes of treatment ever advocated for the cure of disease, that of puncturing distended bursæ is the most unwarrantable.

With this I conclude. The principles of treatment already laid down and so strongly insisted upon comprise all that I consider necessary, and the judgment of the practitioner will, of course, guide him in their application.

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OCTOBER 26, 1847.

The TREASURER, PROFESSOR SIMONDS, occupied the Chair, and acknowledged his re-election to office.

Many new members were elected.

On the table were laid the several presentations and morbid parts received during the recess.

To the Library were presented the Continental Journals in exchange for THE VETERINARY RECORD. Also—

"Trattato di Vaccinazione con Osservazioni sul giavardo e vajuolo pecorino, del Dottoro LUIGI SACCO." By R. Ceely, Esq.

Also, a translation of the above work into the French language, by the same.

"Expériences relatives aux Effets des Inhalations d'Ether Sulphurique," par A. Thiernesse. By the Author.

Two slightly cone-shaped tin vessels, proposed as substitutes for the horns usually employed for giving draughts to horses, were received from Mr. W. G. Taylor, V.S., who, in the note accompanying them, states—

MY DEAR SIR, *Nottingham, May 13th*, 1847.

As every little auxiliary connected with our profession is deserving of notice, I beg to send you a couple of tin vessels, which we find far to surpass the common cow's horn for the giving of draughts, &c. I have no doubt, if you would use one, you will give it the decided preference: we find the nearly strait shape so much more convenient, particularly in carrying one in our pocket for some

distance, as we frequently have to do. For cows we have them made larger. Will you have the kindness to explain them to the Association?

Believe me, your's very truly,

*To Professor Morton.* W. G. TAYLOR.

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*Mr. Varnell* suggested an alteration in the curve of the frog-seton needle, by which it would be caused to enter the skin in the direction of the hair, and be also less likely to wound the arteries of the frog when used. He likewise recommended the passing of the seton from above downwards and outwards, instead of from below upwards.

A form of ether inhaling apparatus for the dog was shewn by Mr. W. Clements.

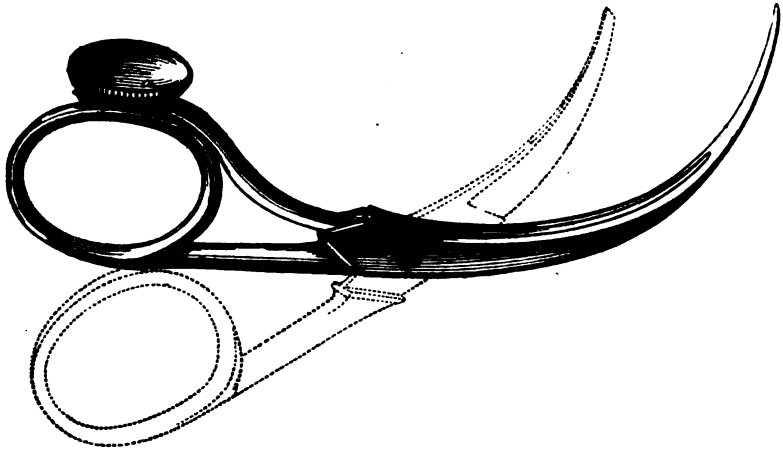
Several highly ingenious new instruments, and improvements in others, were exhibited by Mr. T. W. Gowing. They consisted of,—

1. Knives for paring out the feet of oxen, of a curved form, and allowing of the application of the hammer for removing the morbidly thick and hardened horn.

2. Needles for carrying the flexible suture wire. In the use of these needles Mr. Gowing considered it desirable to insert them deeper, when bringing the edges of a wound in apposition, than is ordinarily done; by which we are likely to have a certain amount of the adhesive inflammation set up, and, consequently, a less quantity of granulatory matter will be required to perfect the healing process, while the cicatrix will also be lessened.

3. "The universal cramp for caustic clams;" so designated by its inventor. The object in view being that of bringing together the ends of the wooden clams, when passed over the constituents of the cord, without the aid of an assistant, while the binding cord is being affixed so as to secure them.

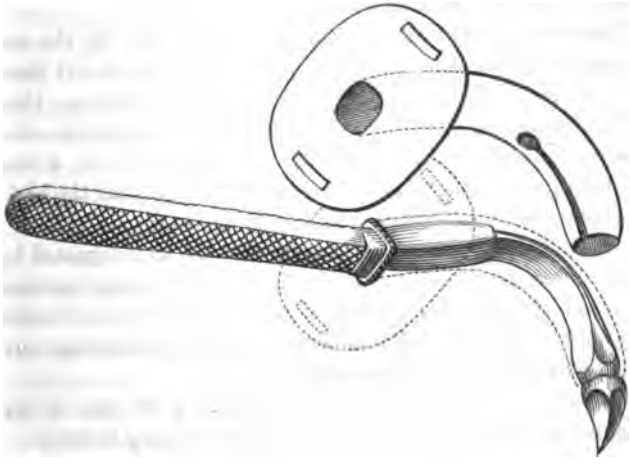
4. A pair of neurotomy scissars, superseding the use of the curved needle and thread, with the scalpel, or cutting bistoury.



EXPLANATION OF THE WOODCUT.

The dotted lines represent the instrument when open, and in the hand of the operator, before being used; the shaded figure shews the scissars closed.

5. New form of tracheotomy tube. Of this the subjoined woodcut will convey an idea—



EXPLANATION OF THE WOODCUT.

The upper figure shews the tube and shield, the trocar, or stilette, being withdrawn. The under figure represents the instrument entire, as to be introduced into the trachea, the tube and shield being in dotted lines.

In the use of this tube, Mr. Gowing stated it was only necessary first to make an incision in the skin, covering that portion of the trachea it was wished to open, with a scalpel. Then with the finger feel where two of the cartilaginous rings unite, and between them make a transverse opening, into which the point of the instrument being inserted, it is to be forced gently but steadily downwards and a little outwards, so as to press forwards the lower tracheal ring, and inwards the upper one; the stilette is then withdrawn, and the canula left in.

The advantage resulting from this form of tube arises principally from the cartilaginous rings not being wounded, by which the throwing out of osseous matter or any subsequent thickening is prevented; the connecting membrane being quickly restored after its withdrawal.

*The President* highly approved of this form of instrument, and also of not dividing the rings of the trachea, as is commonly done in the performance of the operation of tracheotomy.

*Mr. Varnell* had resorted to this tube with success in an aged horse; he therefore recommended its employment, having in nearly all the cases in which he had operated with the ordinary tube found ossification of the cartilages to supervene.

The following case, in which it had been beneficially employed by Mr. Gowing, was related by him:—

## Case of Laryngeal Irritation arising from a Portion of a Ball becoming lodged in the Larynx.

On Friday morning, August 27th, at 4 o'clock, I was requested to see a horse, the property of Mr. Goodman, railway carrier and omnibus proprietor, which was said to be labouring under inflammation of the lungs. The animal, on being brought to my infirmary, presented the following symptoms:—

Pulse quick and small, respiration fearfully hurried, and stertorous; visible mucous membranes rather pale than otherwise, and occasional eructations of gaseous matters took place up the œsophagus.

Inquiring of the horse-keeper if any thing had been administered, he replied a fever ball had been given at 10 o'clock the night before. Thinking from the symptoms, though somewhat ambi-

gnous, that there was some obstruction in the œsophagean canal, I tried if fluids would readily pass into the stomach; on attempting the administration of which the symptoms became increased, and their regurgitation ensued; the patient coughing at times violently, pawing with his fore feet, and shewing other indications of extreme distress. Having properly secured the animal, I determined on introducing the œsophagus tube, in which I succeeded without much difficulty, passing its whole length onwards into the stomach, thus satisfying myself that this canal was perfectly free.

The symptoms still continuing, and even increasing in severity, I was now led to infer that some obstruction existed in the larynx, as the slightest pressure around the laryngeal region was attended with great pain, and the animal manifested unequivocal signs of approaching asphyxia. I at once decided on performing the operation of tracheotomy; after which the urgent symptoms almost immediately subsided; in a few seconds, in fact, the animal appeared almost recovered; the anxious countenance had left him, the breathing had become tranquil, and the pulse soon regained the natural standard. I now ordered him to be led home, and placed in a loose box on restricted diet, allowing, indeed, nothing but white water, and that only as he voluntarily would take it. Having occasion to leave town for the day, I requested a professional friend to see the case in the evening, at which time he deemed it advisable to administer some sedative and febrifuge medicines, as the pulse had again risen considerably.

I saw him on the following morning, and ordered the sedative medicines to be continued. On Monday evening, the pulse having become softer and less in number, the animal was allowed some sloppy bran mash, which he ate with avidity, and drank a pail of chilled water without producing much cough: he was evidently much improved.

The next morning the pulse had again risen, and the cough had become more frequent; but he still continued to eat his mash, and looked cheerful. Ordered some fever medicine, placed my hand over the tube to test the respiration, and left him with it in as before. He was seen by my assistant in the evening, and the report was favourable. I saw him myself the next day at two o'clock: pulse rather quicker and stronger. Again gave sedative medicine,

and a short time after removed the tube without producing any distress. Ordered diet as before.

The next morning the breathing was a little more laboured, the pulse from 50 to 60, and the animal still coughed. Gave sedative agents as before, and applied some blistering liniment to the chest. The next day my patient was feeding better, had lain down during the night, and the cough was not so troublesome. From this time the animal continued to amend, medical treatment was discontinued, and he was soon after put to moderate work.

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The morbid specimens accompanied most of the following cases, of which they were illustrative.

Dear Sir, *Ashbourne, September* 21, 1847.

I have forwarded to your address a box containing two morbid specimens; one a ruptured stomach, the other a diseased larynx. If you think they will be of any interest to the members of the Veterinary Medical Association, they are at your service.

I beg to remain, your obliged servant,

*To Professor Morton.* Thos. M. Leech.

*Case* 1.—Ruptured Stomach.

The subject from which the ruptured stomach was taken was a fine grey colt, rising five years old, the property of a gentleman residing in this neighbourhood, which colt had been turned out to grass for the last two months, and during this time he had very much improved in condition. On the morning I was called to see him, he had been observed by the owner galloping about the fields, and who consequently did not perceive any thing to be amiss with him, except that after he had galloped once or twice round the field, he would stop and attempt to stale, which act he performed two or three times whilst the owner was looking at him; but as the animal immediately commenced grazing again, he therefore left him. But towards the close of the evening the colt was perceived to be labouring under severe pain from some cause or other; frequently lying down, rolling over on his back and getting up again. A messenger was immediately dispatched for me, and upon questioning him, he stated, in addition to the above symptoms, that the

colt sat upon his haunches like a dog, and that he had once or twice attempted to vomit, also that his breath was offensive. I stated my conviction to be that he had ruptured his stomach, and, further, that my services would be of no avail; and that this was the case the sequel will prove.

Upon my examination of the colt immediately on my arrival I found him standing, the breathing very much laboured and painful, the countenance extremely anxious, the pulse small and quick and about 100 in the minute, the membrane of the eye *purple*, that of the nasal cavities *a blueish black;* the mouth clammy, with a copious discharge of saliva; the breath exceedingly fœtid, the whole surface of the body bedewed with cold perspiration, from the nose to the tail, and the legs and ears as cold as death. After a few minutes quietude, he would place himself in the attitude for urinating, and a few tablespoonfuls of urine would be forcibly ejected, accompanied with much straining, the colt making at the same time a plaintive groan. I explored the bladder with the hand, but found it quite empty. The animal would then throw himself down, roll over on his back, and, after rising again, sit upon his haunches like a dog, with his fore legs straight out before him. While in this unnatural attitude he would make frequent attempts to vomit, but without any thing being ejected, except a little fluid which possessed the characters of saliva. These symptoms followed each other, increasing in urgency, until death put a stop to the animal's sufferings. The diagnosis I formed from the above symptoms was, that a rupture of the stomach had taken place, and the case was entirely hopeless. Nevertheless, the medicines usually employed for enteritic diseases were tried, but, as anticipated, without any benefit; death taking place in about nine hours from the time he was first seen to be attacked.

*Post-mortem appearances.*—Upon the skin covering the belly being reflected back, I observed considerable engorgement of the superficial vessels, and the scrotum appeared to me to be fuller than it ought to be in a gelding, which made me examine it more minutely: in it there was a knuckle of the intestines which had protruded through the inguinal canal, constituting hernia. On cutting into the abdominal cavity, a large quantity of a dark-coloured offensive fluid escaped, in which were floating considerable quantities of feculent

matter and clots of blood. The whole of the intestines were highly discoloured, being almost black in places. The omentum was torn to ribbons, and covered with the contents of the stomach. The stomach itself was ruptured to the extent of six inches along its greater curvature, and presented some remarkable appearances: the edges of the rupture were ragged, and the laceration of the outer or peritoneal covering was to a much greater extent than that of the inner coats, which I believe is always more or less the case in ruptures of this viscus. Following up the examination, towards the pyloric orifice I found impacted a circular mass of indigestible matter, consisting of pieces of thorns, varying in length from half an inch to three-eighths, with other extraneous matters, such as the haw and the hip, and even the shells of nuts, which the colt had gathered from the hedges. Immediately posterior to this mass the passage was considerably contracted, forming a kind of stricture; and even behind this stricture was another of these strange masses, formed exactly as the one described, and which occupied the anterior part of the stricture: the situation you will be able to see was at the place where the incision has been made. Nothing particular was noticed further than this, only the excessive redness of the whole of the abdominal viscera, which arose from the inflammatory attack that had destroyed life attendant upon the rupture. The bladder was perfectly empty and very much contracted. The lungs and heart were perfectly healthy.

*Remarks.*—What I could learn of the habits of this horse previous to this illness was, that whenever he had an opportunity he would nibble from the hedges, and pick up all kinds of extraneous and indigestible matters. The question which naturally arises in the mind is, what was the exciting or proximate cause of death? I should say, the masses of indigestible matter being confined in the situation already described would cause spasm, which, if not relieved, would result in inflammatory action, and during the violent paroxysms the stomach became ruptured, and thus caused death.

This case is valuable and interesting, on account of the clearness of the pathognomonic symptoms during life; namely, sitting upon the haunches and attempts at vomition. And after death the character of the rupture; this not being of the same

extent in the several coats of the stomach, but greater in the outer or peritoneal tunic.

The frequent attempts at urinating in this case might have led some persons to believe that the urinary organs were affected; but examination per rectum soon set this matter at rest, and I have frequently seen this symptom present in the more severe cases of enteritis.

### *Case* II.—Laryngitis in a Bull.

The other morbid parts, which consist of the larynx, &c., were taken from a yearling bull of the short-horned breed, which had for a few days been perceived to be unwell before my attention was called to him: this was on the 8th of June of the present year, when the following symptoms presented themselves:—Pulse 70, and full; breathing accelerated, accompanied with a rattling noise during the acts both of inspiration and expiration; muzzle hot and dry, and the other symptoms that denote febrile action. The treatment adopted consisted of bleeding, purgatives, and counter-irritation to the throat, chest, and windpipe, in the form of setons and blisters.

*9th.*—Animal no better; bowels not relaxed; rattling noise louder, and altogether he is much worse. Repeat the purgative, and give sedative agents. He takes a little gruel and mash.

*10th.*—No improvement; and indeed the difficulty of breathing is now so oppressive that we are fearful of suffocation taking place, and therefore determined to have recourse to the operation of tracheotomy. It was performed in the usual manner, and for some time seemed materially to relieve the animal. A dose of belladonna with nitrous ether was given, and he was left for the night.

On the 11th I found the symptoms to be much aggravated, and, indeed, such as to preclude all chance of a favourable termination taking place. I therefore told the owner the animal could not possibly survive the night; and the result verified my statement.

*Post-mortem appearances.*—The whole of the viscera were perfectly healthy, with the exception of the larynx (which I have sent you) and the upper portion of the trachea, which was discoloured from excessive inflammatory action.

[The membrane lining the larynx and upper part of the trachea was much thickened, and the inflammation set up had resulted in the throwing out of lymph into the cellular tissue between it and the cartilages, into which, apparently, pus had also become effused. Thus the laryngeal opening had become constricted, and the difficulty attendant on the act of respiration was easily accounted for.]

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### 3.—Case of Eustachian Abscess in a Horse.

*By Mr.* R. L. Hunt, *M.R.C.V.S.*

[*Communicated by Mr. H. Daws, M.R.C.V.S.*]

Dear Daws, *Edgbaston, Oct. 25th,* 1847.

The case of Eustachian abscess was operated upon this morning, and has as yet been completely successful. The patient was an aged grey horse, the property of Mr. Blendon, of King's Leach, near this place. My attention was first drawn to him about June last. There was then an enlargement on the off side of the throat, filling up the space between the angle of the jaw and the larynx; and upon my first seeing it I instantly detected the disease, from its resemblance to my memorable case that was operated upon in Feb. 1843, and which is recorded in the Transactions of the Veterinary Medical Association for that year, p. 357. The tumour was of considerable size, and at times a purulent discharge took place from *both* nostrils, but most from the off one. The appetite was good, and no disturbance discoverable of any of the other vital functions.

The enlargement and the discharge were noticed nearly twelve months ago; but as no inconvenience was experienced by the animal, or any impediment to work produced, he continued up to the present time performing his ordinary duties.

The proprietor has had the horse in his possession some three or four years, and he cannot call to mind any particular period that he can attribute the commencement of the disease to.

On examining the patient previous to operating, I found a large abscess just ready to burst, but superficially placed on the region

of the submaxillary gland on the near side (the ordinary seat of abscess in strangles): I did not interfere with this until the animal was cast and secured, thinking that, perhaps, there might be a communication with the other and more deeply-seated abscess on the off side. In this, however, I was deceived; for after evacuating the contents of this, which were exceedingly grumous and fœtid, the cavity was but of an ordinary character, and on pressure being applied to the other tumour no escape of pus or other contents was observable. She was then turned over, and the head elevated on a cushion; and, after tracing the course of the jugular vein, I commenced an incision beneath its lower bifurcation through the integument of an inch and a half in length. The cuticular vessels were considerably congested, and a greater escape of black venous blood took place than I expected. I pursued my course with the scalpel through the layers of membrane, avoiding with care the other important vessels, &c., in this region, and after a little careful dissection got down upon the sac. I at once secured it, as in our last operation, with the tenaculum, and then made a small incision in it with the point of my scalpel, and had the satisfaction of seeing a small quantity of pus follow, rather viscid in consistency, but of a good healthy colour, and not possessing any offensive odour. I then enlarged the opening in the sac, and gave a free vent to its contents, which were received in a vessel, and measured thirty-five fluid ounces; but there were no solid masses of pus as in the former unique case. From the quantity of fluid imprisoned you may imagine the cavity was considerable: it passed upwards for about five inches, and then took a lateral direction between the œsophagus and trachea, completely through to the near side of the neck (the point of a sound passed in being plainly detectable on the other side). The patient was then liberated, and the cavity injected with a weak solution of the sulphate of zinc; and I hope that, with cleanliness and attention to his general health, all will soon be right.

If you think there is any thing of novelty or interest in this case, please to direct our mutual friend, Mr. Morton's, attention to it; but you know our propensity to have a good case, or none at all. "*Aut Cæsar, aut nullus.*"

Believe me, your's very truly.

## 4.—A Renal Calculus taken from a Horse.

*By Mr.* G. White, *M.R.C.V.S.*

Dear Sir, *Knowle House, Lichfield, Sept. 26th,* 1847.

I have forwarded to you a renal calculus, which, if you think it is of sufficient interest, you will oblige me by laying before the members of the Medical Association. I am sorry I cannot give you the particulars respecting the symptoms, &c., of the case; all I know is as follows:—It was given to me by my old friend Mr. Willday, of Lichfield, who informs me he purchased the horse from which it was taken of a neighbour to kill for his dogs; but as the animal was only five or six years old, in good condition, ate and drank well, dunged and urinated freely, &c., he thought he would keep him for a time. He accordingly did so; and the only thing that appeared to be the matter with him was, that when down he was unable to get up, unless in a very favourable situation. He kept him about a week; but, the animal getting no better, he had him destroyed.

On examination after death, the only disease he detected was the absorption of nearly one kidney, in the pelvis of which was the calculus I have sent you. Probably the concretion pressed upon some nerve or nerves, which was the cause of the partial paralysis of the hind legs; but it appears singular that nothing particular should have been observed in the character of the urine, which he assures me was perfectly natural.

Believing it to be among the largest renal calculi I have seen, and knowing the interest you have taken in this particular branch of our profession, I am induced to forward the specimen to you, and

Remain, Sir, your's very respectfully.

*To W. J. T. Morton, Esq.*

[The form of the renal calculus is very irregular, its structure dense, and weight four ounces and three-quarters troy; its composition is about one-third animal matter, the remaining two-thirds being carbonate of lime, without any trace of the phosphates.]

## 5.—Case of Renal and Cystic Calculi in a Horse.

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

This case is, I think, not altogether devoid of interest, inasmuch as we find but few recorded in veterinary works of a similar kind; and it is my intention that this shall only be a simple, though I trust a faithful, detail of the symptoms, treatment, and post-mortem appearances.

On August 27th, I was requested to see a horse at Highgate, reported to be very ill, not being able, as it was stated, to void his urine. On my arrival, I found my patient to be a bay carriage gelding, aged, well bred, and sixteen hands high. He exhibited a considerable degree of irritation and pain; the urine was constantly dribbling from him, and he often made repeated efforts to empty his bladder, but without effect. He frequently pawed with his fore feet: the pulse was about 45; the visible mucous membranes were pale, but the breathing tolerably tranquil. On inquiry I was informed that yesterday morning the animal first exhibited a difficulty in staling, and on this account a strong diuretic ball was given him; but he was not relieved, much uneasiness and pain being manifested all night. This morning the farrier was informed that his ball had done the horse no good, and he therefore gave him a draught to produce the desired effect, and from the sequel little doubt can be entertained but that the animal did now pass more than the ordinary quantity of urine. The litter, indeed, bore evidence of this fact. The bladder, on examination, was found to be nearly empty; pressure on the lumbar region shewed no tenderness to be present: and on moving the horse, nothing peculiar was observed in his action, but an escape of the urine was noticed to take place on his being first moved. These symptoms seemed to me to call for a soothing mode of treatment, and, with a view to allay the pain, a mixture of tincture of opium with a small quantity of nitric ether was administered, my object being to determine the influence of the opium to the kidneys, by conjoining a mild diuretic agent; linseed tea was ordered as his ordinary drink. There was no inclination to feed, nor did the horse lie down.

28*th.*—This morning the animal does not paw with his fore feet,

and has been tolerably free from pain since I saw him yesterday; he has, however, not eaten any thing except a few mouthfuls of hay, nor has he lain down. The urine still escapes involuntarily, becoming slightly accelerated by the often repeated efforts made to stale, which continue unabated. The pulse does not indicate the necessity of the abstraction of blood, and the membranes are rather paler than in health. An enema of warm water was thrown up, and the catheter passed into the bladder, but no obstruction to its free passage was found to exist, and only a small quantity of urine was withdrawn. The constant flow of urine, with the entire absence of those jerking ejections manifested in the ordinary as well as in the more painful efforts made to stale, the secretion being only slightly increased in its escape, with the absence of sediment, induced me to conclude that the mucous coat of the bladder was in a state of chronic or sub-acute inflammation; but from the absence of all pain on pressure over the lumbar region, no difficulty being manifested in progression, and no obstruction to the free passage of the catheter, with the little increased vascular action, these indications led me to ask whether the above symptoms might not be the effects of the strong diuretic agents given, and the primary cause be paralysis or loss of muscular power in the urinary cyst. But, from the post-mortem appearances, the correctness of this diagnosis is now rendered doubtful; and the question that arises is simply, whether the calculi were not the cause of all the irritation?

The bowels being constipated, a laxative was given, and the tinct. opii and nitrous ether continued. Having informed the owner that it was a disease likely to prove very tedious, and one by no means free from danger, the horse was gently walked in the evening to my infirmary, and that without any difficulty or aggravation of the symptoms.

29*th*.—The animal has voided a large quantity of urine during the night, and it still continues to escape involuntarily. Pulse from 40 to 43—breathing natural—membranes pale, still no pain on pressure being applied to the loins; has eaten very little, but he drank a small quantity of water during the night: the bowels not having responded, I gave a clyster, and tried the effects of vegetable tonics with the iodide of iron in ʒss doses morning and evening.

*30th.*—Bowels are being acted upon by the physic: the animal has eaten a part of the mash, also a little hay. The symptoms, however, are as yesterday. The medicines to be continued.

*31st.*—Fæces pultaceous; the urine is still voided involuntarily, and in greater quantities than in health. There is no change otherwise, except that he feeds better. The medicines continued as before.

*Sept. 1st.*—Pulse 40. I think the quantity of urine voided is less, and I fancied that there was a little muscular action in throwing out a portion of it. Tonic medicines continued.

*2d.*—Examined my patient very carefully, and I am by no means satisfied that we are making any great improvement: left off the ioduret of iron, and gave plumb. acet. ʒss, with the vegetable tonics.

*3d.*—Animal not so well; pulse 50; more pain; off his feed; bowels constipated; the penis also is a little swollen, and the urine dribbling away as usual. Gave aloes ʒij, in solution, cum ext. belladonna ʒj, tinct. opii ʒij. Applied a mustard cataplasm to the loins.

*4th.*—The penis has become much swollen. Pulse 45; and mucous membranes slightly tinged of a brownish yellow colour. Gave a dose of the solution of aloes, with mucilaginous drinks, and also small doses of pulv. opii: foment the swollen part. The horse laid down in the night, and exhibited more uneasiness. In the evening I scarified the enlarged parts, and ordered the fomentations to be continued. To the glans penis apply cold lotions.

*5th.*—The scarifications have but slightly relieved the distended sheath, or vagina propria penis, and all we have yet done has been ineffectual in allaying the irritation or the diseased state of the bladder. There is still no pain on pressure being applied over the kidneys, and it is surprising how little the vascular system is involved. The sheath is swollen, even to its extremity, and the flow of urine is still constant. The bowels not being sufficiently relaxed, continue the aloes in solution.

*6th.*—There does not appear to be so much pain present, and the animal feeds better; but the swelling of the sheath, &c., and the other symptoms, are unaltered.

*7th.*—The bowels have become slightly relaxed, and, towards

the evening, the animal purged a little. At half-past ten, P.M., he had eaten part of his mash, and there were but few symptoms to indicate that this would be his last night of suffering; but it was so, as he was found dead in his box early in the morning.

*Post-mortem appearances.*—(For many of the details I have to express my obligations to Mr. Varnell.)—On opening the abdomen, considerable peritoneal inflammation was everywhere to be seen, both over the whole of the intestines and the lining of the cavity, on the surface of which a considerable quantity of flocculi existed. The cavity itself contained about three gallons of serous fluid. The mucous coat of the intestines was healthy, as also were the liver and the spleen. The omentum, however, was beautifully injected, and patches of inflammation were to be seen upon the peritoneal coat of the stomach. On inspecting the urinary apparatus, pus was observed to be flowing from a small opening in the fundus of the bladder. The whole of the urinary organs were, therefore, removed, the careful examination of which exposed an extensive state of disease. The right kidney shewed but slightly the marks of structural derangement, yet in the pelvis of this gland were two small calculi, and a quantity of sabulous deposit, mingled with mucus, adherent to its inner surface: the cortical part appeared softer than natural. The left kidney exhibited much disorganization, particularly the anterior lobe, it being of a dark red colour, broken down in structure, and particularly the cortical portion of the gland: the other portion was of a deep red colour, and much softer than natural, but not in that broken-down state which characterized the anterior lobe.

The *ureters* presented no traces of diseased action.

The *bladder*.—The external membrane of this viscus was of a dark red colour, at the fundus inclining to a black; and at this part the bladder was ruptured. The muscular coat was much thickened, and of a greyish-black hue. The internal or mucous coat was extensively diseased, in places going on to gangrene; its whole surface being covered with flocculi of lymph, which, in some parts, formed false membranes. At the postero-inferior part of the bladder I observed, near the fundus, a considerable quantity of muco-purulent matter, mixed with sabulous deposit. The neck of the bladder was slightly thickened, soft, and flabby. The urethral

canal was a mass of disease, from the neck of the bladder to that part of the penis where it bends over the ischial arch, the lining membrane being jagged and lacerated in many places.

In the bladder was found a rough calculus, about the size of a small walnut. This apparently had passed down the urethral canal as far as I have described the lacerated membrane to extend: at the termination of the penis, the membrane was of a dark colour, inclining to a black.

The vesiculæ seminales contained muco-purulent matter, the lining membrane being much thickened, and of a dark greyish-red colour, with pus exuding from it at various points. The prostate glands presented also extensive disease. Viewed externally, their colour was nearly black; they were soft in structure, and, when cut into, they contained a quantity of pus of rather a dark hue.

This case, I think, deserves some few reflections: *e. g.* 1. What was the original cause of this disease? 2. What organs were primarily affected? 3. Must we not look upon the renal and cystic calculi as the immediate cause, and the symptoms described by me as a result of the irritation set up by these foreign bodies? And can we credit the coachman's statement, that the horse exhibited no pain or uneasiness previous to the Thursday, and yet he manifested so much pain when first observed? Had we found any difficulty in passing the catheter, we might have concluded that the cystic calculus had made its way into the urethra, thus obstructing the passage of the urine, and producing the symptoms here detailed; and I cannot but think myself remiss in not having passed the catheter a second time, and also instituted a further examination of the bladder *per rectum*. I feel now fully convinced in my own mind, that, whatever might have been the state of the bladder at the period of my being called in to see the animal, the calculus was then probably in the neck of the bladder, not producing a complete retention of the urine, but which, ultimately, from the diminished size of the passage for its exit, caused the bladder to become distended far beyond its natural state; and this remaining for some days, it at length lost its power of contraction, and became paralytic. This state of distention could not increase beyond a certain point, when, most probably, the orifice of the bladder became dilated, and, the calculus descending into the urethra, all the urine secreted after this period dribbled away, and, finally,

inflammation and sloughing of the bladder took place, of that character described by Sir John Bell, in his *Principles of Surgery*, vol. ii, part 1, page 262, it having a small round hole, the edges of which were dark coloured, black, and mortified.

Mr. Morton having kindly undertaken the analysis of these concretions, I leave him to add their constitution.

I am, your's respectfully.

*Analyses of the Calculi.*

The RENAL concretions were two in number, and both weighed only 48 grains. Their particles were loosely aggregated, and, a portion being heated with potash, yielded ammonia; proving the existence of animal matter, which, on subjecting another fragment to the influence of heat, was found to amount to nearly one-half. The residuum dissolved in hydrochloric acid with effervescence, from which the oxalate of ammonia threw down an abundant precipitate. The solution being neutralized with soda, the nitrate of silver gave no indication of the presence of phosphoric acid.

The CYSTIC calculus weighed ʒiss. Its structure was more dense, its surface granulated, and it conducted itself before the blow-pipe as the portion of renal calculus did; first blackening and exhaling a peculiar odour, and then becoming white. This being dissolved in dilute hydrochloric acid, and neutralized, afforded no result differing in any respect from the renal concretion. The inference, therefore, is, that these calculi consist of animal matter with the carbonate of lime.

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## 6.—INSTANCE OF MALFORMATION OF THE HEART OF A CALF.

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

Dear Sir, *Northowram, Halifax, Aug.* 5, 1847.

I HAVE sent you, by rail, the heart of a calf which died last night. The little animal was about seven months old, and previous to its death appeared like a living skeleton, being very little more than skin and bone, and not much larger than an ordinary calf of a month old.

The history of the case is as follows, at least as far as I can learn it from my younger brother, I being at the College until the middle of May, consequently I had not an opportunity of seeing

it myself before that time. The calf was born in the early part of December last, and appeared quite healthy, with the exception of being very low in condition, until Feb. 4th, when it shewed the following symptoms: Pulse natural in number but rather irregular in character—the respiration much disturbed, the expirations being performed with a kind of double effort—the inspirations natural, but quick—grinding of the teeth, stamping the ground, and striking the abdomen with its hind feet—frequently lying down and getting up again, with intervals of ease. My brother, considering the attack to be colic, gave an antispasmodic draught, consisting of tinct. opii et spt. ætheris nit. In the course of two hours the symptoms became more tranquil, but, the bowels being constipated, he gave a laxative; after which the animal gradually recovered, and continued well till March 25th, when he was observed to be fast losing in condition, having a staring coat, the eyes sunk in their orbits, grinding of the teeth, total loss of appetite, pulse increased in frequency, and also the respiration, accompanied as before with stamping of the ground and then striking the abdomen with its hind feet. The bowels being constipated, a purgative of mag. sulph. was administered; and on the evening of the same day, the symptoms having become more severe, an antispasmodic was again given.

*March 26th.*—The animal very weak, and scarcely able to rise: he continues grinding of the teeth—the eyes are very dull and sunken—the abdomen tympanitic. Gave spt. amm. arom. ʒj, cum mag. sulph. ʒiv in haustus.

Two, P.M. More tympany present—abdomen enlarged, almost to bursting. Gave calcis chlor. ʒj in water, which was repeated in the evening.

*27th.*—He is much better this morning, and has eaten a little hay. Gave tonic medicines twice in the day until April 2d, when the animal appeared quite convalescent, and continued much the same up to the time I first saw it in May; when I found it still very low in condition, having a haggard appearance—staring coat—the pulse about 60 in number, but very weak and indistinct—the blood seemingly flowing in almost a continuous stream. The jugular veins were much distended the whole course of the neck, and regurgitations of blood could be distinctly seen in them half way up the neck; the respiration was laboured, with a rattling noise in the

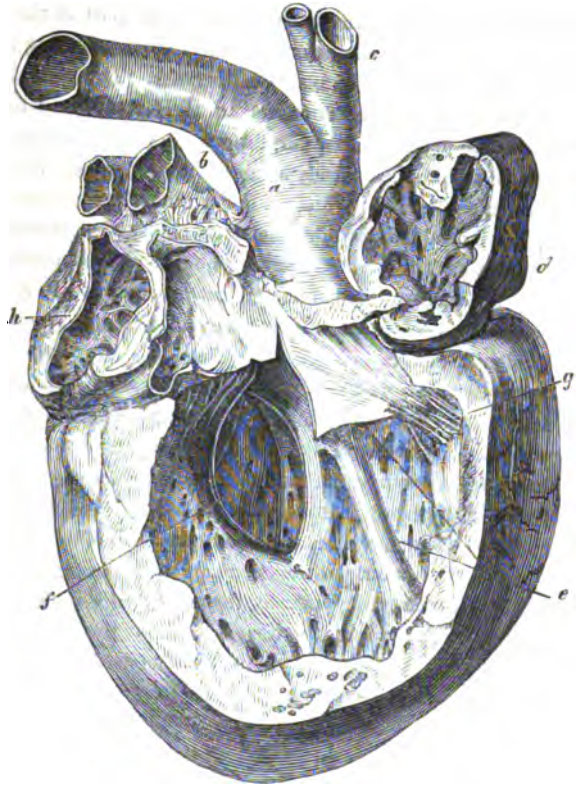
larynx, and from twelve to fourteen in a minute; the eyes were sunken, and on striking the thorax a very hollow sound was emitted. The appetite, however, was pretty good; but when fluids were given the animal swallowed them slowly, and with some difficulty. Bowels acted naturally. Thinking that a chronic disease of the digestive organs existed, involving some part of the circulatory system, probably the heart, I despaired of effecting a cure, and merely recommended turning out to grass. The animal, however, continued much the same up to the 28th July, when the abdomen became very much enlarged, and he was almost unable to rise when down: the jugulars were much distended, the blood being seen to regurgitate in them almost the whole course of the neck, and passing, as before, almost in a continuous stream; the pulse eighty to ninety, very weak, and somewhat irregular; the mucous membranes were blanched; the appetite entirely gone: and the animal remained in this state until Aug. 5th, when it was found dead in the field.

*Post-mortem examination.*—On laying open the abdominal cavity, about *two gallons of straw-coloured fluid escaped*. All the viscera appeared healthy, except the mesenteric glands, which were enlarged to four or five times their natural size, and when cut into presented a dirty brown aspect: the mucous membrane of the abomasum was highly inflamed, assuming a scarlet appearance. On opening the thoracic cavity, *about one gallon and a half of serous fluid escaped:* the lungs were apparently normal, with the exception of their surface being covered with small black specks, more particularly upon the anterior lobes. Upon puncturing the pericardium, *four pounds two ounces of fluid escaped from it;* and when this was removed, the heart was seen very much enlarged, and not of its natural form. I proceeded to make an incision through the walls of the right auricle and ventricle, when I perceived a large opening through the septum ventriculorum, whereby the arterial blood was enabled freely to mingle with the venous; but, wishing to keep the organ as entire as possible, so as to give you an opportunity of examining it, I am contented to wait the result of your examination of it, and for any remarks you may make on this very singular case, rather than offer any myself.

I am, dear Sir,

*To Professor Simonds.* Your's respectfully.

[The above is the second instance of malformation of the heart of a calf which has been laid before the Members of the Association; a similar case being recorded by Mr. J. Carter, of East Dereham, in the "Abstract of the Proceedings of the Association" for 1838-9, p. 355.




EXPLANATION OF WOODCUT.

*a*. The aorta. *b*. Pulmonary artery. *c*. Anterior aorta. *d*. Right auricle laid open. *e*. Moderator band passing from the outer wall of the right ventricle to the septum ventriculorum. *f*. *The opening in the septum ventriculorum, forming a free communication between the right and left cavities.* *g*. The inner portion of the tricuspid valve. *h*. Left auricle laid open.

Inspection of the woodcut will shew that the inner portion of the tricuspid valve is considerably increased in size, and so disposed

as to cover a great portion of the *ventricular* opening; by which means the venous blood entering the right side of the heart was almost entirely prevented from passing into the left ventricle, while the blood in this last named cavity had a free passage into the right ventricle. Thus, from the mingling of the two fluids, the blood sent through the pulmonary artery to the lungs did not require decarbonization to the same degree it otherwise would; the whole vascular system may thus be said to have been supplied with highly arterialized blood: hence, too, in all probability, the reason why the animal lived so long, and effusion took place into the serous cavities, the bloodvessels being relieved of a portion of their contents by exosmose.

[The great singularity of this case is, the animal having lived for so long a time without evidencing any indications of this marked structural change in so important an organ as the heart. Analogous cases, however, are recorded in the "Cyclopædia of Anatomy and Physiology," as occurring in the human subject. We extract the following. "We find that children with hearts so malformed live three, four, or five days, and even as many weeks or months; but where the perforation of the septum is not accompanied with the contracted state of the pulmonary artery, life may be prolonged to a considerable period. Thus, Louis quotes one case of a general officer (age not stated), whose death was occasioned by the active part he took in the American war. Along with ossified valves of the right auriculo-ventricular orifice, there existed a perforation of the septum ventriculorum large enough to admit the extremity of the little finger. In another case, quoted from Richerand, the patient aged forty, the perforation of the septum was half an inch in diameter."]

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## MISCELLANEA.

Lassaigne found a cerebral concretion in a horse to consist of—

| | |
|---|---|
| Cholesterine | 58·0 |
| Coagulated albumen and Cellular tissues | 39·5 |
| Phosphate of lime | 2·5 |
| | 100 |

THE

# VETERINARY RECORD, &c.

VOL. IV.] APRIL 1848. [No. 15.

## OBSERVATIONS RELATING TO SICKNESSES AND CASUALTIES THAT MAY BE EXPECTED TO OCCUR AMONG THE HORSES OF THE 1ST REGIMENT OF DRAGOON GUARDS, COMMANDED BY COLONEL THE HONOURABLE GEORGE CATHCART, ON THE APPROACHING VOYAGE FROM CANADA TO ENGLAND.

*By* J. MELLOWS, *V.S., Half-pay* 1*st Dragoon Guards.*

1st. THE printed regulations referring to veterinary surgeons require "that when a cavalry regiment arrives at, or returns from, a foreign station, the veterinary surgeon shall transmit to the Principal Veterinary Surgeon a journal of the diseases and casualties among the horses on the voyage, with an entry of the daily treatment each of those horses has received." But as this would be impracticable unless a journal be kept on board each vessel, Veterinary Surgeon Mellows has submitted the matter to Colonel the Honourable George Cathcart, who has been pleased to order that the proposed journal shall be kept by the officer in command on board, entering in his own hand-writing each occurrence as well as the daily treatment, and signed by himself at the end of the voyage.

2d. The farrier at each stable hour is to examine the horses, one by one, inquiring diligently if the evacuations have been proportioned to the consumption of forage; and if in any horse the evacuation has been less, that horse should be frequently examined, so that it may be seen if there is any sickness or swelling of the body; care should then be taken to stint him till he is sufficiently emptied: and it may be advisable to assist this by hand-raking and clysters

of warm (sea) water. But attention to diet, "wetting the forage"*, and cold bran mashes, are preferable to physic or other internal medicines, if the latter can be avoided. A similar inquiry should be made by the farrier concerning the evacuation of urine, as a difficulty of staling is not unusual with horses on board vessels†.

## Of Diseases and Accidents on Ship-board.

### *Ship Staggers*‡.

This appears to arise from the same cause as sea sickness in man. But it is the most formidable disease to which horses in vessels are subject§; for, though at first an affection of the brain, yet the chief danger arises from the state of the stomach and intestines, and hence the importance of observing the before-mentioned instructions; for should a horse be attacked when his stomach and intestines are over-loaded with ingesta, a cure can scarcely be expected. The structure of his organs will not admit of the contents being thrown back by vomition. To this circumstance is to be assigned the frequent death of horses when labouring under this disease. Although it may be necessary to place slings under the horse's belly, yet I think it would be injudicious to support the animal off his feet, if it can be avoided, as the pressure of the canvass is an additional impediment to evacuation‖

* The words within inverted commas were added by the Colonel in the perusal.

† A difficulty of staling was observed in some instances on the outer-bound voyage; but I did not hear of any instance on the return; I therefore think it is rarer than I expected to find it.

‡ Query, "Maritime Apoplexy."

§ Since it cannot be prevented by attention to ventilation. I presume, in the human subject, that the motion of the vessel produces an effect on the brain, which re-acts upon the stomach and viscera generally, and the disease becomes counteracted by the nausea and vomiting that supervene. But in the horse, as he cannot vomit, it becomes a new, formidable, and generally fatal disorder.

‖ Mr. Cherry, Principal Army Veterinary Surgeon, in his letter to me, deprecates the embarkation of horses when their stomachs, &c., are full, lest the slinging should produce internal rupture, and recommends, if practicable, "that the horses, previous to embarkation, should travel a moderate stage to empty themselves." For the same reason, they should be stinted previous to debarkation, in which a similar danger is to be apprehended, and upon

being effected. The characteristic symptom of the disease, at its commencement, is drowsiness*, followed by apparent stomach sickness. This is succeeded by more or less swelling of the body. If the attack progresses, the horse falls or throws himself on the slings; and if these give way, and he is cast under the feet of the other horses, death generally follows before he can be extricated. Therefore, as many horses on each side of him as practicable should be removed further on, and great care observed to have the cords secure; and if, in any instance, there be a doubt of their sufficiency or strength, they should have additional support, which most likely the sailors can assist in affording.

*Treatment.*—To relieve the affection of the brain, four quarts of blood may be withdrawn, and, if the horse be not relieved by it, repeated during the progress of the disease. But the chief attention should be directed to the state of the viscera of the abdomen. To obviate as much as possible the disadvantages arising from the inability to vomit, the farrier should immediately remove with his hand all the dung accumulated in the straight gut or rectum, and follow this operation by frequent injections of warm water. Fresh soapy water is to be preferred to sea-water; but the latter, most likely, must be used on board, in which case the soap should be omitted. Benefit has been derived on shore in these cases of internal obstruction† by bathing the backs and bellies of horses by

similar grounds. The less the canvass can be kept from pressing upon the parietes of the abdomen when the animals are standing in the hold, the more favourable it will be for the avoidance of the disease I am considering; from this I also consider the places on which the horses stand should be prevented from being made slippery as much as possible. This, I think, had been overlooked in the transports for the homeward-bound voyage; the standings had been formed by plaited ropes, which, when they became wet, allowed the horses to slip about, and frequently to fall, when the ship was rocking much on the voyage.

* The horse closes his eyes as if about to sleep: a similar affection, formerly, was called "sleepy staggers."

† I have seen one case, and heard of others, in which this plan has been followed by free alvine evacuations, when every other measure had failed. Above, I have given the preference to soap and water for enemas over that of sea-water. This recommendation, however, is not founded on my own experience, but, some twenty years ago, I received a circular letter from the late Professor Coleman, cautioning me against the use of muriate of soda in solution as enemas, as he had seen two instances of death ascribable to that cause

means of blankets soaked in hot water and applied continuously. This treatment has been found useful in producing an evacuation of the bowels, and may probably be available on board of ship, and, if so, should not be omitted. Hot sea-water will answer for this purpose.

### *Spasms and Inflammation of the Intestines.*

The treatment recommended in the last-mentioned disease is indicated if horses are griped on board. Dry rubbing and wisping are, however, preferable to the application of wet blankets as suggested for staggers. The same precaution in removing the other horses from each side of the sick animal, and in strengthening the cords of the slings, is called for. In this disease there is also danger of injury to the other horses by the violence of the affected animal, which should as much as possible be prevented. Bleeding should likewise be resorted to*.

### *Suppression of Urine.*

Horses embarked on ship-board sometimes experience a difficulty in staling. They are not very liable to inflammation of the kidneys or bladder, or spasms of the neck of the bladder. The cause arises, generally, from a foul sheath, or from some hardened mucus at the entrance of the urethra†. The first act, therefore,

alone; and, in the same letter, recommended as a substitute, the diffusion of soap in water. For my part, I think warm water alone is frequently all that is necessary; but not in such diseases as those I am now noticing.

* There was not an instance of this disease on the homeward voyage, but two or three in the outward-bound. Some practitioners have questioned the propriety of bleeding in spasms, while others have held the detraction of blood to be a powerful antispasmodic. But the persons who would on board of the vessel have to decide could not have been able to judge of the diagnostic symptoms; and hence it would be preferable to bleed in all cases rather than run the chance of omitting, as it can do but little harm if not indicated. The plan of applying hot water by means of blankets was found in several cases to be highly beneficial on the homeward voyage.

† Hardened fæces in the rectum, pressing upon the neck of the bladder, will also sometimes cause a stoppage of urine. In these cases, however, there are, in general, symptoms of spasms in the intestines. No case of this kind occurred on either the outer-bound or homeward voyage; and those affections only were anticipated that occurred in the former.

should be the cleansing of the sheath, and the removal of the inspissated mucus. If there be no sickness or pain afterwards, there can be no objection to the administration of half an ounce of soap, or of half a diuretic ball. But if the obstruction is attended with indications of pain or inflammation, whatever will excite the kidneys should be carefully avoided; on this account diuretic agents are especially objectionable. If strangury be present, on passing the hand up the rectum of a male animal the bladder will be found full and pressing on the intestines; and when the kidneys are inflamed, the animal will shrink from pressure applied to the loins. In mares the bladder cannot be felt at the rectum, because the uterus lies between the rectum and the bladder. But if she does not shrink from pressure applied to the loins, some disease of the bladder may be presumed to exist. In either instance, however, bleed to the amount of five quarts, and, if not relieved, repeat the detraction of blood in about the space of twelve hours. If fresh water can be procured, clysters should be frequently used; but sea-water might do more harm than good*. Purgatives are indicated in these diseases, and also in the affection of the kidneys: hot water should be applied to the loins by means of blankets.

### *Inflammation of the Lungs.*

Since the invention of air-sails, and the passing of tubes through the decks, diseases of the respiratory organs are far less frequent on ship-board than before these means were resorted to for ventilating the holds. But even now those diseases are sometimes seen, and are always dangerous. To distinguish this from other affections, it should be borne in mind that a horse does not lie down in inflammation of the lungs, because he makes his fore-legs props to favour the action of the muscles of respiration. On board, therefore, he does not strive to bear himself on the slings, but, as firmly as his strength permits, keeps himself on his feet, and is not found upon the slings unless he actually falls. Perhaps this statement is sufficient, without mentioning other symptoms, for the information of those who are unacquainted with horses when labour-

* In consequence of the absorption of the salt into the system, and increased excitement of the urinary organs through it; for this reason, in affections of the kidneys, blisters of cantharides to the loins would be injudicious.

ing under this disease. The pulse, however, is generally full and regular, while in "ship staggers" it is commonly quick, small, irregular, and indistinct. In "ship staggers" too, the ears and legs at first are of their natural warmth, and especially the ears, though the extremities become cold when the disease is near its termination in death. In inflammation of the lungs they are cold from the commencement. In both there is laboured respiration, but in "ship staggers" this proceeds from the impediment presented to the descent of the diaphragm, and the acts of inspiration and of expiration are shorter than in inflammation of the lungs, from which it is also distinguished by the swelling of the body.

*Treatment.*—Bleed to the amount of five quarts; and if in twelve hours there is no relief afforded, repeat the operation, taking away a similar quantity of blood, and a rowel may now be inserted in the chest. The ordinary alterative balls are adapted to this as well as to other kinds of fever. In cases of catarrh and other affections, and also local injuries, the treatment advisable is similar to that resorted to on shore, and therefore need not be here stated.

### *Swelling of the Legs.*

If extending above the hock or knee, constant fomentations should be employed; also administer physic and diuretics, but not in slight cases.

In each vessel there was a supply of medicinal articles for use.

### *Additional Remarks.*

It may be proper to state, if not settled by instructions already understood, that no impediment should be given to, or put in the way of, the air-sail, nor any obstruction allowed to exist in the tubes through the deck. The dung of the animals should be daily removed from the hold, and the floor frequently sprinkled with a solution of chlorinated lime, which occasionally should be used to wash the mangers. At each stable hour the horses' nostrils should be sponged, and more frequently if the health of the horse requires it.

*Note.*—All the above measures, stated in these additional remarks, had, however, been settled by previous regulations; and

chlorinated lime, as well as vinegar, to use for the sponging of the horses' nostrils, were given out from the stores of the transport. The whole process of ventilation, as well as the above remarks, should be known, however, by private persons embarking horses, as it is very difficult to cause sailors to understand them. Even with all our advantages, these persons were frequently throwing obstructions on the air tubes, and not removing them till ordered to do so.

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The following statistical account may not be altogether devoid of interest:—

In the outer-bound voyage from Cork to Quebec, embarked 120 horses; died 14, or 1 to 8 and ¾.

On the homeward, including 3 by the closing of the ventilators, 10 in 210, or 1 to 21.

Or, exclusive of the three deaths, 7 in 210, or 1 to 30.

In the four vessels that first arrived, in one vessel, 2 deaths

| | | |
|---|---|---|
| one ditto | 2 | ,, |
| one ditto | 0 | ,, |
| one ditto | 1 | ,, |
| Total, | 5 | |

177 horses were embarked, so that the proportion of deaths was only as 1 to 37¾.

One died after landing, however, of rupture of a large blood-vessel, and profuse hæmorrhage in the lungs, consequent on an injury received in debarkation, the result of the slinging.

Two horses received severe injuries of the lumbar vertebræ, and, becoming unfit for the service, were afterwards sold, one of them for £9.

The above were all the serious casualties on board. But for the accident on board the "Tory" transport, it is likely that vessel would have had no death on board.

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## Case of Tetanus in the Horse.

*By Mr.* T. Hurford, *V.S., 15th Hussars.*

My dear Sir, *Bangalore, Nov.* 7, 1847.

Perceiving, in The Veterinary Record for January last, some cases of tetanus, by Mr. J. R. Hoey, V.S., East India Company's Service, successfully treated with aperients and sedatives, I have thought the following would not prove unacceptable to your readers. I give the case as it is briefly recorded in my note-book.

I am, very truly, your's.

### *Traumatic Tetanus.*

*Sept. 28th.*—Bay horse. The animal was admitted on the 10th inst. with a wound in the foot from a nail; it healed quickly, and the animal was discharged apparently well on the 23d inst. He is now re-admitted into the infirmary with all the painful symptoms of tetanus present, and the jaw is nearly fixed. Take blood to the amount of 6 lbs.; pare out the foot where the wound existed till it bleeds; give aloes ʒv, calomel ʒj, croton grs. xv, in one ball, and opium and camphor āā ʒj, in another; throw up enemas and blister the course of the spine: diet restricted to sloppy mashes. In the evening of the same day the opiate and the enemata were repeated.

*Sept. 29th.*—No action of the bowels has taken place: repeat the purgative, and throw up an aloetic clyster. In the evening, as the bowels had not responded, and the symptoms were becoming more urgent, the purgative ball was repeated.

*Sept. 30th.*—Still the bowels remain torpid: repeat the ball as before, and again give the opium and camphor in combination. At 1 P.M., some fæces were voided slightly softened: the animal has been able to partake of a little mash, and the pulse is tranquil.

*Oct. 1st.*—The bowels again have ceased to act: repeat the aloetic ball with the opium, and throw up enemata of warm water. In the evening the purgative ball was again given.

*Oct. 2d.*—Still no action of the bowels: repeat the ball as be-

fore. At mid-day the physic began to operate, but not powerfully. Gave opium et camphora āā ʒj, in ball, cum ext. belladonnæ ʒijs. The animal is tranquil, but evinces no inclination for food. Let him have gram-water to drink.

*Oct. 3d.*—The animal has been purging freely during the night; the rigidity of the muscles has become much less, and he can pick a little grass. At 6 A.M., gave ext. cannabis Indica gr. xv in ball, and repeated the same at noon and in the evening of the same day.

*4th.*—The jaws are more easily moved, and the animal has partaken freely of grass: the bowels continue relaxed. Give the ext. cannabis twice in the day, in scruple doses.

From this period to October 12th the patient was apparently doing well. I persevered in the use of the extract of Indian hemp, as on some days the muscular spasm appeared to have increased, and I feared a return of the attack in its severity; but to-day a cough is present, the respiration is disturbed, and the pulse quickened. Insert a seton under the throat, blister the sides of the chest, and give one of the following balls every morning:—

℞. Antim. tart.
Camphoræ
Aloes, āā ʒj
Digitalis, gr. xx.
Fiat. bol.

*14th.*—The cough is relieved, and the animal now feeds well: gradually return to ordinary diet.

*28th.*—Animal allowed full feed and exercise: he requires no further treatment.

I have been, generally speaking, successful in this treatment of tetanus. I blister the spine, I hardly know why; indeed, I think it is of little or no use. The quantity of purgative medicine given was enormous, and I have not exaggerated the amount, if, indeed, I have recorded all I gave. The cough and irritation were, I think, brought on by a portion of a ball becoming lodged in the fauces, it being with difficulty, by means of a stick, we could get the balls into the mouth at all. The extract of hemp I could not obtain before the 3d October, or I should have exhibited it in preference to the opium and camphor.

Many diseases in this country often make rapid progress to their termination in death, especially inflammation of the bowels, which is very common and fatal. I have lost many horses in six or seven hours, who, up to the moment of admission into the infirmary, had been apparently in the highest health.

Believe me, my dear Sir,

Very truly your's.

[We owe an apology to Mr. Hurford for having in a previous Number stated him to be in the Honourable East India Company's Service instead of the Queen's.

The use of the extract of Indian hemp in that formidable disease tetanus has awakened much contrariety of opinion. The late Mr. Hughes, of Calcutta, informed us, that he was in the habit of employing it very largely, and with considerable success. He also promised us the history of several cases, but, unfortunately, did not live to fulfil his promise. It is somewhat singular that much larger doses of this drug are required to affect the human subject in this country than in India. Dr. O'Shaughnessy, who has given much attention to the subject, found that, when in England, he was obliged to administer ten, twelve, or even more, grains of the extract, while, in India, he considered gr. ss a sufficient dose, and gr. jss a large one. And perhaps the same thing may obtain in the horse. Mr. Broad, at our suggestion, tried it in half-drachm doses, repeatedly administered, in a case of tetanus in the horse, without observing the least effect follow its administration, the agent being procured by him from a house on which reliance may be confidently placed. "As a medicine," says Dr. Royle, "it was tried by Dr. O'S. in rheumatism, hydrophobia, cholera, and tetanus. In the last such marked benefit and cures were produced, that the hemp was pronounced an anticonvulsive remedy of the greatest value. Its general effects are, alleviation of pain (generally), remarkable increase of appetite, unequivocal aphrodisia, and great mental cheerfulness. Its more violent effects were, delirium of a peculiar kind, and a cataleptic state. Dr. Pereira was among the first to submit it to experiment, but failed in obtaining any results, probably from changes having taken place in the drug. Dr. Laurie pronounced it uncertain, and not to be trusted to as a narcotic. Mr. Ley, however, found it useful in relaxing spasm, producing sleep, and during its action abatement

of pain. Mr. Donovan found its power great in temporarily destroying sensation, and subduing the most intense neuralgic pain. Professor Miller, of Edinburgh, considers its virtue to consist in a power of controlling inordinate muscular spasm. Dr. Clendinning says that in his hands its exhibition has been followed by manifest effects as a soporific or hypnotic in conciliating sleep, as an anodyne in lulling irritation, as an antispasmodic in checking cough and cramp, and as a nervous stimulant in removing languor and anxiety."

We extract the following from the *Pharmaceutical Journal*:—

THE INDIAN HEMP, OR GUNJAH.

(*Cannabis Indica.*)

This plant is a native of Asia Minor and India; and although it closely resembles the European hemp in its botanical characters, yet there is a very marked distinction between the two in their chemical constituents and medicinal properties. The Indian hemp contains a large proportion of resin, which is entirely absent from the European. On this resin depends the peculiar effects for which the hemp is administered; and so abundant is its secretion in the Asiatic plant, that at certain seasons it exudes from the leaves, the slender stems, and flowers.

The resin which has thus exuded, being separated and collected in concrete masses, constitutes the *churrus* of Nepaul and Hindostan.

The dried hemp plant which has flowered, and *from which the resin has not been removed*, is called *gunjah*. The bundles of *gunjah* are about two feet long, and three inches in diameter, and contain twenty-four plants. The colour is dusky green, the odour agreeably narcotic, the whole plant resinous, and adhesive to the touch.

The larger leaves and capsules without the stalks are called "*bang*, *subjee* or *sidhee*." This is less powerful, and cheaper than *gunjah*.

The resin of the hemp is very soluble in alcohol and in ether; partially soluble in alkaline solutions—insoluble in acids. When

pure, it is of a blackish grey colour; hard at 90°; softens at higher temperatures, and fuses readily: it is soluble in the fixed and in some of the volatile oils; its odour is fragrant and narcotic; its taste slightly warm, bitterish, and acrid.

The *gunjah* affords, by means of alcohol, about twenty per cent. of resinous extract, composed of the resin and green colouring matter.

The *seeds* of the hemp possess none of the medicinal properties of the resin.

In India, and also in Asia Minor, South America, Turkey, and Egypt, the hemp is employed as a means for producing a pleasing intoxication: it is also resorted to as a medicinal agent in a variety of affections.

It is used in several different forms for the purpose of intoxication; either mixed in the form of powder, with milk and water, sweetened with sugar; formed into a confection, called *majoon*, with flour, butter, &c., or smoked with tobacco.

The Indian hemp was introduced to the notice of the medical profession a few years back, by Dr. O'Shaughnessy, of Calcutta, who published a pamphlet on the subject, from which our information is principally derived.

The following formulæ are given by Dr. O'Shaughnessy for the preparations he has employed:—

The *resinous extract*, formed by boiling the tops of the dried *gunjah* in alcohol, until all the resin is dissolved, and evaporating in a water-bath.

The *tincture*, prepared by dissolving three grains of the resinous extract in one drachm of proof spirit.

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## Case of extensive Valvular Disease in the Heart of a Colt, with Attenuation of the Walls of that Organ.

*By Mr.* W. Stanley, *M.R.C.V.S.*

Dear Sirs,

I have this day forwarded by railway a diseased heart taken from a colt rising three years old, which died last Wednesday. The history of the case is as follows:—His owner purchased him

in the early part of November last at a fair, and at that time he was very fat, and looked, to all appearance, in health. After purchase he was turned into a field, and was observed very soon after to lose flesh and daily pine away; but as he always appeared so lively and gay in the field, his owner thought there was no illness present, and allowed him to take his course till about three weeks since, when my attention was first directed to him. After a careful examination of him, I gave it as my opinion that the animal was consumptive, and I feared no medical treatment would be of any service. However, he was placed under my care, and I treated him for a chest affection, employing setons, counter-irritants, sedatives, &c. I soon strongly suspected the heart was also implicated, and, after a short time, my suspicions were confirmed by the general symptoms of heart affection being manifested.

The pulse, from the time I first saw him, was strong and quick at the side, but so indistinct at the jaw that it could not be taken: it ranged during his illness from 90 to 110 beats in a minute, and the beat could easily be felt on the right side; but it was not of so violent a character as the case I sent you an account of some time since (*see* VETERINARY RECORD, vol. iii, p. 233), nor was the beating perceptible at any part of the body except at the chest. There was a continual regurgitation of the blood up the vessels at the lower part of the neck, and the breathing was rather quick and interrupted. From the time of purchase till within ten days of his death, he was never observed to lie down, but after this period he frequently did so. He had that peculiar animated expression of countenance so common in heart diseases; but there was no cough, nor any abnormal sound in the respiration. The general symptoms remained unaltered from the time I first saw him, the only change being daily loss of flesh. In this state he continued till last Wednesday, when his breathing became much embarrassed, and he dropped down suddenly, and unexpectedly died. I saw him about four hours previous, when he appeared the same as usual. Upon examination an hour after death, I found the immediate cause to have been a rupture of the posterior vena cava, there being two bucketfuls of blood in the abdomen. The liver had undergone no structural change, but its vessels were congested. The heart, when taken out of the chest, weighed 12 lbs., and both its ventricles were full of coagulated blood. As it shews

so much valvular and membranous disease, accompanied with atrophy and dilatation of its walls, not usually met with, I have thought the case worthy of being recorded. The cardiac membrane of the right ventricle, especially at its opening, has undergone a singular change, and on the valves are fungoid excrescences, evidently the result of inflammatory action. The valves in the left ventricle are also thickened. The lungs were apparently free from all *acute* inflammatory disease, but they were of an unusual size, and several tubercles existed in them, while about three-fourths of each lobe was of a fawn colour, and indurated, this being produced by the plastic matter of the tubercles, some of which had suppurated, and others, on cutting into them, contained pus. The lungs were very heavy, and crepitation was but little felt; nevertheless, they did not sink in water. I forgot to mention there was about two quarts of serum in the pericardium, which was also very much thickened.—What produced this disease of the heart? I am of opinion that the plethoric state of the colt at the time of sale, and probably the excitement and exertion he was subjected to at the fair, combined with the tuberculous state of the lungs, were the principal causes; the former being the predisposing, the latter the exciting. The disorganized state of the lungs I consider was not so much the result of any previous inflammation in those organs, as the consequence of an unhealthy constitution; in other words, an hereditary predisposition.

I am, truly your's, &c.

*Leamington, Feb.* 21, 1848.

[This case is replete with interest. We consider Mr. Stanley right in his conjecture that the diseased state of the lungs was consequent on hereditary predisposition, there being an absence of all indications of acute or active inflammation having existed in these organs. The morbid action of the vessels resulted in the formation of tubercles, some of which, it appears, had gone on to suppuration. The function of the lungs being thus interfered with, it might be anticipated that the heart would soon become implicated. The lesions which had taken place in this organ were very remarkable. Its appearance externally was healthy, there not being

the slightest sign of any disease of the pericardium immediately investing the heart; but the pericardial sac, we are informed, was extensively affected, and filled to repletion with serous fluid. In magnitude the heart appeared not much increased; the ventricles, however, were somewhat larger than natural, and the muscular parietes considerably diminished in thickness: whether this was the result of over-distention or absorption, is not assignable. The fibres were disgregated, and the texture of the organ generally weak.

The right auricle appeared normal, but around the auricular-ventricular opening a mass of disease presented itself. The tricuspid valves, and the lining membrane of the cavity, were much thickened; and numerous projections, consisting of effused lymph, lowly organized, were thrown out between the layers of the membrane forming the valves, thus necessarily interfering with their function. The chordæ tendinea and carneæ columnæ were also involved in this structural change, shewing that much exertion had been necessary to carry on the circulation, which accounted for the enlarged state of the ventricles. On the left side considerable disease also existed, but not equal in degree to that on the right. The bicuspid valves were thickened from effused lymph, and thus their action was impeded. The valves guarding the aorta were likewise thickened, but those of the pulmonary artery appeared altogether free from disease.]

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## Case of Ulceration of the Parotid Duct of a Horse, terminating in the Loss of the Secretory Function of the Gland.

*By Mr.* W. C. Sibbald, *M.R.C.V.S.*

On the 9th of December, 1847, I was requested to visit a black horse thirteen or fourteen years old. On examination, I found the lower half of the left side of the face much swollen, the swelling extending from the postero-superior edge of the inferior maxilla to the angle of the lips, and filling the space occupied by the submaxillary gland. No cause could be assigned for this enlarge-

ment, and which had taken place in less than forty-eight hours. There was much difficulty in mastication, and, consequently, food was partaken of but sparingly. By the aid of the balling-iron I made a careful examination of the interior of the mouth, but could not discover any cause for the appearances presented; and, indeed, the absence of all fœtor disinclined me to the opinion of any of the usual abnormal affections of the mouth existing; such as diseased teeth, fractured bones, ulcerated buccal membrane, &c. Having placed one hand on the inner surface of the cheek, with the other I manipulated over the outside, but could not detect the existence of any substance in the parotid duct, the obstruction of which I began to suspect was the cause of the mischief, nor could I find the opening of the duct on the buccinator muscle. The submaxillary swelling was blistered, the mouth-rasp applied to the molars, and a febrifuge exhibited daily.

*Dec.* 11*th.*—The swelling is increasing; the blister has acted well: continue the same treatment.

13*th.*—The symptoms remain stationary: treatment as before.

16*th.*—The duct has burst, and a large slough has taken place which would contain a walnut. The external opening is about an inch below the border of the masseter muscle. I can introduce the probe into the canal superiorly, but I am unable to find any passage into the mouth. I am perfectly satisfied that there is no extraneous substance in the duct. During the process of mastication the saliva runs from the wound in a continuous stream, but when the jaws are still none appears unless the probe be introduced. The swelling is extending up towards the base of the ear, embracing the parotid gland, and the poor animal looks half starved. An abscess having formed in the submaxillary space, a lancet was plunged into it, and a large quantity of pus escaped: discontinue medicines, and simply foment the increasing tumour.

18*th.*—My patient is much the same: the swelling is still increasing; injected some solution of chlorinated lime into the wound (not the duct), and directed it to be carefully applied daily without breaking down the granulations which are beginning to form.

22*d.*—Wound healing: discharge of saliva less. On making a manual examination of the upper swelling, before using the lancet, the animal swerved, and the contents of a large abscess

came pouring through the opening previously made: fomentations to be continued.

*Dec.* 26*th.*—The swelling still continues to extend upwards. The base of the ear, the ear itself, and the hollow above the orbit, with all the surrounding parts, are a tumid and tender mass; but down the facial region it has much subsided. The lower part of the branch of the inferior maxilla feels considerably thickened, and the lancet again gave exit to a quantity of pus from the submaxillary space. The animal looks much emaciated. Give sulphate of copper two drachms daily in his food, and apply a blister all over the parotid region.

29*th.*—On visiting my patient this day, I found him in a pitiable plight. His owner had re-applied the blistering liniment, the result of which was, that the whole of the side of his head was, superficially, one vast discharging surface. Foment and cleanse his head with tepid water daily, and continue the tonic medicine. The original wound has healed.

31*st.*—There was a large collection of pus at the root of the ear, which I evacuated: continue treatment as before ordered.

*Jan.* 4*th,* 1848.—The animal looks better, and the appetite has improved. There is a small abscess immediately on the opening of the old wound into the duct. Let it be opened. On account of a mucous discharge from his bowels with the fæces, the sulphate of copper was discontinued.

7*th.*—Patient improving in condition. There has again a small quantity of pus collected below the ear: give exit to it.

11*th.*—The swelling is fast subsiding, and there takes place a laudably purulent discharge from the last one or two openings made, and that over the duct is quite healed.

17*th.*—Calling to see my patient to-day, I found that the wounds were all healed, with the exception of two small ones about the size of pin-holes just below the ear, from which, however, there was scarcely any discharge. The swelling of the face and head has disappeared, but the termination of the parotid gland has become scirrhous, and there is an indurated cord proceeding from it towards the intermaxillary space, which cord appears again turning round the angle of the jaw, along the inferior border of the masseter, and terminates where the duct burst. The animal has quite recovered his general health and condition, and I have

intimated that I shall not see him again unless other symptoms shew themselves.

*Remarks.*—There is some doubt in my mind as to the cause of this affection. Whether external injury would bring on inflammation of the duct, or whether it arose from an obstruction of its terminating portion, and certain it is, that I never could discover the opening on the buccinator muscle. The case itself terminated (as it appears to me) in inflammation and destruction (by induration) of the secretory function of the gland; and I believe it is unique, inasmuch as it progressed of its own accord, the surgeon having only to watch and assist the operations of nature. It may be worthy of notice, that the opening into the duct never, properly speaking, became fistulous, but healed by granulation of the soft parts, the pressure of the salivary secretion gradually lessening as the function of the gland ceased.

[From the suddenness of the attack, we are of opinion that some injury was inflicted on the parotid duct, which probably prevented the flow of the saliva into the mouth, thus partly accounting for the peculiarity of the symptoms when the animal was first seen. This resulted in inflammation of the duct, followed by ulceration involving the duct itself, and extending to the surrounding soft parts, in which abscesses from time to time formed. We concur with Mr. Sibbald, that the diseased action thus induced ultimately destroyed the secreting power of the gland; hence the readiness with which the ulcerated opening into the duct healed, and its subsequent obliteration by a deposition of lymph within it.]

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## Case of Ulceration of the Larynx of a Mare, with Atrophy of the Muscles.

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

Rarely has it been the case that a greater amount of disease has existed in the superior part of the trachea than that I am now about briefly to describe.

On the 24th of January last I was first called to see the animal. All the symptoms of laryngitis, in an acute form, were present.

On making inquiries into the previous history of the case, I ascertained that for three or four months past she had been a "roarer." My prognosis was unfavourable, on the grounds that it was an acute inflammatory attack supervening on chronic disease, and this, no doubt, some structural derangement. Mild antiphlogistic remedies were resorted to, with active counter-irritants to the laryngeal region. On the following day the patient appeared much worse; she protruded her head; the countenance was extremely anxious, and much general excitement present: the animal was altogether unable to swallow, and, suffocation being threatened, tracheotomy was immediately performed, which afforded instantaneous relief.

The acute symptoms having been easily combatted, after this I, of course, became desirous of removing the tube from the trachea; but, on its withdrawal, a return of the unfavourable symptoms shewed themselves, it was therefore *for a time* re-inserted. The owner becoming impatient, it was again removed; and it was now plainly to be perceived that disorganization had taken place in some portion of the upper part of the larynx. As the edges of the wound contracted, so the symptoms increased in urgency; and when the healing process had become perfected, they had returned to as great a degree as at the first. The animal was wholly unable to deglutate, and scarcely able to breathe; the general excitement was necessarily considerable, and being much out of condition, in fact, emaciated and old, it was deemed most desirable to have her destroyed.

*Post-mortem examination.*—The lungs were much tuberculated, the tumours varying from the size of a pea to that of a chestnut. I am indebted to Mr. Varnell for the following description of the lesions that shewed themselves in the larynx:—"The mucous membrane reflected over the inner side of the anterior margin of the cricoid cartilage, the inner surface of the arytenoids, the chordæ vocales, and the ventricles of the larynx, was thickened, and in a highly diseased state, the result of inflammatory action, involving the membrane forming the lateral boundary of the glottal opening to the base of the epiglottis, the epiglottis itself being unaffected. Ulceration had taken place to a great extent; several cavities, varying in size from a split pea to that of a sixpence, existed. Of the larger ulcers, two were situated on one

side, and one on the other, implicating the lateral and upper part of the arytenoid cartilage, and they were covered with a thin ichorous discharge of a greenish-brown colour. (This green tint I believe to be peculiar to ulceration of cartilage.) The other parts appeared highly vascular and granulated.

"The lining membrane of the trachea, as far as the fourth ring, although not thickened, was studded with small elevations, some of which were very vascular, and others not so. From the above abnormal appearances, I am inclined to think it was not a common case of laryngitis, or one induced by ordinary causes, but the result of some specific cause in operation.

"Externally, the following lesions presented themselves:—atrophy of the crico-arytænoideus posticus muscle; likewise of the arytænoideus, the crico-arytænoideus lateralis, and the thyro-arytænoideus muscles of the left or near side, with a falling in of the arytænoid cartilage.

"This atrophy of the muscles of the larynx I can only account for in this way:—Some lesion exists of the left recurrent nerve which more immediately supplies the dilator muscles of the larynx; and I am inclined to think, partly from my own dissections, and also from observations made by Mr. Hilton, of Guy's Hospital, that it supplies the constrictors as well. The superior laryngeal nerve is the nerve of sensation to the larynx, being distributed solely—with the exception of its external laryngeal branch and a twig to the arytænoideus—to the mucous membrane.

"But why this peculiar state of the muscles should not frequently take place on the left side—and, as far as my observation has gone, it has been invariably so—I am altogether at a loss to assign a reason. Is it on account of the left recurrent nerve being given off more posteriorly than the right, it having to pass round the posterior aorta? Thus pulmonic or bronchial affections may so affect this nerve as to destroy its functions wholly or in part. This is an interesting inquiry, and the view thus taken is seemingly, in degree, borne out by the history of the above case. I shall, however, avail myself of all the opportunities that present themselves to prosecute investigations into this subject, as I cannot but think it very important in a pathological point of view."

## Case of Purpura Hæmorrhagica in a Filly.

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

Dear Sirs, *Brighton, Jan. 17th,* 1848.

I have sent *per rail* the duodenum of a filly, which, in my opinion, presents a very unusual appearance, and which, with the history of the case, I have thought might prove interesting to the readers of The Veterinary Record.

I am, very truly your's.

A filly, rising two years old, the property of a gentleman residing near Brighton, was, with another a year older, attacked with strangles about ten days since. Except a somewhat unusual degree of tumefaction in the submaxillary space, no unfavourable symptom presented itself in either of them. As is customary, abscesses formed, were opened, and discharged healthy purulent matter. On the 12th inst. I saw them, and they appeared so well that I discharged them from further treatment, merely intending to call when near the place again, which would have been in three or four days. I was, however, sent for early in the morning of the 14th inst., and desired to come as quickly as possibly I could, as the yearling was thought to be almost in a dying state.

On my arrival I found her presenting the following symptoms :—The off fore leg and both the hind legs were excessively tumefied over the knee and hocks ; and so great a deposit of effused fluid had taken place about the nostrils and inferior portion of the face, that her respiration had become exceedingly laboured from the impediment thus offered. Hæmorrhage was taking place from the off nostril, and, within half an hour after my arrival, the near fore leg had become tumefied as much as the others were. Her pulse, though weak, was much quickened in consequence of the difficulty experienced in respiration, but no febrile symptoms were present. These appearances were accounted for by the formation of another abscess which had not relieved itself, and, doubtless, absorption of pus had taken place into the system. I was unwilling, in so early a stage, to have recourse to tracheotomy, and therefore ordered continual fomentations to be used after scarifying

the nose and face deeply, and evacuating the contents of the abscess. The bleeding was pretty copious, and I hoped would have had a beneficial effect; and after administering some tonic diuretic medicine, consisting of pulv. gentian. with the spirit. æth. nit., I left the animal until the afternoon, ordering the fomentations to be continued without intermission.

In the after part of the day I again saw my patient, and found the tumefaction had increased about the nose and extremities, and that, to prevent suffocation, it was absolutely necessary to have recourse to the operation of tracheotomy, which I performed, and which had the effect of relieving the immediate symptoms of suffocation: I also applied powerful digestives to the abscess, my object being to make it answer the purpose of a rowel. I saw her again late at night, but the tumefaction was still gradually increasing. I should have mentioned that her appetite was good, and she ate mashes pretty well, but was unable to use her upper lip for the purpose of collecting her food. The same medicines were repeated.

On the 15th none of the symptoms were ameliorated; the tumefaction of the legs had extended to the groin and chest, and the upper lip was of an enormous size; her appetite, however, continued good, and she was very cheerful. Hæmorrhage to a slight degree was taking place from both nostrils, and a sero-sanguineous fluid was oozing from several parts of the extremities. No discharge had taken place from the abscess: her fæces were healthy, but she had a difficulty in placing herself in the natural position to void them, and also to urinate. I again scarified the nose and face, continued the fomentations, and repeated her medicine several times during the day, with the addition of pulv. potassæ nitras in small doses.

On the 16th she was much worse; the swelling had continued to increase until her hocks nearly touched each other; her nostrils and lip were also more swollen, and considerable effusion had taken place about the eyelids. A sero-sanguineous fluid was oozing from several spots in the legs and from the conjunctival membrane, so that she might be said to shed tears of blood: the membrane itself was as red as a piece of scarlet cloth; no discharge takes place from the abscess, and there is almost a total inability to feed, although her appetite and spirits remained pretty good. Scarifications were made to the nose, lips, and eyelids, which latter bled

profusely. Fomentations were still resorted to, almost unremittingly, and she was frequently drenched with gruel, which she swallowed without difficulty. The tonic and diuretic medicines were again administered, and the abscess dressed as before. She laid down in the afternoon and rose without assistance, and afterwards walked some distance in search of her companion; but the symptoms gradually increased in intensity, and about the middle of the night she fell down, and died in two or three hours after. Whilst down she struggled, and shewed some slight symptoms of abdominal pain.

*Post-mortem examination.*—On removing the common integument, the extremities presented a perfectly blackened appearance from effusion of blood into the cellular membrane, as did the greater part of the facial region. The abdomen being opened, no abnormal appearance presented itself until the duodenum was exposed, the peritoneal coat of which immediately attracted my observation. I removed the stomach and intestines: on opening the former, it presented a perfectly healthy appearance, but, on carrying the incision into the duodenum, the intense disease which you will perceive was exposed. No bots were adherent to the villous coat of the stomach, and but few to the cuticular; they would appear to have accumulated in this intestine. The liver, spleen, and pancreas, were perfectly healthy, as were the urinary organs. The lungs, especially the anterior portion of the right lobe, were excessively congested. I cannot imagine the disease of the duodenum could have caused the symptoms which I have related, only that it would have prevented healthy chymification taking place, and thus have rendered the blood circulating in the system of an unhealthy nature, and, as was the case in this instance, poisoned it. What appears to me so singular is the confined space of inflammation (the stomach and jejunum being perfectly healthy), and the absence of pain until within a few hours of death, and which was even then very slight.

I hope you will excuse defects in this hurried scrawl, as I am much tied for time.

I am, your's very truly,

J. MANNINGTON.

[This case appears to us to have been one of PURPURA HÆMORRHAGICA supervening on an attack of strangles. The portion of

intestine forwarded evidently shewed that the lesions were not the result of simple inflammatory action, but were referrible to interstitial sanguineous deposit; in all probability, consequent on an empoisoned state of the blood, and which might, as observed by Mr. M., depend upon the absorption of pus, this not being thrown out of the system by the maturation of the second abscess. Or, this passive hæmorrhage into various parts of the body, particularly the cellular tissue, might depend upon a peculiar idiosyncrasy, as such cases often exist independent of the absorption of pus.

This disease assumes either an acute or a chronic form. In the first, death usually takes place in the course of a few hours, of which an instance occurred in the infirmary of the College, which closely resembled the case above recorded by Mr. M., not long since. A horse was admitted for lameness of the hock, accompanied with a slight swelling of the joint, both of which soon disappeared by ordinary treatment; but he was not removed, although fit to resume his work, on account of his owner being on the Continent. The evening preceding the attack the animal was apparently in perfect health; but the watchman, early in the morning observed him to be hanging his head, which was much swollen, over the door of the box in which he was kept, and a discharge of blood to be taking place from both nostrils. The state of the horse was immediately reported, and, being visited by the Assistant Professor, the following symptoms, in addition to those above stated, were observed to be present:—The extremities below the knee and hock joints, and the prepuce were much enlarged; diffused swellings existed over the surface of the body, and under the abdomen; the pulse was rapid, tremulous, and nearly indistinct; the breathing painfully laboured; spasmodic twitchings of the voluntary muscles took place; the coat was erect; the tail quivered; the vessels of the conjunctival and Schneiderian membranes were engorged; frequent efforts to urinate were made; and it was with difficulty the animal could be induced to move. These symptoms soon became much aggravated, and the swelling of the head and upper parts of the neck could actually be observed to increase, and this took place so rapidly that suffocation was threatened. Profuse perspiration now bedewed the body, and it was evident that, unless relief were speedily afforded, death would soon close the scene. The operation of tracheotomy was

at once performed, which afforded only temporary benefit, and fomentations by means of rugs were continuously applied; but so quickly did the vital powers become exhausted, that time was not afforded for the adoption of other remedial measures, except that opiate enemata were thrown up to allay the excitement, the swollen state of the head and lips precluding the administration of medicines by the mouth. In six hours from the attack the animal died.

Inspection after death shewed infiltration of blood into the subcutaneous cellular tissue, especially of those parts most swollen, and likewise into the substance of the muscles. Under the mucous membrane lining the intestinal tube blood had become extravasated in patches, and the same appearance was met with, here and there, between the muscular and peritoneal coats. The serous membrane of the thoracic cavity, and the pericardial covering of the heart, presented the like lesion. The lining of the trachea and larynx, with the Schneiderian membrane, were of a black colour from blood effused within and underneath them. Not a viscus in the body shewed the slightest trace of any other disease.

In the subacute or chronic form of *purpura hæmorrhagica*, some practitioners advocate the withdrawal of blood, while others depend upon the exhibition of styptics, preferring those containing sulphuric acid in excess. All treatment, however, is at best of doubtful efficacy.]

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## Case of Phrenic Hernia, in which nearly the whole of the small Intestines had passed into the Thoracic Cavity.

*By Mr.* T. W. Gowing, *M.R.C.V.S.*

Dear Sirs,—I beg to forward you the history of a case of phrenic hernia that very lately came under my notice, the diseased parts having been already laid before the students of the College.

On the 1st of February, about six o'clock in the evening, I was sent for to an aged grey cart-horse, the property of the London and Birmingham Railway Company, which I was told was labouring under an attack of spasmodic colic, he being a coarse and

voracious feeder. When I arrived, I found the symptoms not so acute as in ordinary colic generally. The animal was continually pawing and shifting his fore feet; the breathing quickened; the pulse slightly accelerated, but its tone was nearly natural. I was informed by the horse-keeper that he had lain down once, a thing he had not done for twelve months or upwards, as he was a horse that did not lie down. Knowing that the animal was, as before said, a voracious feeder, and that the bowels had not acted, I imagined that there might be some spasm existing, and therefore ordered an opiate combined with a full dose of purging medicine to be given, and enemas to be administered at intervals. Another antispasmodic draught was exhibited at nine o'clock, the unfavourable symptoms continuing still present; but at eleven o'clock the patient was more tranquil, and drank some white water that was offered to him. He was now left for the night, with instructions that all solid food should be kept from him. On the following morning he was again seen by me: the pulse at this time was nearly natural and tolerably strong in tone—the bowels, however, had not acted; the cathartic medicine was therefore repeated, and I saw him again in the evening. The symptoms were still unfavourable, and the bowels had not yet responded: I consequently repeated the opiate combined with laxative agents, and ordered injections to be thrown up frequently.

*Feb.* 3.—The bowels are still torpid, and my patient much the same as yesterday. Gave six drachms of the cathartic mass, rubbed down in a little mucilage of gum arabic, continuing injections as before.

4*th*.—The bowels are acting freely. The purging continued until the 6th, when the physic began to set, the animal the whole of the time being kept on sloppy diet. He seems to be markedly improved, and his appetite is returning. He was now allowed soft meadow-hay, with an occasional bran mash, and exercise, preparatory for work, to which he was taken on the 16th of February, for an hour or two only, and then returned to his stable, when he ate his usual food, and appeared to be doing well, according to the statement given me by the horse-keeper.

On Thursday, the 17th of February, between the hours of one and two, I was again requested to visit my old patient, who was said to have a severe return of his former malady. The horse had

been taken to work in the early part of the morning, doing his work well, and appeared quite fresh until the period above stated, when he suddenly shewed symptoms of distress, acute pain, and intense suffering, and fell across the "metals," where he had previously been drawing some loaded trucks. But after some little time he was again got upon his legs, and removed to his stable, a distance of seven or eight hundred yards, where I found him with the following symptoms present:—the pulse 58 in the minute, and somewhat full; the breathing accelerated; the nostrils dilated, and the mucous lining encoated with a brownish matter, apparently from non-secretion; the conjunctival membrane injected; profuse perspiration covering the body; the animal supporting himself by his hinder quarters against his box, and the man keeping him in that position by holding his head so as to prevent him from knocking himself about, which he seemed much disposed to do. I desired the man to let go his head, and leave the animal to himself, while I watched the symptoms. Upon his head being relinquished, the animal laid down, plunged occasionally, and rolled and at last balanced himself upon his back, which position he maintained for some moments, and then commenced again struggling and plunging violently: he then arose for a short time, but it was not long before he again went down, lying for some time upon his abdomen with his legs under him, throwing his head towards his sides, and looking anxiously at his flanks. After resting in this position for a short period, he got up again, and I embraced this opportunity to extract some blood; but had not taken more than three quarts before there was a faltering of the pulse, and the animal evinced great uneasiness. I at once pinned the orifice up, and ordered an opiate draught to be given, and an enema to be administered; saw my patient again in an hour; and, the animal not being in the least relieved by my former treatment, the opiate combined with a cathartic was administered, and fomentations of hot water were directed to be applied to the abdomen, the animal to be well littered down, and a report sent to me if he became worse. In the course of two hours my assistant brought me word that he still continued in great pain, and, if any thing, that his sufferings were more severe,—I therefore saw him: found the pulse feeble and quick; the conjunctival membranes still injected; the breathing laboured; and the countenance ex-

tremely anxious; in fact, all the former symptoms seemed to be aggravated. Gave another opiate draught, repeated the enemas, and ordered the fomentations to be continued. I saw him again at nine o'clock at night, when there was a still greater change for the worse: the pulse was not to be felt at the submaxillary artery; patches of cold perspiration covered the surface of the body; the eye was amaurotic; and he was continually wandering round his box, which was of large dimensions. These symptoms told me too plainly that the scene was drawing near its close; I therefore reported to the proprietor that the case was now a hopeless one, and the animal had not long to live; but he feeling desirous that, while he was alive, we should do all that was in our power, and, the bowels not having responded, some medicine should be given him for that purpose, I replied that I thought it a pity to annoy and irritate the poor animal with any more medicines, yet, as he wished it, of course I would comply with his request: an oily mixture was therefore given combined with opium, and in two hours from that time death put an end to his sufferings.

*Post-mortem appearances.*—Upon reflecting back the skin and cutting into the abdomen, the cœcum came into view filled to distention with flatus; and the colon likewise contained a great quantity of gas. The stomach was full of ingesta, but there was a very small portion of the small intestines to be seen, at which I expressed my surprise, and said, we should soon have the mystery solved. Feeling that side of the diaphragm which was next to me, it appeared unnaturally hard and tense, as if the thoracic cavity was filled with some unusual substance. I then explored the abdominal region, and, on displacing the colon, I found a portion of the small intestines, and, tracing it along with my hand, I ascertained that it entered the diaphragm, near the lateral border of the right crura, through a rupture of about nine inches long, and through which almost all the whole of the small intestines had passed into the thoracic cavity. I then tied that portion of the intestine which was in the abdominal region, and separated or detached the other viscera from it; and, on cutting away the diaphragm, the remainder of the small intestines were brought into view, filling up the entire space of the thoracic region. They had become strangulated, and portions were quite in a state of sphacelus. I have little doubt but that at the first attack this

rupture in the diaphragm existed, and a portion of intestine may even then have passed through it, but it again returned to its place. A recurrence of the attack having been experienced, this, unfortunately, was not attended with the same result, but the intestine became strangulated, and mortification of it soon followed.

I am,

*Camden Town, Feb.* 21, 1848. Very truly your's.

[Instances of rupture of the diaphragm are by no means rare in the horse. At one time, "sitting on the haunches" was accepted as pathognomonic; but this is not to be relied on, since many cases occur in which it does not exist, and sometimes it is present without rupture of this organ. There is not an instance that we know of on record of an extensive rupture of the diaphragm having healed; and no cicatrix indicating a lesion of this kind having existed has been met with in post-mortem examinations. Nevertheless, many cases are recorded of small openings having been present in this muscular organ, the edges of which had become callous, and through which a knuckle of intestine had passed and become strangulated. There are physiological reasons why this reparation could not take place; the continuous action of the diaphragm preventing the edges of the wound being kept in apposition, so as to bring about their union by adhesion, or by the usual healing process; besides which, the reproduction of muscular structure is always extremely slow, it being, indeed, a question if ever muscle is reunited by fibre. A singular case, and similar to this communicated by Mr. Gowing, occurred in an antelope, which will be found in the *Proceedings of the Association for* 1838-9, page 101.

We have adverted to the ambiguousness of "sitting on the haunches" as a pathognomonic sign. Some consider it characteristic of rupture of the stomach, and we once observed it in a case of mesenteric hernia. Perhaps it may be indicative of lesion of some portions of the *anterior* part of the alimentary canal. The following case may be accepted as further illustrative, the symptoms of which simulated those usually attendant on rupture of the stomach. We are indebted to Mr. Gowing for it.]

## Case of Abdominal Disease, the Symptoms of which simulated those of Rupture of the Stomach.

On Monday, September 4th, at four o'clock P.M., I was requested to see an aged grey cart-horse, the property of Messrs. Chaplin and Horne, which was stated to be labouring under a severe attack of spasmodic colic. My assistant immediately attended, but shortly after returned, and expressed his belief that there was something more than ordinary colic present. When I arrived I found my patient *sitting upon his haunches*, his countenance anxious, the pulse intermittent and thready, and sometimes not to be felt at the jaw. The animal did not remain in the sitting position long, but from time to time rose, threw himself down again with violence, and then resumed his former posture upon his haunches, extending out his fore legs. At intervals he had rigors, which were followed by perspiration in patches over the body. I could get no previous history of him. The horse-keeper said he had been in from work about two hours, and when he first came home appeared quite well, and fed as usual, and that at the expiration of the above time the attack came on. Knowing that I had some visceral disease of the abdomen to contend with, but as to its seat all was only conjecture, I gave some fluid, thinking, from the general symptoms, that a rupture of the stomach existed, and, if so, that the fluid would, by coming in contact with the peritoneal cavity, increase those symptoms considerably; but this not taking place, and the pain being still very great, I had recourse to opiates, which were given at intervals until the morning of the following day, when the animal seemed much relieved. He was standing quiet, and the pulse had become stronger. I saw him again at twelve o'clock; the pulse was then 50, the extremities warm, the animal more lively, and, to all appearance, much better. The bowels not having acted, I gave a laxative, and saw my patient again in the evening, when the bowels had responded. On the following morning the medicine was still operating, but not inordinately: pulse 50; appetite returning; and the animal appears markedly improved. From this period I dated the convalescence of the animal, and he was a few days after able to resume his work.

Of course, what part of the alimentary tube was affected will perhaps for ever remain a mystery; but this case goes to prove one point, namely, that "sitting on the haunches" cannot be depended upon as diagnostic of ruptured stomach. The only means, I think, of ascertaining that, is by the administration of fluids, from which, of course, all the symptoms would be greatly aggravated. Deeming this rather an interesting case, and one likely to promote inquiry, I have forwarded it to you for insertion.

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## A Case of Phrenic Hernia in the Horse.

*By Mr.* W. Woodger, *V.S.*

The animal was attacked two days previous to his death with symptoms resembling spasms of the intestines, when an antispasmodic draught was administered by the stableman. No relief being afforded, I was requested to attend professionally, when I found the animal still evincing all the indications of colic, and therefore repeated the exhibition of sedative agents, following them up with an oleaginous purgative.

On the following morning the symptoms were still highly unfavourable, and indicated inflammation supervening on an attack of spasm; I was therefore induced to abstract blood, but the loss was borne by the animal with difficulty, and but little was withdrawn. Sedatives were again given, and enemata of tobacco thrown up. In the evening, to the casual observer, the symptoms were less urgent, but the experienced practitioner at once could see they were delusive. Although little pain was evinced, the pulse was imperceptible at the jaw, the breathing embarrasssed, the countenance anxious, the mouth clammy and offensive, and the extremities cold. Rupture of some portion of intestine, or its strangulation, was prognosticated to have taken place, and it was evident the animal was now beyond the reach of all remedies. During the night, or rather early the next morning, he died.

*Inspectio cadaveris* shewed a large portion of the ilium to have passed through a rupture in the diaphragm, and to have become strangulated. Examination of the rupture proved it not to be recent: its edges were thickened and rounded, and on the

abdominal surface the omentum was adherent to the margin of the opening by false membranes, while, on the thoracic side, adhesions also existed. The rupture was on the right side, at its inferior part.

About two months since the animal experienced a similar attack of spasms, which yielded to the ordinary remedies. It may be that the rupture in the diaphragm then took place, and the opening left having allowed of the passage of the ilium into the thoracic cavity, and which becoming strangulated, was the immediate cause of death. During the second attack there was an absence of the usual symptoms attendant on hernia of the diaphragm, there being no sitting on the haunches, &c.; and the laborious breathing did not shew itself till the evening before the animal died.

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### Calculus in the Colon, with Rupture of that Intestine.

*By the same.*

Although intestinal concretions are not uncommon in the horse, nevertheless they present inquiries of interest both to the physiologist and the pathologist. Their origin is clearly traceable to the food partaken of; hence the necessity of great attention being paid to the dieting of animals. Poor and innutritious provender, or an undue proportion of some of the constituents of the food, producing derangement of the digestive organs, and leading to non-assimilation of the ingesta, may be viewed as the proximate causes of these accumulations; yet their formation can be only slow, and while of small size they may be passed onwards and voided with the excrement; but, which is by far more common, they become lodged in a sacculus in the gut, acquiring size by retention, and, as long as they remain in one position, no inconvenience from their presence is experienced by the animal: but if from any accidental occurrence they are moved from their location, symptoms more or less acute will follow, and sometimes death, from their mechanically stopping up the alimentary tube, or exciting inflammation in it.

The subject of the present case was a bay mare, about seven or eight years old. She had been worked in an omnibus, and

was a good, though not what is generally designated a voracious feeder. Her diet was liberal, she being allowed half a bushel of oats *per diem*. About two years since she experienced a severe attack of spasmodic colic, which by the adoption of the usual remedial measures passed off, and the animal continued apparently in health until the 23d January last, when, being sent for, I found her again labouring under colic, accompanied with obstinate constipation of the bowels. Active means were resorted to, which were followed by successful results, and on the 31st of the same month the animal was put to work. On February 7th she was again admitted into my infirmary, a recurrence of the unfavourable symptoms having taken place, and, as before, the bowels were extremely torpid. Brisk purgatives, consisting of croton oil, with aloes, aided by tobacco enemata, caused them to act, and again relief was afforded, and the animal returned to her owner. On the 13th instant I was consulted by him on account of my patient not having regained her wonted spirits, and there being also indications of dull abdominal pain. I felt convinced that these repeated abdominal attacks were the consequence of some abnormal state of the intestinal canal, or that a calculus was there existent, which from time to time became dislodged from its situation. Seeing that but little could be done, I merely advised careful dieting, with an occasional mash, anticipating that time would soon develope the cause, and this took place somewhat sooner than I expected, for the next morning the animal was found dead in her stall.

On laying open the abdominal cavity, a large quantity of fæcal matter was perceived to have escaped into it; and on further search, this was found to have taken place from the colon, which was extensively ruptured just at its termination in the single colon, the immediate cause of this being a large calculus of the oat-hair formation, as classed by Mr. Morton. Its weight was six pounds avoirdupois; its form ovoid, measuring on its longer axis nine inches, on its shorter, five and a half inches. Its structure was nearly uniform; the inner portion being somewhat softer than the external part, and mixed with adventitious matters. In all probability, during the night another of these acute attacks came on, and by the animal's rolling about from pain and excitement, with so large a mass of foreign matter in the

intestine as that just described, the walls of the colon gave way, and death was the inevitable result.

During the progress of the disease the pain was at times as violent as in colic; at other times not so acute, but continuous. The pulse would vary considerably; sometimes being much accelerated. There was no injection of the visible mucous membranes, nor any coldness of the extremities, nor tympany present; which last I view as an unfavourable sign, from its indicating that some mechanical obstruction has taken place. In this case I did not bleed, the character of the pulse never warranting the act, although it is with me a general practice, as I find it has a relaxant effect on the system generally, and also prevents the accession of inflammatory action.

*Market-street, Paddington, Feb.* 18, 1848.

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## Case of Stricture in the Œsophagus of a Horse.

*By Mr.* G. Austin, *M.R.C.V.S.*

[Communicated by Mr. Gowing.]

My dear Gowing, *Blenheim-yard, Jan.* 20, 1848.

You wished me to send you an account of the case that you and Mr. Varnell saw at my infirmary on the 19th of December last. I know you will excuse my writing a minute detail; I have therefore just penned down the leading features of the case, which are as follow:—

*Dec.* 14*th.*—A bay thorough-bred horse, five years old, in rather low condition (having been at pasture from two years old until within a month of my purchasing him on the 6th of Nov.), exhibited the following symptoms:—General dulness—hanging of the head—loss of appetite—quick and weak pulse—cold extremities—staring coat—mucous membranes rather paler than natural—legs cold—respiration a little quickened—evacuations natural. The treatment adopted was tonic and stimulating, to which were conjoined a loose airy box, bandages to the legs, and diet of gruel and mashes. I anticipated that this would have been a case of influenza by the next morning, as I had three such cases

in the hospital, the symptoms of which were at the commencement nearly allied to these.

*Dec.* 15*th.*—This morning the horse appeared better in many respects; but there was a depression of spirits, and some suffering observable. About three o'clock P.M., the pulse had risen, both with regard to the force and frequency of the pulsatory action; the extremities were alternately hot and cold, and there being evidently febrile action present, which was gaining ground, some febrifuge medicine was given.

16*th.*—The extremities are still alternately hot and cold; a slight rattling noise, as if caused by mucus, is heard when he coughs, and the effort occasions pain; a slight discharge of a watery character takes place from the nose, and the lachrymal secretion is augmented, the breathing is a little disturbed, and the pulse about 44, and soft. In other respects the animal is much the same as on the preceding day. The throat appearing a little sore, some stimulating embrocation was applied to it.

18*th.*—The respiration is increased; the pulse is quick and weak: he still coughs; the nose is dry, and there is pain on pressure being applied over the left hypochondriac region, with frequent attempts to bite and kick; the visible mucous membranes are also slightly injected.

On the medicine being given in a liquid form, and not more than four ounces, the horse, after making violent efforts, vomited very considerably. I should think he threw up quite the half of a common stable-pailful of carrots, bran mash, and liquid matters, which smelled very sour. The efforts were so violent, that I thought the animal would have choked himself: the ingesta came from the nostrils and mouth at the same time; after which a fluid passed up and down the œsophagus two or three times; he would then cough, and throw up about a pint out of the mouth and nostrils, producing much general excitement. As balls were inadmissible, and the smallest quantity of fluid brought on distressing symptoms, I gave his medicine in powders, a small quantity at a dose, also threw up an enema, and applied a stimulating embrocation down the œsophagus, and over the region of the stomach (nux vomica was the medicament administered in powders.)

19*th.*—On visiting the horse early this morning, I found he had again vomited very considerably: the pulse was scarcely to be felt

at the submaxillary artery, and could not be numbered: the heart also was beating feebly, and seemed with difficulty to contract on its contents. I again gave his medicine in the form of powder, one part of arnicum album triturated with ten parts of sugar, half a drachm each dose. Under this medicine, frequently repeated, he appeared before night to have somewhat rallied. However, on this day you, in company with our friend Mr. Varnell, saw him.

On the 21st Dec. he was slightly improved. I still gave his medicine in powders.

22*d*.—In the morning much better, and inclined to eat. The groom having indulged the animal's appetite, he had in the evening a slight return of vomiting.

23*d*.—Not quite so well. Continue medicine.

24*th*.—Animal again apparently better, and from this date he has continued to improve, and so disappointed the knacker, for whose convenience, on the noon of the 19th, I had him, with three men supporting his tottering frame, brought from an upper box to one in the lower part of the yard, to facilitate the process of carting him off. His diet, even now, consists of boiled oats, bran mash, carrots, and sweet hay, with steeped linseeds.

There is no doubt of the existence of a stricture at or near the cardiac orifice of the stomach, with dilatation of the other part of the œsophagus: and the animal has even now occasionally a fit of coughing, though not very violent, after feeding; probably from some retention of food in the gullet and pressure on the nerves; but he has not been observed to vomit since, although the man said he had seen him do it slightly before this attack came on.

I am your's faithfully.

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## Case of Ventral Hernia in a Colt successfully treated.

*By Mr.* R. Girling, *M.R.C.V.S.*

On Tuesday, the 2d of November last, I was requested to attend a yearling cart-colt belonging to Mr. Faiers, of Burstall, near this town, affected with a laceration of the abdominal parietes to the extent of from four to five inches. The common integument was

not broken through nor abraded, but it formed a large hernial sac. There was also but little inflammation about the lacerated parts; and the constitutional disturbance was so slight, that the animal had every appearance of being in health.

I told the owner that I was well assured the protruding viscera would never return to their proper situations without a surgical operation was performed, and this being a very dangerous one, I would not be responsible for the life of the animal. I also objected to operate on him unless I had him entirely under my care, to which the owner willingly consented, and, on the following day, the colt was sent to my infirmary. I placed him on a restricted diet, but did not bleed nor give him any purgative medicine prior to the operation, the animal being rather low in condition.

On Wednesday the 10th, I considered he had received sufficient preparatory treatment, and on that morning he was kept without food. A short time previous to the operation I assisted in evacuating the bowels by an enema, and gave tinct. opii ʒiss in half a pint of warm gruel. Having made the necessary preparations for the purpose, I cast the animal on his near side; his head was then made fast to a post in front of him, and the off hind extremity being freed from the hobbles, was confined by a rope to a large staple behind; the colt was then turned in a favourable position, and supported in that situation with bags of straw. After a careful examination, I commenced the operation by making an incision through the integument into the sac. The greatest care was required to prevent the escape of the intestines; but we succeeded in keeping them in, and four sutures of the large flexible wire were then passed through the edges of the laceration so as to bring them into apposition: these sutures included in their grasp the peritoneum and the abdominal muscles. The divided integument was afterwards brought together by three interrupted sutures, the smallest wire being used for this purpose. A broad surcingle was then placed round his body, as I feared that some of the sutures might give way in his getting up. The patient was allowed to rise at his own pleasure, which he did after a few minutes.

The surcingle was then removed; a large compress of fine tow, saturated with diluted spirit, was placed over the entire surface of

the wound, and the surcingle replaced. The animal was then left at liberty, but strictly watched. A gallon of tepid water was offered him, which he drank with avidity, and a warm bran mash was ordered to be given an hour afterwards, but which he refused. The pulse, which, shortly after the operation was 65, had at two P.M. risen to 75 beats in a minute, and the respiration was increased, accompanied with symptoms of abdominal pain. An oleaginous draught, with tinct. opii ʒss, was administered, which relieved him. At 5 P.M. the pulse had sunk to 68, and the breathing was less accelerated. A small quantity of warm bran mash was placed before him. At ten P.M. he appeared much the same: orders were given for him to be kept particularly quiet, and to have half-a-pail of gruel placed within his reach. At eleven P.M. I again visited my patient, when he appeared more composed: he had partaken of the greater part of the gruel; his pulse was 58, and the breathing tranquil. The following morning, at six o'clock, I found him very comfortable: pulse 52. On removing the broad surcingle and the compress, I found the wound much tumefied, and very tender on pressure being applied. Fomentations were ordered to be employed by means of a large piece of woollen cloth, dipped in hot water, and wrung out; this being held upon the part for at least an hour at a time, and to be repeated several times during the day. There being a quantity of sanious fluid contained in the sac, which rendered the skin pendulous, I removed the middle suture, gave exit to the imprisoned fluid, and dressed the wound with the common digestive ointment: the surrounding parts were also bathed with diluted alcohol, and the surcingle was replaced in such a manner as to give but little pressure. The fæces being, as desirable, pultaceous, I gave spts. æther. nit. ʒs in a pint of warm gruel, which he took with very little difficulty. I also ordered a bran mash and a small portion of sweet hay, and half-a-pail of tepid water to be allowed him. At twelve o'clock he appeared to be going on as well as I could expect—pulse 56; and as he seemed inclined for food, he was allowed a little more hay and bran mash. At five P.M. I saw him again, and was pleased to find him still progressing favourably. He was seen again during the evening; and, as no unfavourable symptoms had shewn themselves, he was left for the night. On

Friday morning, early, on removing the surcingle, I found the wound still tumefied, and tender to the touch, but not to the same extent as before. The suppurative action having commenced, similar treatment to that ordered yesterday was adopted. On the following morning its appearance was much more favourable—suppuration was fully established; and now the compound tinct. myrrh. was applied, and repeated daily until the 29th, when two of the sutures being still adherent to the parietes, they were removed. As a portion of the integument in the central part of the sac was hanging down, a piece of small whipcord was tied tightly round it, and, after a few days, it sloughed off. In about a week the patient was convalescent, and soon afterwards he was returned to his owner. I subsequently saw the case, and had the gratification to find that in a few weeks the colt was perfectly restored to health.

*Ipswich, January*, 1848.

[Several analogous cases to the above have been recorded in the pages of our Journal, the result being equally as satisfactory: nevertheless, we are of opinion, that the decision and caution with which Mr. Girling acted are highly creditable to him, since any thing short of the operation would doubtlessly have been unattended with benefit. It must always be borne in mind, that an important difference exists between ventral hernia the result of accident, and those cases having their origin in natural causes. Surgeons, even of eminence, a few years since, hesitated to open the peritoneal sac, although it had occasionally been undertaken by persons altogether ignorant of the first principles of medical science, and, like similar operations performed by empirics on man, Nature withstood these rude attempts on her conservative powers; the charlatan, therefore, took to himself praise when he really merited censure. Circumspection before he acts is inculcated by the knowledge possessed by the educated practitioner; and this it is which marks the difference between him and the mere pretender.]

## Case of Poisoning in the Cow with the Chloride of Mercury—Recovery.

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

Dear Sir, *Northowram, Halifax, Feb.* 26, 1848.

I have lately met with an instance of poisoning in the cow with the chloride of mercury; and knowing those cases are not of frequent occurrence, I have thought the following history of it would not be unworthy of your consideration, being well convinced of the interest you take in these matters. I shall state the case as well as my recollection serves me, having unfortunately taken no notes at the time.

*Nov.* 29, 1847.—At 2 o'clock, p. m., I was called to attend a cow, the property of Mr. C——, when the following symptoms were present:—pulse 80, but weak; grinding of the teeth, but no discharge of saliva; the gums have a pink hue all round the incisors, and the mouth is extremely fœtid; the animal is down, and scarcely able to rise; profuse diarrhœa, with intense fœtor of the evacuations; legs, ears, and surface of the body cold; loss of appetite and rumination; milk diminished from seven quarts to a pint per diem. I was informed by the owner that she was suffering from gonorrhœa, for which he obtained a recipe from a neighbouring farmer, as follows:—

| | |
|---|---|
| 12 ounces | Glauber's salts |
| 6 ditto | jalap |
| 2 ditto | calomel |
| 4 ditto | sulphur. |

A mistake was here made, two *ounces* of calomel being written instead of two *drachms*. The above was administered on the night of the 27th. Knowing this, I lost no time in giving the animal a quantity of albumen of eggs, with wheaten-flour gruel, and ordered the same to be repeated at night, and also in the morning, with frequent drenches of milk. Exhibited an oleaginous purgative with tinct. opii ʒj, and ordered enemata to be thrown up twice or thrice a day.

30*th*.—Animal rather better, and the diarrhœa somewhat

checked: pulse 70, ears and legs warmer. Repeated the laxative with the opium, and continued the gruel and enemata.

*Dec.* 1*st.*—The animal remains much the same, except that the fæces are becoming more natural. Gave the medicine as before.

2*d.*—My patient seemed to-day rather better, and nearly in this state she continued until the 5th, when dysentery set in. She was continually down, the pulse 80, the eyes sunk in their orbits, the legs and ears intensely cold, the fæces watery, and covered with bubbles of gas—in fact, the general symptoms gave little or no hopes of recovery; but, being urged to do all I could to save her, I gave catechu ʒij, creta prep. ʒij, opii ʒiij, in a very strong decoction of oak bark, which dose was repeated twice a-day; I also applied the terebinthinate solution of croton to the sides of the abdomen, and ordered astringent enemas to be thrown up frequently. This treatment I continued up to the 13th, varying the doses as the state of the case required, when the fæces had become of a natural consistence, the appetite improved, and the milk increased. From that time the animal continued gradually to get better till Jan. 8, when the milk she gave amounted to a gallon twice a-day; the appetite was good, and she appeared quite convalescent.

Before concluding this brief statement, there are one or two points on which I wish to dilate. It may be asked, why administer albumen as an antidote? To which I reply, that I felt convinced from the time the chloride of mercury had been given, as well as from the largeness of the dose, that a portion of it, at least, had by the action of the acid of the gastric juice become converted into a bichloride of mercury, and for which this is the most effective counter-agent we have; besides which it is one always at hand in a farm-house. One of the symptoms present, namely, the profuse and offensive character of the dejections, was to me sufficient proof that some such change as this had taken place.

Another point is the largeness of the quantity of catechu administered by me as an astringent, this being so much greater than is recommended in books. It will be remembered that this was not exhibited until after I had employed my antidotes, and endeavoured to expel the poisoning agent from out the system. Then it was that symptoms of dysentery shewed themselves; and I knew this to be a fatal disease, and one that often bids defiance

to all ordinary therapeutic agents, and this, too, was no common case. Moreover, latterly I have been somewhat successful in this affection, by giving ounce and ounce-and-a-half doses of catechu in combination with the gall-nut, when small doses have failed to effect any good, and here I thought I was warranted in even increasing my dose. Therefore I gave two ounces twice in the day for two days, and afterwards only half the quantity till the 12th of January, there having taken place an amelioration in the unfavourableness of the symptoms, and the fæcal dejections being more consolidated; nor, as the sequel proved, had I any cause to regret my temerity.

I am,

*To Mr. Morton.* Very truly your's.

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## REPORT OF TRIAL.

### MAYHEW *v.* SPOONER.

Extracted from "*The Times*" of Feb. 11th, 1848.

(*Sittings at Nisi Prius, before the* LORD CHIEF BARON *and a Special Jury.*)

THIS was an action by which the plaintiff sought to recover compensation in damages for the alleged use of slanderous words by the defendant as applicable to the plaintiff.

Mr. Cockburn, Mr. Martin, and Mr. Petersdorff, appeared on behalf of the plaintiff; and Mr. Sergeant Wilkins, with Mr. H. Hill, represented the defendant.

The plaintiff and the defendant are well known as gentlemen of high reputation as veterinary surgeons, and the defendant is the professor of anatomy at the Veterinary College. The parties entertained different opinions in reference to an application which the defendant had made to the Government with the view of obtaining a new charter to the College. One result of this variance was the holding a meeting of the members of the profession at the Freemasons' Tavern, at which both of these gentlemen were present. In the course of the proceedings the plaintiff made an assertion that the defendant had made an untrue and an unfounded statement, by having said that he had delivered lectures at the

Veterinary College on the disease of the "glanders." The defendant thereupon repeated his former assertion, and cautioned the meeting against placing reliance in the statement which had been made by the plaintiff, who was a "convicted libeller, and a desecrator and a ridiculer of the Christian religion." These accusations raised the indignation of the party against whom they had been directed, and considerable excitement was manifested by the meeting. After consulting many friends, the plaintiff quitted the room, and, in the end, the present action was instituted.

Mr. COCKBURN, at the conclusion of his address to the jury, when opening the case for the plaintiff, said, that the only object his client had in bringing the matter into court was to have the opportunity of putting the defendant to his proof of the accusations he had made, and of enabling himself to refute and disprove them, so that he should place his character once more before the public and his friends as clear and as free from imputation as it had been prior to the charges the defendant had made. The plaintiff did not seek damages, but a clearance of his character.

Mr. Sergeant WILKINS here rose, and said, that after the statement his learned friend had just made, he was quite willing, under the peculiar circumstances of the case, to suggest that there should be a withdrawal of the alleged scandalous words on both sides. Each gentleman held a very high position in the profession, and they had for years been associated together in the pursuit of that branch of the medical and surgical science to which they had advantageously to the world at large directed their attention; and it would afford him much satisfaction to hear the withdrawal of the offensive words which had been uttered by both manifestly when labouring under a state of heated and excited feelings, in the progress of a public meeting called and held to consider the propriety, or non-propriety, of carrying out a proposition which had been set on foot by the defendant. That being so, he should suggest their mutual withdrawal, and that the parties should at once meet and shake hands. It was clear that on both sides those expressions had escaped in the heat of the moment.

Mr. COCKBURN replied, that, if this much had been done before they had come there, the proposal would at once have been acceded to. But as it was, his learned friend's client had compelled the plaintiff to incur the expenses of bringing the matter

into court, as the only means by which he could clear his character from the aspersions which the defendant had cast upon it. Would his learned friend pay the costs the plaintiff had thereby been put to?

Mr. Sergeant WILKINS did not think that that much should be required of him; but he would leave the question to his Lordship.

The CHIEF BARON could not offer any opinion unless he were asked for it, and that, too, with the consent of the other side.

Mr. COCKBURN would most readily leave the matter to be determined by the opinion of his Lordship.

The CHIEF BARON then said, that if he were in the same position as the defendant, and had had such a proposition made, he should feel himself bound to comply with it, and to pay the costs of coming down to that court. He quite went along with the observations of the learned counsel for the plaintiff in reference to the disuse of the barbarous and insane custom of duelling. Most happy was it that such a system of attempting to redress a personal wrong was fast dwindling from existence. In his opinion, the defendant ought to pay the costs of coming to that court.

The Attorney for the defendant here stood up, and, addressing the learned judge, said that he had not been, nor had his client been, any party to the proposition which Mr. Sergeant Wilkins had made as the representative of the defendant. Not only had he not been a party to the suggestion, but it had in no way been with his sanction that such a proposition had been suggested as from his client.

A pause in the proceedings was the result of this unusual course of proceeding, and astonishment was depicted on every countenance. At length,

The CHIEF BARON told the counsel that he did not think the Attorney had sufficiently considered the matter; and, therefore, to afford him time to consult with his client, and for both of them to reconsider the matter, he would postpone the further proceedings in the case until the next case had been disposed of.

The Attorney said he had well considered the matter, and he could come to no other conclusion than that the case should be tried.

The CHIEF BARON.—Sir, I do not think you have sufficiently considered the matter.

The Attorney felt that he had; and, moreover, that at present the statement of one side only had been heard.

Mr. COCKBURN said that, as a member of the bar, he could feel for the painful position in which his learned friend (Mr. Sergeant Wilkins) had been placed by this most unusual and most extraordinary proceeding on the part of his Attorney. He must protest against such an unusual interference; the more so, as that unseemly interference had not been made until the Attorney had taken the chance of the decision of the Court being in his favour. Had the opinion of the Learned Judge been contrary to what it had been, then the Attorney would not have been heard of. But that gentleman had thought proper to take no step until he found an adverse opinion expressed. He must protest against the interference of the Attorney.

Mr. Sergeant WILKINS here rose, and, addressing the Court, said,—"My Lord, I feel that there is something I owe to myself as an act of duty and of justice, and I feel, too, that I owe a duty to your Lordship, and to my brethren of the bar, in consequence of what has just transpired in this case upon the agreement which I took upon myself to suggest, and which my learned friend, as well as your Lordship, conceded would be a wise course to be pursued. If that agreement be not carried out, there is no other course left open to me than at once, however painful, and whatever loss it may personally entail upon me, to withdraw from the case." [Considerable sensation of an approving character was manifested throughout the Court.]

Mr. COCKBURN could not but deeply feel the painful situation his learned friend had been placed in by this extraordinary conduct of his attorney. No man could have acted more fairly, more correctly, or more honourably, than his learned friend had done by that course which he had just taken. He was, however, anxious, if possible, to spare his learned friend from the ultimate adoption of the step he had alluded to; and therefore he begged to state that he had the authority of the plaintiff's attorney to say, that he would only ask for the costs actually out of pocket.

The CHIEF BARON said, nothing could be more fair. In respect to his learned brother who had been placed in so painful a position, he wished to tell him, that it was because he had foreseen, from his known character for honour, that the step he had taken—that

that learned Sergeant would take—that he had felt anxious that the Attorney should further consider the matter, He had seen the position in which, by a wise suggestion and the subsequent improper interference by the Attorney, the learned Sergeant would be placed. He had seen that the defendant must, if he persisted, be left without any counsel; for it was utterly impossible that any man of honour, any member of the bar, could proceed with a case after the course which his own Attorney had adopted. In proposing, therefore, the postponement of the case, he had meant to afford the Attorney sufficient time to instruct some other counsel. With respect to the learned Sergeant, that learned gentleman had conducted himself on that painful occasion in a manner worthy of the high character and high honour which he had always maintained. After what had occurred, he could not by any possibility see how any man of honourable mind could have gone on with the case.

The Attorney said his Lordship had cast blame upon him, and he thought he was entitled to be heard in explanation.

The Chief Baron.—I think you are not entitled to be heard. I sit here to try this case, and not to enter into an argument with the Attorney. If you wish it, I will try the case; but I would ask you again to consider the matter.

The Attorney decided that the trial should go on.

Mr. Sergeant Wilkins said, that he felt that all the blame that had arisen ought strictly to fall on his shoulders, and not on those of the Attorney. He was quite willing to take all the blame. He had felt that he had made a wise suggestion.

The case was about to proceed to the evidence, when another consultation ensued, which resulted in the withdrawal of a juror, and the defendant consenting to pay the plaintiff's costs out of pocket.

It is not easy to describe the excitement which appeared to be created by this unusual scene in the Court.

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[*From "The Times" of Feb.* 12, 1848.]

A scene, which is happily most unusual, occurred on Thursday at the sittings of Nisi Prius in the Court of Exchequer in Westminster Hall. The occasion was the intended trial of an action

for libel which had proceeded as far as the opening speech of the plaintiff's counsel, who had declared, properly enough, that his client had no other view than to clear his character, when the defendant's advocate judiciously caught at a suggestion that seemed to hold out a prospect of an amicable arrangement. Every thing thus far was quite satisfactory, for it certainly appears on a *primâ facie* view of the matter that mutual concessions afford the most unobjectionable means of settling a dispute. Mr. Sergeant WILKINS, speaking in the name of the defendant, grew amazingly cordial, and wanted the intended litigants to "meet and shake hands." Mr. COCKBURN for the plaintiff, though not averse to the compromise, was unwilling that costs should be sacrificed, by his client at least, on the altar of friendship that his learned opponent would have reared. An intimation was thrown out on the one side, and gently repelled by the other, that the expenses ought to fall on the defendant alone. The barristers not being able quite to agree about the matter, left it to the LORD CHIEF BARON to decide. The Judge, after overcoming some little reluctance he had to undertaking the officer of arbiter, was at length induced to do so upon his opinion having been asked for by both sides; and his Lordship then proceeded to say that he thought the defendant should be the party to pay all the costs. Nothing could be more pleasant and conciliatory than all that had transpired on the subject up to the point at which we have arrived; but the harmony hitherto prevailing was suddenly interrupted by the attorney for the defendant, who stood up and declared that neither he nor his client had been a party to the proposition of Sergeant WILKINS. These impracticable individuals had, in fact, an obstinate repugnance to the process of moulding which their interests had been undergoing at the hands of the judge and the counsel on either side. Our report tells us, that "a pause in the proceedings was the result of this unusual course, and astonishment was depicted on every countenance." The cause of the astonishment, however, was not the unauthorized compliance of Mr. Sergeant WILKINS with an arrangement to which his client objected, but the extreme hardihood of that client in daring to make his objection known. Consternation seized the bench and the bar at the effrontery of this unfortunate attorney in failing to adapt himself instantly to the state of things which

had been, somewhat prematurely we think, agreed to in his name, and without his sanction having been obtained. Passing over with a sort of compassionating contempt the audacious individual whose interests were really in question, and who had presumed to interrupt their compromise before his face, the CHIEF BARON merely told the defendant's counsel, that, as "he did not think the Attorney had sufficiently considered the matter," the case might be postponed for a little while. The Attorney had, however, "considered the matter," and declared that he "could come to no other conclusion than that the case should be tried." The CHIEF BARON, taking a different view of the amount of consideration that was necessary on the part of the Attorney, determined that he should have more time for making up his mind.

Any one reading the account of these proceedings might naturally draw the inference that, if any one was a fit object for commiseration, it must be the defendant and his attorney, who were being urged to the adoption of a course they did not approve. It seems, however, that Mr. Sergeant WILKINS was in reality the individual whose painful position was to be deplored. Mr. COCKBURN sent forth a refreshing gush of eloquent sympathy to cheer the drooping spirits of his learned friend. "He," Mr. COCKBURN, "could feel for the painful position in which his learned friend Mr. Sergeant WILKINS had been placed by this most unusual and most extraordinary proceeding on the part of his Attorney." Nobody said a word or thought for a moment about the "painful position" of the poor Attorney himself, who, as the agent between the defendant and his counsel, had to restrain the latter from acting in opposition to the wish of the former, and who had been most unmercifully snubbed for hinting that the compromise proposed was one in which the person really interested refused to concur. Mr. COCKBURN, who, it will be remembered, was on the other side, protested with great earnestness against the interference that had occurred; and the learned counsel seemed really hurt at the idea that an obstinate principal and a persevering attorney should refuse to submit quietly to their fate. Mr. Sergeant WILKINS was so grievously affected at the perverseness shewn by those who had retained his services, that he saw no other alternative than to withdraw from the cause and leave them in the lurch. "However painful" it might be to him, there was nothing else to be done. At this

there was a "sensation of approval manifested throughout the court." Mr. COCKBURN then became more affected than ever at the accumulated sufferings of his learned friend, and to spare the excruciated sergeant, he, Mr. COCKBURN, "had obtained the authority of the plaintiff's attorney to say that he would only ask for the costs actually out of pocket."

We may be excused for expressing a little astonishment that the authority of the plaintiff's attorney should have been required to an arrangement proposed by the plaintiff's counsel, while the authority of the defendant's attorney was looked upon as a thing to be despised, and an attempt to assert it regarded as an offensive intrusion on the Court, as well as an outrage on the feelings of the bar. The Chief Baron broke out into a strain of almost enthusiastic admiration with reference to the learned Sergeant, "who," said the judge, "must have left the defendant without any counsel at all if the case had proceeded after the course the Attorney had adopted." It appears, therefore, that a defendant must submit to any terms his counsel will agree to, or be liable to abandonment by his advocate after the trial has commenced, and the statement of the plaintiff's case only has been heard. Such a course seems to be required by the honour and dignity of the bar, though many unlearned persons will, we think, cry out against having to pay the price at which these attributes of the forensic station are to be maintained. We admit there is a certain amount of discretion which every advocate may claim the right to exercise consistently with duty to his client; but we do not think this privilege extends so far as to justify the former in a compromise against the consent of the latter, saddling him with costs, forcing from him an acknowledgment of having done wrong, and depriving him of the opportunity of having that question decided by a jury of his countrymen. These are the extraordinary powers Mr. Sergeant WILKINS desired to exercise without the authority, and indeed against the expressed wish, of his client, whose humbler representative, the unfortunate Attorney, was exposed to the concentrated indignation of the bench and the bar for venturing to stand up in court and make the defendant's wishes known. He, though nominally the party whose consent to any arrangement was required, should have been a mere cipher in the business, if the views of the learned judge and the learned counsel are correct.

To our merely common-sense powers of comprehension it would appear that Mr. Sergeant Wilkins was a little premature in making up his own mind to a compromise without having previously ascertained how far his client would be prepared to make concessions, pecuniary and moral, for the sake of preventing the trial from proceeding after the case against him had been disclosed. We must, however, look upon a plaintiff or defendant as something in the nature of a property given to A. the attorney for the use of B. the barrister, when, in conformity with the statute of uses, the whole interest or legal estate passes to B., and A. has not the right to interfere. Such was the mode in which the defendant was disposed of in the trial, or intended trial, that has elicited these remarks. The client was the property to be dealt with, and A. was the original grantee; but as he held only to the use of B., the latter claimed the entire control.

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MAYHEW *v.* SPOONER.

*To the Editor of "The Times."*

Sir,—As this case has, from the "unusual scene" at the intended trial, and from your admirable remarks of Saturday, attracted great attention, and as I find that, by many, I am censured for having consented to my counsel's asking the judge to decide, and for having withdrawn such consent only after the judge had decided, I beg you will allow me the opportunity of saying, that I never in any way consented to the course taken by my counsel, but, on the contrary, I distinctly informed him, and so did my client, both before he made the statement which ultimately terminated the case, and whilst he was making it, that the defendant would consent to nothing but that the case should be fully tried.

The cost to my client will not be far short of £150; but, in so far as the public is interested in what occurred, your able remarks render it unnecessary for me to add a word.

I am, Sir,

Your obedient servant,

44, *Lincoln's-inn Fields, Feb.* 14. W. M. WILKINSON.

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## Presentation of a Testimonial to Mr. George Varnell by the Students of the Royal Veterinary College.

The students of the above Institution, desirous of acknowledging their obligations to Mr. Varnell for his valuable anatomical demonstrations and kind assistance afforded them in their studies, met on the evening of the 3d of March last, and presented to him, as a token expressive of their feelings, a gold watch and appendages. The honour of its presentation devolved on Mr. Cartledge, who spoke nearly as follows:—

"Fellow Students,—It is my pleasing task, this evening, to present the expression of your respect and esteem to our able Demonstrator, Mr. Varnell; and if I fail to perform my duty to the full extent of your expectations and desires, you will, I am sure, pardon me: the feebleness of my performance will be lost sight of in your approval of the object for which we are met together.

"On the slightest reflection it must be evident, that it is only by the acquirement of scientific principles professional eminence can be attained. There must always be a solid foundation laid on which to raise an edifice of any worth; since a structure built in accordance with the most rigid rules of architecture, and adorned with the costliest works of art, would, unless securely based, be rocked by every passing wind, or topple into a heap of ruins on the slightest shock, and, 'like an unsubstantial pageant faded, leave not a wreck behind.'

"Allow me to direct your attention for a moment to the situation of a man called upon to repair some delicate and complicated machine, with whose structure he is altogether unacquainted, and of which he knows nothing beyond what he has acquired by every-day glances at its mere *outward* form. It will at once strike you, that for him to attempt to re-arrange its displaced pulleys and levers, would be an act little short of insanity. You would, perhaps, think no one could be found who would thus tamper with an apparatus whose power and movements exceeded the bounds of his limited comprehension; yet among the pretenders to that profession, of which the majority among as are,

at the present time, students, but we hope hereafter to become graduated members, how often is this brought before our notice? How frequently do we see the empiric operating upon structures the most delicate, whose formation he is utterly ignorant of? He fears not danger, because he sees none; so true it is that 'fools rush in where angels fear to tread.'

"Looking back to the dark ages, and comparing them with the present and brighter period, it is with feelings of no little gratification we can reflect on the rapid improvement which has taken place in the veterinary art. The qualified practitioner no longer gropes his way in lamentable ignorance of the diseases he is called upon to treat, or the structures that may become implicated.

"To the science of *anatomy* we owe the greater part of this improvement. Intimately acquainted with it, the skilful operator directs his scalpel in the vicinity of parts, to wound which were to 'cut the silver thread of life asunder;' but, familiar with the structures on which he is operating—knowing from actual dissections the complicated machinery of which the animal is constituted—he, like the *pretender* to veterinary science, fears not danger, but for another reason, because he sees it, and knows well how to avoid the mischief, or, should it be committed, how to repair it.

"Let us imagine for a moment a man sent forth on the 'world's wide waters' with no other foundation on which to raise a name than the possession of a few unscientific nostrums which he uses 'because his father had used them before him;' with no other anatomical knowledge than that which he has acquired from the few operations he may occasionally have seen performed. Perchance, such an one may even obtain the confidence of his employers for a time; but by and by some case of more than ordinary difficulty presents itself, and the impostor is exposed; and now all his chances of success are marred for ever.

> "The bark was ill-built, ill-freighted, at its outset:
> No wonder it made shipwreck in the end."

"Thus, I have endeavoured to shew, in a few words, the evils and the danger arising from a want of anatomical knowledge; and it is to such men as Mr. Varnell that we owe our hopes of

steering clear of all these rocks and quicksands; and I rejoice that we are this day met to do him justice, and to express our sense of obligation to him.

"To you, Sir, the students of this Institution, actuated by various but not conflicting feelings, having a high admiration of your talents, and respect for your untiring research, and indebted to you for your kind and unceasing exertion to promote their advancement in that department of veterinary science in which it is your province to instruct them, have unanimously determined to give expression to their sentiments, by presenting you with a humble testimonial.

"The time has passed when an entire people expressed their sense of the worth of science and the triumph of art by a wreath of 'laurel' or of 'bay;' when these fading crowns conferred more honour on the possessor than lordly riches or presumptuous titles; when Science walked hand in hand with Fame, and needed not the adventitious aid of wealth to keep it on the road. Had you, Sir, lived in those days, such would have been your reward. Science by you has been sought for from a pure love of it, and the purity of the motive has enhanced the pleasure of your success. But those times are gone; the age when the poetry of reward was associated with the poetry of life is past: we have come to mere 'matter of fact' times; the 'laurel' and the 'bay' now only as evergreens give freshness to our conservatories, and cheat the winter's blast.

"But if Time has substituted prose for poetry, and the 'Year-book of Facts' for Sappho's lyre, it has also given us Bacon for Aristotle, and the inductive philosophy for the system of the Scholiasts; it has made demonstration the order of the day, experience the premises on which to found our conclusions, and utility the object to be sought for.

"You will permit me to allude to your happy, and to us highly useful, mode of amalgamating theory with practice, and of proving the positions you lay down by actual demonstration. It is this which renders you so valuable an assistant to the young seeker after anatomical information.

"And you have your reward. Far more gratifying than any feeble words or testimonial of ours must be your own feelings, when you see your pupils advancing in knowledge, and know that you have been instrumental in laying its foundation. The business

of instruction is proverbially tedious and tiresome; but it receives compensation in the progress which the mind makes by the acquirement of truth and the expansion of its nobler faculties.

"I know well, Sir, that I am but expressing the feelings of all my fellow-students in making these statements; and in their name and my own I respectfully offer to you our grateful thanks for your kindness in devoting yourself, your time, and energy, to our instruction.

"This token, which I am delegated to present, in itself is but a feeble though it is a sincere expression of our feelings. As such you will accept it, and with it our united thanks for your undeviating kindness, your earnest wish for our improvement, and your readiness on every occasion to communicate all the information in your power.

"We only hope you may long live to deserve the respect you have already gained, and to maintain that position in society which your practical and scientific knowledge renders you so eminently calculated to adorn."

Mr. VARNELL replied as follows:—

"Gentlemen,—I feel convinced you will not think me wanting in right feelings, when I assure you that your kindness this evening has placed me in a most awkward position, to extricate myself from which I find more difficult than the most delicate dissection I have ever undertaken. Nevertheless, I cannot but think that little is required to express what you feel in a manner comprehensible at least by all, although it may not be graced with the figures of rhetoric or the flowers of eloquence; and under this impression I am emboldened sincerely to thank you for this splendid expression of your sentiments, and also for the kind and handsome manner in which Mr. Cartledge has presented it in your name.

"I may be excused for saying, that it is to me a moment in which I feel some degree of pride, from being assured by you that my humble endeavours have been the means of assisting you in the acquirement of that knowledge which may be considered as the key-stone to the art we in common profess. I perfectly concur in all that Mr. Cartledge has so well expressed as to the benefits arising from the study of anatomy. Moreover, it is evident that no one can be acquainted with disease unless he is conversant with the part affected—its form, its structure, and its situation; and the

more minute and correct his knowledge of these, the greater will be his knowledge of disease generally. It is true that anatomy, of itself, cannot teach the functions of an organ,—this is the province of physiology; still the amount of disease is in proportion to the deviation of the part from the natural state, and he only really knows the extent of the alteration who is intimately acquainted with its normal state. Without, then, a knowledge of structure and of function, a thousand little deviations from health would not be recognised which in daily practice come under the notice of the professional man. I am gratified at knowing that you approve of my demonstrations. I have endeavoured to make them as practical as possible, yet I am fully aware they are not what they might be; nevertheless, I gather, from what has taken place this evening, they are not altogether unworthy of your notice. During them I have been more solicitous to convey to you a correct knowledge of the parts under notice than in the selection of words, considering the great point to be, that of making myself clearly understood by all.

"But it must not be inferred that demonstrations obviate the necessity of dissections: far from it. They may be, and I believe they are, of some assistance to you; but they can never make you competent anatomists without you yourselves put your shoulders to the wheel, and most happy shall I be at all times to render you all the aid in my power.

"Gratifying, indeed, it is to me when a whole class thus comes forward to acknowledge having been benefitted by my instructions. Ofttimes have I, when reflecting on the events of the passing day, accused myself of not having done my duty as it ought to have been done, or feared that some blunder might have been made in my descriptions. Still, with all my faults, I shall not, I hope, be accused of being an idler in the vineyard. Man I consider is made to work; to do something for the benefit of the human race, and not to rust out his life in idleness. Little did I think, when, only eighteen months since, I was appointed by Professor Spooner to my present office, that my humble endeavours to instruct you would be rewarded in the handsome manner they have been. The highest ambition I have ever had, while aiding you in your studies, was to see you make advancement in them; hoping that all of you would not only pass your examinations with credit to yourselves and the school, but that, in after-life, your exertions

would prove both honourable and profitable. And I can assure you, gentlemen, that your highly respected and talented teachers, Professors Spooner, Simonds, and Morton, are as equally interested in your progress as I have expressed myself to be. I have said your *talented* teachers, and I repeat the word; for I have heard the names of two of those gentlemen very highly spoken of five thousand miles from this Metropolis, at which time Professor Simonds' judicious appointment had not taken place; but his fame, too, is fast spreading, and the worth of all of them is appreciated by very many. I have their names attached to certificates in my possession, certifying that they were my teachers, and I am proud of them; and such, I contend, should be possessed by all of you, for it cannot but be that, by their signatures being appended to your diplomas, it would weigh in the estimation of the public; while to you they would be pleasing from the remembrance of past scenes, when 'alternate hope and fear' prevailed.

"Again I offer you my sincerest thanks for your kindness; and I assure you it will be my greatest pleasure on every occasion to assist you in your studies; and to shew, by actions rather than by words, how grateful I am for this handsome testimonial from you in acknowledgment of my feeble endeavours to do my duty in that situation in which I am placed."

The Hon. Secretary then presented to Mr. Varnell the following written address:—

*ROYAL VETERINARY COLLEGE,*

London, March 1848.

To GEORGE VARNELL, Esq.,

Demonstrator of Anatomy, &c.

Sir,

The undersigned Students of the Royal Veterinary College, feeling the obligations they are under to you for the readiness with which at all times you have assisted them in the acquirement of anatomical knowledge, and having witnessed the industry and love of investigation by which you are actuated, and from which they have derived considerable advantage, beg you to accept this slight but sincere expression of their gratitude;—a mentor which,

while it tells the passing hour, and bids us "waste not time, because it is the stuff that life is made of"—will, they hope, by your long possession of it, shew that to increasing years has been added increase of knowledge and of happiness.

With fervent wishes for your prosperity,

We subscribe ourselves,

Ever truly yours.

*Chairman.*—CHARLES N. CARTER.

*Committee.*

| | |
|---|---|
| FRANCIS WARD | EDWIN HARRISON |
| JOSEPH SWAINE | J. V. D. BRENNAN |
| JOHN CUTHBERT | JOHN WESTON |
| PAGE WALLIS | CHARLES TURNER. |

*Treasurer.*—H. J. FITTER. *Secretary.*—B. CARTLEDGE.

The names of nearly all the Students in attendance at the College were here attached.

## EXTRACTS FROM JOURNALS.

### EFFECTS OF CHLOROFORM ON ANIMALS.

[From "The Lancet."]

WE extract from one hundred experiments performed with chloroform and ether on animals, by Mr. T. Wakley, jun., in which he was assisted by Mr. Erasmus Wilson, the following, for the purpose of shewing the effects of this agent on those animals that come more immediately under the notice of the veterinary surgeon. They will tell their own tale, and cannot fail to interest our readers.

*On the Dog.*

The vapour of one drachm of chloroform was administered to a dog, weighing about twelve pounds. In three quarters of a minute the breathing became laborious, and the animal foamed at the mouth. At the end of one minute and a quarter, the conjunctivæ were much congested, and the pupils dilated. At one minute and three quarters, struggling, which had been considerable from

the beginning of the experiment, became violent. At the expiration of two minutes, the animal was released: it had the appearance of being in a state of extreme intoxication; it staggered, and fell; and on attempting to rise, it again fell. At the end of three minutes, it staggered away, lifting its legs unnecessarily high, and having a dull and heavy expression of countenance. In a quarter of an hour it had quite recovered.

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A young dog; weight about ten pounds; the sponge of the inhaler saturated with two drachms of chloroform. The animal lost the power of sustaining itself, and became insensible in one minute and a half, and without whining or crying. The respiration was as uneasy as in the preceding instance, and there was the same foaming at the mouth; the conjunctivæ were congested, and pupils greatly dilated. Inhalation was discontinued at the end of one minute and a half. At three minutes and a quarter, the animal attempted to get on its legs, and with the same difficulty as in the preceding instance. At the end of six minutes, its gait was still staggering and irregular. While recovering, it voided fæces and urine.

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A dog, weighing thirteen pounds; quantity of chloroform, three drachms. Struggled, as did all the dogs, on the first application of the inhaler. At the end of half a minute, commenced whining loudly; and at the end of one minute, barked violently for two minutes, foaming abundantly at the mouth during the whole experiment. At the end of three minutes, the animal fell on its side, from the loss of power of its limbs, the hind-legs failing first, as in the previous instances. On recovering somewhat from its motionless state, it struggled violently, foamed at the mouth, and snapped with its jaws, seeming to be in a fit. By the end of six minutes these symptoms had subsided; it attempted to get on its legs; and, after repeated falls, succeeded in walking away, with a staggering gait.

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A dog, weighing fourteen pounds: chloroform, three drachms; death. No sound uttered. In one minute struggling ceased, and the animal fell motionless and insensible on its side. At two minutes and a half respiration ceased with one convulsive respi-

ration. There was some little motion of the hind legs in this animal after respiration had ceased.

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A large dog, weighing forty pounds; chloroform, four drachms; death. The animal made not the slightest sound. In two minutes it had ceased to struggle, and had fallen on its side, insensible and motionless. Respiration was very slow, and in three minutes and a half had ceased entirely.

*On the Cat.*

A full-grown cat; chloroform, two drachms; death. This animal made a whining noise on the application of the inhaler, but offered no resistance. At one minute and a half she was foaming at the mouth, and apparently insensible. At two minutes she lay upon her side to all appearance dead; the pupil was dilated to the whole extent of the cornea. At five minutes there was a spasmodic action of the diaphragm, followed by cessation of respiration. The heart continued to beat with a fluttering action for one minute longer—a fact previously noted in the dogs, and also in subsequent experiments.

*On the Pig.*

A pig, weighing twenty pounds; chloroform, two drachms. On the first application of the inhaler, the animal struggled and cried violently. In half a minute the respirations were deep and slow, and the screaming subsided; in one minute the animal was silent and passive; in one minute and a half it was perfectly insensible, foamed at the mouth, and kept up an active movement of the jaws, as though feeding. The inhaler was then removed. At the end of two minutes it commenced grunting, and at two minutes and three-quarters made several ineffectual attempts to rise. At three minutes the pig was set on its legs, but immediately fell, the hind-legs giving way first. At three minutes and a quarter the animal succeeded in getting first on its fore-legs, and then on the hind ones; and, after several tumbles, it contrived to stagger away.

*On Ruminant Animals.*

A wether; chloroform, four drachms. At one minute and a half the animal fell on its side. At two minutes and a half it was

completely insensible; the respiration was quick and panting, the eyelids were closed, and the pupils largely dilated. The inhaler was removed. At four minutes the animal raised its head, and stretched its limbs—the latter action being observed in many of the subjects of experiment while under the influence of chloroform. It then made several ineffectual attempts to rise. At five minutes the respiration was quick and agitated. At five minutes and a half it succeeded in regaining its legs, and after several tumbles it managed to stagger away.

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A fine two-year old heifer; chloroform, four drachms, applied by means of a large cup-shaded sponge. At the end of a minute the respirations became slow and laboured; at two minutes and a half the animal staggered; and in another minute fell to the ground. At six minutes the breathing had become more laborious. At six minutes and a half the animal seemed completely insensible; the pupils were fully dilated, and the conjunctivæ congested. The sponge was now removed. At ten minutes respiration became quick and agitated. At eleven minutes the animal got up, but had much difficulty in standing. Shortly afterwards it staggered into the straw-yard.

### *On Solidungulate Animals.*

A she-ass, ten years old; chloroform, one ounce and a half, applied with a hollow sponge. At the end of a minute the respiration became deep and laborious; at two minutes there was staggering of the hind-legs, which in two minutes and a quarter gave way, and the animal fell upon her side, the breathing still continuing laborious. At four minutes the respiration was trembling, and the nose was pressed against the ground. At nine minutes the animal made repeated attempts apparently to vomit. At ten minutes she raised her head and looked around, and then turned and nipped the grass. At eleven minutes and a half she got up and walked away, lifting her fore-legs unnecessarily high, and crossing her hind-legs, as if she would fall. The sponge was removed as soon as the animal fell; and it is worthy of remark, that the insensibility appeared greater a few seconds after its removal than while it remained applied to the nose. This circumstance

was observed in several of the experiments. While the animal was down, its ears were punctured without exciting the slightest signs of pain.

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A powerful cart-mare; chloroform increased in quantity during the experiment, commencing with ten drachms. At the end of a minute the animal moved backwards, turning at the same time; the hind legs crossing and impeding each other, and giving her a staggering gait. At seven minutes the staggering was increased, and she had much difficulty in keeping on her hind-legs. At the end of eight minutes, four drachms of chloroform were added to the sponge. At ten minutes she continued backing in a circle, making strange movements with her legs, and appearing scarcely able to sustain herself; respiration slow and laborious. At twelve minutes she appeared falling, but managed, with difficulty, to keep up. At fifteen minutes she still remained standing, and, as the means of applying the chloroform were imperfect, it was deemed advisable to conclude the experiment. As the animal walked away, she shewed symptoms of drunkenness, and, like the animals noted in some of the preceding experiments, lifted her legs unnecessarily high. This high action of the old cart mare, with the crossing of the hind legs, and the obvious difficulty which she had to walk in a straight line, together with the elevated carrying of her head, altogether produced a most ludicrous effect.

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The same mare; chloroform, three ounces. At the end of half an hour, when the mare had evidently recovered from the effects of the previous experiment, it was thought desirable to try the action of a larger quantity of the chloroform at once. She made no resistance to a repetition of the inhalation, but seemed rather to like it, as was the case with most of the animals. For example, the dogs, after their recovery, continued to play around us, and the animals operated on followed rather than shunned us. The she-ass was very pressing for our attentions, whether to be permitted to inhale again, or for the indulgence of an apple, is not certain. The mare and she-ass were simply held by a loose halter, and the experiments on them were conducted in an open park. On applying the sponge, saturated with three ounces of chloroform, to the nose, the animal, at the end of a minute, staggered

forward, and fell heavily on her side, when she lay perfectly motionless. Her pupils were largely dilated, and the respiration was slow and laborious, 26 in the minute. At the end of five minutes she suceeeded in rising, and, after standing for a minute or two longer, staggered away with a high action as before. There was expulsion of gas from the bowels, in considerable quantities, both in the ass and in the mare.

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## On Wounds inflicted by Bites from Animals Healthy, Rabid, or Venemous. By Mons. Rey.

[From the Journal Médécine Vétérinaire à l'Ecole de Lyon.]

*Translations by Mr.* W. Ernes, *M.R.C.V.S.*

We pass over the first and last of these divisions, and make a few extracts from that on rabid animals.

Mons. Rey remarks that, up to a recent period, to the dog alone was attributed the fatal power of communicating rabies by inoculation. However, a closer study of this dreadful malady has not only shewn the impotency of all medical treatment, but also added to the dread it inspires, by demonstrating the possibility of its virus being transmitted by bites of the herbivorous animals.

Results obtained from experiments made by Mons. Rey on sheep affected with rabies prove the fact, that saliva taken from them, and individuals of the same species therewith inoculated, the same malady is developed in a space of time varying from twenty to forty days; and likewise, that rabies does not lose its contagious properties even after several transmissions (*Recueil de Méd. Vétérinaire*, tom. xix, 1842, p. 543). Since this, an instance of a man becoming rabid some time after he was bitten by a cow affected with this disease has been recorded in the medical journals.

Subsequently Mons. Renault has obtained similar results. Having inoculated a horse and a goat from a rabid sheep, which had contracted the disease from inoculation by the virus from a rabid dog, the goat became rabid within a month, and the horse at the end of six weeeks.—(*Recueil de Méd. Vétérinaire*, tom. xxiii, 1846, p. 723.)

The following is somewhat more consoling to investigators. It has been strongly recommended to those persons who have to have to handle the dead carcasses of rabid animals to wash their hands carefully, and to avoid bringing them in contact with the lips or other parts of the body where the mucous membrane is exposed, and consequently more liable to imbibe the virus. From several experiments instituted to ascertain the fact, it has been proved that *the virus dies with the animal*, and thus the disease cannot be transmitted after its death.

I have stated that experience unfortunately proves the communication of rabies from the herbivora. However, this transmission is less frequent than from the dog; likewise an animal which has contracted the disease from inoculation does not so readily communicate it; moreover, a rabid animal which has bitten several others does not communicate the disease in the same proportion, the danger being greater to the first bitten, from there being less of the virus introduced into the system of the last, consequently the conditions are less favourable for the production of the disease.

*Treatment.*—All kinds of remedies have been proposed to prevent the developing of rabies from the first appearance of the symptoms, but unfortunately, both for men and animals, they have all failed.

The first indication to be attended to, is to destroy the virus in the parts before it has had time to become absorbed. Divers agents have been recommended to effect this, such as to wash the wounds, pressing out the blood, and to provoke active suppuration; but all this would be insufficient without the cauterization of the part, which, with good reason, might be considered as a specific, by its charring the parts in which the virus was deposited.

The preference is justly given to the hot iron for animals, because it can easily be carried to the necessary depth, and held there until all the parts are effectually cauterized. Gunpowder, moxa, &c. have also been used. By human surgeons the potential cauteries are preferred, because they create less repugnance in the patient: such are the nitrate of silver, the chloride of antimony, caustic potash, ammonia, nitric and sulphuric acids, all of which have been employed with more or less success: the chloride of antimony is the safest.

Internal remedies have no direct effect in expelling the rabid

virus from out the system; nevertheless they may, in some measure, facilitate it by increasing the secretory functions of some of the glands and surfaces; and for this end, purgatives, diuretics, sudorifics, and emetics may be administered.

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### Effects of Chloroform on the Dog.

On this animal being subjected to the influence of the vapour of chloroform, he soon becomes stupefied with even the smallest quantity. A few drops on some tow will produce this effect. At the first inhalation the dog defends himself with great violence; but this state of excitement only lasts a few seconds, and the animal soon loses its power of resistance; the eye becomes fixed, the pupil dilated and insensible to the light: the respiration increases sometimes to 80 in a minute, but diminishes as the animal passes into a state of complete anæsthesia. After a short time a perfect calm succeeds; the muscles are relaxed, the eyes are open and fixed; the application of the finger to the cornea does not excite the least movement; punctures with pins or a bistoury cause no pain; the gravest operation might now be performed without causing the least suffering, and there is no other sign of life except the pulsation and respiratory action being continued. The first symptom of a return of sensibility is observed in the eyes; the jaws then open, the head is lifted up, and the limbs are agitated. The animal now tries to get up, but falls down again; he rises on his fore legs, then on his hind ones, but still remains paralysed. The posterior extremities are the last to lose their torpid state; but the general stupefaction only goes off entirely after several hours.

The action of chloroform on cats is nearly the same as on dogs.

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### Effects of Chloroform on Horses.

In an experiment, after having cast the horse on a good bed of straw, a pledget of tow steeped in chloroform was applied to each nostril (about 20 drops may suffice?). At first the animal seemed to suffer considerably, as he struggled violently; but after a minute

or so there was great prostration of the vital powers, and at the end of two minutes the eyes were fixed, but wide open; the cornea insensible to the touch. The hobbles were now taken off, and the limbs left at liberty, or placed in any direction without the slightest resistance being offered. Any part of the body might be punctured, the animal evincing not the slightest sign of sensibility. In this state of immobility the respiration was from 28 to 30 in the minute; the pulse 60. The sensibility returned in about four minutes after the inhalation; but this can be retarded by the re-application of the chloroform. The first sign of a return of the sensibility is a slight motion of the eyes and head, which is followed by an agitation of the limbs; but it requires about two minutes before the standing position can be effected. The animal then shews signs of intoxication; its walk is uncertain; great debility is evinced in the posterior extremities, and in some cases partial paralysis. In from five to six minutes the sight has not returned, as the animal runs against any obstacle in its way: the respiration is now 17, the pulse 45; but after a short time the effects gradually pass off, and the animal recovers its usual state of health.

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## Inhalation of the Vapour of Ether a Remedy for "Staggers" in the Solipedes.

*By Mons.* Adolph. Reynard.

The trial of this agent appears to have originated with Dr. Upart, who first observed the good effect of ether in meningitis in man.

In the month of September last the first experiments were made on three subjects, one horse and two mules; all of which presented the severest symptoms of vertigo (staggers). There was, also, but little chance of their recovery when they were submitted to this new mode of treatment; however, it is necessary to state that the inhalation of ether was not the only treatment they were subjected to. Setons were inserted in the thighs, and they were bled according to the strength and constitution of the patients: while, on the one hand, these means have never succeeded alone, on the other, the effects of the etherization were so rapid and so com-

plete, that there can be little doubt but that the cures must be attributed principally to it. From the very onset of its action, we entertained a firm hope of saving the whole of our patients, and in this we were not deceived; two of them have since gone to work, and the third is perfectly convalescent.

This number of cases, although small, seems to leave no doubt, in the author's opinion, of the efficacy of this new therapeutic agent against this affection, and which is one that proves so often fatal; but until a greater number of facts enable him to arrive at a more positive conclusion, he has thought it necessary, in concert with Dr. Upart, to give publicity to them, simply for the interests of science, so that others may try the agent in this disease.

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## TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION.

[We perceive we are very considerably in arrear with our report of the Proceedings of the Association. While we cannot regret the causes which have led to this, nevertheless, we shall be compelled to abridge both the Debates and the Essays, for which we must apologize; but, with our present arrangements, we have no alternative.—*Editors.*]

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### March 31, 1846.

Mr. J. Rose, V.P., in the Chair.

### A Case of Parturient Apoplexy, or Dropping after Calving in a Cow.

*By Mr.* T. W. Gowing.

*Mr. Gowing* stated that the animal had been ill for three days before he was called to attend her, during which time the owner had essayed her medical treatment, but without any benefit resulting; in fact, she was down and in a comatose state when he first saw her. His prognosis was unfavourable. However, at the

solicitation of the proprietor, he gave her a draught by means of the stomach pump, she being insensible and unable to swallow. Enemas were also thrown up, but the cow died the same day. An autopsy was soon after made, when a considerable effusion of blood was found to exist upon the medulla oblongata especially, and also on the brain. The superior portion of the spinal marrow did not present any abnormal appearance. The uterus was in the state usually met with at this period after parturition, and the digestive organs were likewise healthy. The lungs, however, were slightly congested.

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## Novel Method of fixing the Shoe on the Foot of the Horse without Nails.

*By Mr.* W. G. Robinson.

*Mr. Robinson* directed the attention of the Members to a new method of shoeing horses invented by him, and placed on the table a foot shod in his peculiar way; which consisted in having a piece of gum elastic, about a quarter of an inch in thickness, interposed between the foot and an iron plate shoe, both of which covered the entire ground surface of the foot.

The mode of attachment was both curious and ingenious. It consisted of sutures either of waxed cord or wires, which were introduced into small chambers at the periphery of the shoe, and then passed through two holes which made their exit at right angles from the plane of the roof of each chamber, and afterwards passed through the india rubber, including a portion of the crust, in the same way a nail is used in the ordinary method of shoeing. The foot before the Association had been arranged by a saddler. The inventor said that the shoes and the india rubber were attached to the foot by stitches in a somewhat similar manner to that in which men's boots or shoes are made by sewing the sole to the welt.

Mr. Robinson, before concluding his explanation of the advantages derivable from his invention, said that he designed it more especially for diseased feet in valuable horses; and, on being

questioned, admitted that he had not practically tested its efficacy on the living horse.

*Mr. Kent* objected to the flat surface presented by the shoe, and remarked on the great liability of the animal slipping in consequence of it.

*Mr. Robinson*, in defence, said that the pattern was imperfect, as he had intended to have had two grooves running across the shoe at right angles, which, in his opinion, would effectually prevent slipping.

*Mr. Gowing* strongly objected to this mode of shoeing, first, on account of the certainty of the shoe being cast in fast action, owing to the weakness of its attachment to the foot; secondly, on account of the thinness of the iron covering the sutures; and, thirdly, from its inapplicability to the feet of horses liable to brush or cut.

*Mr. Robinson*, in explanation, said that when applying the shoe, he should place some of the solution of india rubber in naphtha between the india rubber and the foot, which would very materially increase the strength of the union by means of its cementing properties, which are known to be exceedingly great.

In the further discussion that took place, the practical utility of the invention was more than doubted, although much mechanical ingenuity was allowed to be displayed in it.

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April 7, 1846.

The Treasurer in the Chair.

### Case of Strangulation of the Ilium, produced by a pendant Tumour.

*Forwarded by Mr.* G. W. Brown.

*Mr. Pearson Ferguson* observed, that this case was extraordinary, insomuch as the cause of the strangulation was unusual. The history, as related to him by Mr. Brown, was as follows:—The animal was attacked with spasmodic colic, which caused him to roll and plunge about very much. The ordinary treatment in such cases was adopted, but the unfavourable symptoms, instead of being entirely removed, returned at intervals, and on the fol-

lowing day the attack presented the characteristics of enteritis. The pulse, which before was not much disturbed, then became quick, small, and hard, and the manifestations of abdominal pain were constant; the animal was, therefore, bled, and opiates, combined with aperients, administered, and clysters thrown up; but, despite all remedial measures, the horse got worse, and, the bowels not having responded, he died on the third morning following the attack.

On a post-mortem inspection being made, one of the small intestines—the ilium—was found strangulated, the strangulation being compound, including the gut, in such a manner as to embrace two separate portions of it, and thus cut off an entire convolution, which therefore hung like a loop from the strangulated part. On carefully examining it, Mr. Ferguson found that, after some manipulation, he was enabled to unloose the ligature around the intestine, and to reduce the strangulation, which being done, he discovered that a fatty tumour was hanging pendulous from the mesentery by a portion of peritoneum about ten inches long, which had become invaginated. It is evident that it was this invaginated or hollow cord of peritoneum which strangulated the intestine, and thus caused the death of the animal; and this took place when he was labouring under spasmodic colic, by the tumour in one of the paroxysms becoming passed around the ilium at that part where two portions of the gut cross each other, forming one of the convolutions.

An Essay on Pneumonitis, by Mr. W. Kent, was read.

In the discussion that followed, and which occupied the remainder of this and the succeeding night of meeting,

*Mr. Mannington* disagreed with the treatment recommended by the author of the Essay, particularly as to the exhibition of sodæ sulph. or magnes. sulph., as he considered them altogether useless. He preferred the administration of aloes in doses of ʒij or ʒiij, at the outset of the disease, combining it with the ext. belladonnæ, which was useful both as a sedative and an aperient. He had also found the potassio-tartrate of antimony and the nitrate of potash valuable agents. And as to counter-irritants, he certainly would blister the sides, since he did not think setons or rowels of any value except as *sanimeters*.

*Mr. Surmon* did not concur with Mr. Mannington in the view he had taken of counter-irritants; for he could speak from an extensive experience as to the utility of setons in pulmonic affections, and also the application of mustard poultices. He would not hesitate to insert four or five setons in an acute attack, and would give small and often-repeated doses of belladonna with digitalis, the latter of which he had found particularly beneficial in doses of grs. xv, given every four hours. In the subacute form he had found the carbonate of ammonia a very valuable therapeutic.

*Mr. Bass* approved of mustard as a counter-irritant generally, but he disapproved of blistering the sides in inflammation of the lungs.

*Mr. Varnell* said his treatment of the disease in question would consist in bleeding largely, the application of counter-irritants to the front of the *chest*, but not to the *sides*, and allowing the animal plenty of fresh air, restricting his diet, and giving as a laxative-diuretic the sulphate of soda with the nitrate of potash, whensoever circumstances warranted the exhibition of these agents.

*Mr. Pearson Ferguson* spoke at considerable length, referring to the various inflammatory affections of the respiratory apparatus, and their different stages and complications; and he animadverted strongly against the absurdity of any single mode of treatment being laid down for all cases. He said that each patient should be treated according to the exigencies of his case, which would be different according to the nature of the affection, and the structures implicated. Thus, for example, in *acute* congestion, to attempt to bleed would be useless, and to give a powerful sedative would be worse; for death would be the consequence. Well, then, it might be asked, what should be done? He would say, to an animal in this state, with laboured respiration, rigors, and a pulse almost imperceptible, a strong diffusible stimulant, such as ammoniæ carb. ʒjss, should at once be administered, and a warm blanket thrown over him. And then in about half an hour or so after the patient will be found in a very different state: he will no longer have an imperceptible pulse. The circulation having received, through the agency of the stimulant, an impulse which alters both the rate and force of the motion of the blood in the vessels, the arteries will be felt bounding, and the lancet may be used with the greatest possible benefit; the blood will now flow freely,

and should be drawn from a large orifice till syncope approaches; after which sedatives, such as calomel and opium should be administered, in frequently repeated doses, until the urgency of the symptoms were abated.

On the other hand, in a case of *chronic* inflammation of the mucous lining membrane, the treatment must be different; for the patient so affected will not bear the loss of blood like one with acute congestion of the parenchyma of the lungs. He must have, also, a different class of medicines. The potassio tartrate of antimony is the most beneficial in this case, in doses of about ʒss, given three times in the day, or even more frequently. Aloes should be carefully avoided; but the bowels should be relieved by tobacco enemas, and the patient placed in a well-ventilated apartment, and counter-irritants applied.

Again, in the complicated affection of peripneumonia, where the structure of the lungs and the pleura are together affected, the treatment should be still further varied, insomuch as, in the early stages, bleeding and counter-irritants must be had recourse to at once, and carried to a great extent, and both direct sedatives and nauseants freely administered, as also those agents that have a diaphoretic effect. In fact, every thing must be done to overcome the distended state of the capillaries, and prevent effusion, which is always one of the proximate results of congestion. In those cases, the combination of digitalis, nitre, and tartar emetic, will be found serviceable, particularly where effusion has commenced, or is about to do so.

As to cathartics, he said they were most injurious in those cases, in consequence of the great sympathy existing between the respiratory and digestive organs, and, therefore, should not be administered.

In conclusion, as regards diet, he remarked, that persons, generally, were far too anxious on this point; for it should be borne in mind that during inflammation of the vital parts of the organism, the vessels lose their power of appropriation, and, consequently, by feeding a patient fuel is added to the fire, *if it be digested;* or it acts as a foreign body, and becomes an irritant, *if it be not digested.*

The reason that animals and persons get so thin during and after severe attacks of inflammatory disease is, in a great measure, on account of this loss of the appropriating power. Whilst the

waste, on the other hand, is continued, and even augmented, by the greater velocity of the circulation, and consequent combustion or burning up of the elements of the body, which otherwise would be deposited in the form of fat.

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APRIL 21, 1846.

The TREASURER in the Chair.

*Mr. Clements* introduced to the notice of the Members an improved needle for carrying the metallic suture, the peculiarity of which was, that the head was so constructed as to permit the portion of wire remaining in the needle, in case of the suture wire breaking off close to the head, to be removed easily without drilling it out, this being required in the old form of the wire suture needle.

*Mr. H. J. Surmon* introduced a new form of Stethescope, which he said conveyed sounds, when auscultating, much more distinctly than any other he had met with. In figure it closely resembled two elongated egg-cups joined together by their bowls.

On the table was laid the cancerous tail of a horse.

*Mr. Pearson Ferguson* stated that the animal from which the morbid parts on the table were taken had been for a long time under the treatment of a practitioner. Having removed some large tumours from the under part of the tail, and found that they were soon reproduced, he sent the animal to the College for Professor Sewell's opinion.

When he arrived, it was found that there was, in addition to those tumours on the tail, one tumour of a very large size situated within the pelvic cavity, and to the right side of the anus, which was in consequence much distorted and pushed in an opposite direction. Mr. Sewell at once advised the animal to be destroyed, there being no chance of operating successfully on the case. This was accordingly done, and, on examining the parts then before the Members, the tumours were found to be cancerous in structure, and pervading all the structures of the tail; and the large one occupied a considerable

portion of the pelvis, and was adherent to the sacrum and sacro-sciatic ligament.

If the tumours had been confined to the tail, some hope of a successful result might have been entertained from their excision, or amputation of the tail might have been performed; but the animal suffered so much pain from the tumours in connexion with the rectum and anus, that it was deemed most humane to have him destroyed.

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## Case of Sabulous Matter in the Bladder of a Mare, resulting from Paralysis.

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

*Mr. Pearson Ferguson*, in remarking upon this case, said, that early in March Mr. Broderick's attention was directed to this animal by the superintendent at Mr. Pickford's establishment, when he found that she could not void her fæces, and the urine flowed from her involuntarily. The tail was also paralysed, for which latter affection, indeed, it was that Mr. B. was requested to see the animal. In answer to inquiries, it was stated that her driver did not know of her meeting with any accident, although the tail was observed to be pendulous the day after she had been out in a delivery cart with a number of boxes and parcels. She was put into the infirmary stable, and, after the rectum had been emptied, a dose of purgative medicine was administered, and rest enjoined. Matters, however, remained in *statu quo* for a fortnight, during which time it was necessary to evacuate the rectum by the hand night and morning, and the urine continued to trickle from the vulva. The animal was then brought to the College for consultation, and the prognosis was unfavourable, particularly on account of the length of time which had elapsed since the first appearance of the affection. It was, however, recommended as a "*dernier resort*" to blister the croup and loins after having performed the operation of acupuncturation. These means were tried; but, not relieving the animal in the least degree, she was destroyed on the 16th of April, and the urinary organs were forwarded to the College, when the bladder was found to contain several pounds weight of sabulous matter. As to the cause in operation to pro-

duce this deposit, it is only necessary to remember the composition of the urine of the horse, and then we come to the conclusion that, by a large quantity of this fluid remaining in the bladder, decomposition would take place, new combinations would result, and some of the elements, such as lime, &c., which before were held in solution, would then unite with the carbonic acid furnished by the decomposing urea, and, this salt being insoluble, its precipitation would necessarily take place, and remain in the bladder, while the watery parts of the urine would be voided.

As to the cause of the paralysis, there was little doubt but that it resulted from a mechanical injury, such as a box falling on the croup, or striking against some part, in stopping suddenly, or backing, by which the sacrum was injured, and consequently the nervous matter within it became affected.

In conclusion, he said, that when paralysis of the rectum, urinary organs, or tail, resulted from mechanical injury, there was little chance of a successful issue to the case, without treatment was had recourse to immediately; and the treatment should be of the most active kind, such as acupuncturation followed by firing, or powerful blistering, with the administration of nux vomica, or its active proximate principle, strychnia.

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*Mr. Mannington* related two cases of rupture of the diaphragm, in neither of which was the symptom of *sitting on the haunches* present. In one of these cases there were accessions of violent pain with long intervals of apparent ease; and on a post-mortem inspection, the tendinous part of the diaphragm was found ruptured, and part of the colon protruding into the thoracic cavity. The fleshy part of this organ was ruptured in the other case. He had seen several cases of enteritis recover in which the animals had sat upon their haunches: thus this symptom is not one to be implicitly relied on.

*Mr. Surmon* related a case of ruptured stomach, in which the horse had swallowed a large quantity of pebbles previous to death. This animal, however, had frequently sat on his haunches.

April 28, 1846.

Mr. J. Mannington, V.P., in the Chair.

A fractured long pastern bone of the off hind leg of a horse, caused by a blow, was received from Mr. W. R. Gough, V.S., Shrewsbury.

An Essay on Diarrhœa in Sheep, by Mr. G. White, was then read.

For the reason already assigned, we are able to give only a part of the discussion that supervened.

*Mr. Bass* approved of Mr. White's classification, and looked upon the disease as resulting either from functional derangement or organic lesion. If it results from a change of food merely, it is not so dangerous. One of the causes of diarrhœa, likewise, is a moist state of the atmosphere, which induces an abundant and over-succulent condition of the aliment; which, in its turn, acts as either an irritant to the alimentary canal, or, from its excess of watery particles, gives rise to a very fluid state of the ingesta, which, without being sufficiently digested, are voided, and hence the soft fluid nature of the fæces.

In this form of the disease it was only necessary to change the diet, by substituting provender of a drier nature; and he recommended a little oats to be given, with some fresh hay, until the diarrhœa was checked, when the animal might be again turned out to pasture. But when it was the result of an inflammatory affection—as he believed it very frequently was—the primary disease must be treated, and he thought it even might be prudent then to bleed. He did not approve of the administration of medicines to ruminants in the form of balls. His objection, however, was not founded upon the same conclusions as those to which Youatt had arrived; but more especially in consideration of the great length of time necessary for medicines to act on the system, when given in balls, as compared with their exhibition in the form of a draught. Therapeutics must act either locally or through the medium of the circulation, and it mattered not in which way the particular agent was intended to operate: it was certain that its influence would be much sooner exerted upon the system when given in the fluid than in the solid form.

*Mr. Varnell* approved of the manner in which the author of the Essay had treated his subject, and agreed with him generally in his classification of the disease, and also its treatment. He, too, should prefer exhibiting medicines in the liquid form, as they acted much quicker and with more certainty than when given in the form of balls.

There was one circumstance he had observed in sheep as differing from other ruminants, and which he would mention as worthy of notice in a pathological point of view, namely, the greater fluidity of the aliment contained in the rumen of the former than the latter.

*Mr. Mannington* had not observed this greater fluidity of the contents of the rumen adverted to by Mr. Varnell; and he could not understand why it should be so, since it was a well ascertained fact that sheep drank much less than oxen.

As to diarrhœa in sheep, he agreed generally in the opinions entertained by the author of the Essay. But he attributed the disease, in numerous cases, to the washing of these animals previous to shearing. He advocated the exhibition of a mild cathartic in the commencement of the treatment of this affection, more especially where its appearance was connected with a change of diet, and recommended the *hydrargyrum cum creta* as the most useful agent; but did not approve of the carbonate of the alkalies, as he thought they would be liable to aggravate the symptoms by the disengagement of the carbonic acid within the alimentary canal, and also by the caustic effect of the alkalies on the mucous membrane subsequently.

*Mr. Morton* said, with reference to the alkaline carbonates, he did not see the danger apprehended by Mr. Mannington; for, supposing that they did undergo decomposition in the alimentary canal, the base would unite with some of the acids therein existent, and the causticity of the alkali would thereby be destroyed. And as to the carbonic acid eliminated, it could only be injurious by reason of its bulk; and, when it is considered in what great quantities it is absorbed by fluids, the idea of its injurious effects must vanish.

He approved highly of the exhibition of a purgative at the beginning of the treatment of diarrhœa, as the alimentary canal was thereby cleared of the acrid ingesta, whose presence, so long as they remained, would keep up the irritation and purging. But

this was not the only object in view he had in giving a mild cathartic: there was another and more important one to be gained by such a procedure, namely, the removal of the coating of morbid secretion which frequently covers the openings of the follicles of the mucous membrane of the intestines, and thus obstructs the performance of the functions of the absorbent vessels.

As to the agents called for in such cases, he considered linseed oil a most useful one. Quicksilver, with chalk, was also an available compound. And as to astringents, powdered catechu and gall-nuts would be found very valuable, to which may be conjoined opium. The most powerful astringent, perhaps, among these is the powdered gall-nut; and this fact should be borne in mind, as it could not safely be administered in so frequently repeated or such large doses as other agents of the same class. Prepared chalk, too, is admissible in these cases, which acts by correcting the acid secretion poured out from the lining mucous membrane.

Thanks being voted to the several officers, the hebdomadal meetings were closed for the Session 1845-6: the final meeting was a *Conversazione*, of which an account appeared in a previous number of this Journal.

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# PRIZE ESSAY.

## ON THE ANATOMY AND PHYSIOLOGY OF THE FOOT OF THE OX AND SHEEP.

*By Mr.* G. T. BROWN.

*To the Council of the Veterinary Medical Association.*

Gentlemen,—OBSERVING with feelings approaching to regret, on perusing the TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION, the general apathy existing among veterinary students in not competing for the prize given by you for the best essay on subjects from time to time propounded to them, I determined that the thesis for the present session, at least, should not go uncontended for. Acting on this determination, I, at once,

commenced my investigations, which are embodied in the following paper, and which I beg most respectfully to submit to your kind consideration. I have endeavoured to render what must necessarily be the dry detail of anatomy as concise as is consistent with correctness. My remarks on physiology are also unavoidably brief, and possibly, in many respects, faulty; but I cheerfully submit the whole to your perusal, conscious your decision as to the merits of the Essay will be a just one.

I have the honour to subscribe myself,

Gentlemen,

Your most obedient servant,

THE AUTHOR.

"NIL DESPERANDUM."

*General Observations.*

WHEN our attention is first directed to the external characters of the foot of the ox and sheep, there would appear to the unthinking observer but little to excite any admiration. The rough uninviting exterior would seem but ill calculated to call forth the wonder of the philosopher, or the reasoning powers of the practical physiologist. But not being contented with this superficial view, as we proceed in our investigations, we cannot fail to observe the wonderful economy of Nature to be here displayed in an eminent degree; for if, in one part of the animal machine more than another, she has been more lavish in her provisions for combining freedom of motion with great powers of endurance, elasticity of action with immense strength, we find that to be the FOOT.

ANATOMY OF THE FOOT OF THE OX.

The first thing that strikes us, as being peculiar in the foot of this animal, is its cloven or dydactyle form. Its outer surface presents a covering of hard, firm, insensible material, known as the hoof or horn, which acts as a protection to the soft and sensitive structures within it. At the posterior part of the leg, immediately behind the sessamoid bones, are two projections, presenting a character externally, and also in their internal arrangements, exactly analogous to the foot itself: these are known as the *dew claws*. These appearances are mainly composed of a

fibrous material (although, in the old subject, I have found a small pisiformoid bone in the centre of each), covered by a vascular secreting membrane having a coronary papillated surface, and also a lamellated one; following, in fact, precisely the same arrangement as these various structures in the foot itself.

The bones entering into the formation of the foot are six in number—the lower condyles of the two coronal, the two pedal, and the two navicular or inferior sessamoids.

The *os coronæ* has somewhat the appearance of a triangular prism, more particularly at its superior portion. It has two articular surfaces, its superior one being divided into two concavities by a central elevation, into which fit the two corresponding convexities of the os suffraginis. Its inferior articulatory surface has a semicircular appearance, being divided into two convexities by a central depression immediately above its articular surface. Posteriorly is a roughened depression for the insertion of the flexor pedis perforatus; there is also a corresponding depression anteriorly, though less extensive, for the reception of a strong ligamentous band coming from the pedal bone. Laterally it has a roughened character for the attachment of numerous tendinous and ligamentous bands.

This bone is supplied with blood by numerous small foramina existing on various parts of its surface, Its interior presents a compact reticulated structure, gradually becoming denser as it approaches the exterior. The outer shell, or crust, is thickest at the superior part, becoming almost invisible as it proceeds inferiorly, where the cancellated structure becomes most dense in character.

The *os pedis* has much the appearance of the same bone, sawn in two, of the horse. It may be divided, for the convenience of description, into the lateral parts or wall, its anterior part running upwards terminating in a roughened tubercle, forming its coronal process; its inferior or ground surface, and its posterior division or heel, with its two articular surfaces. The outer surface or wall of the pedal bone presents everywhere a roughened surface, in order to afford a firm attachment to the fibro-ligamentous structure with which it is covered; it is also perforated by numerous foramina for the passage of vessels, &c. On its inner side, immediately below the coronal process, is a large foramen for the admission of the plantar artery. On the same side, at the extreme point of the

toe, is another of considerable size, while a larger one still is observed at the heel on the outside. At the anterior part of the coronal process are five or six foramina of considerable size, and immediately below them generally about eight smaller ones. At the inferior portion of the wall we observe a row of small foramina proceeding all around the outer surface, mostly about eight in number, while the internal side has but two of any considerable size at its posterior boundary.

The inferior or ground surface of the os pedis has also a roughened appearance. It approaches a concave from the outer to the inner border, so that, when the two bones are placed in apposition, they will have the form of a perfect concave. A section of the bone demonstrates its outer shell to be extremely thick and very dense, approaching an ivory-like character: its cancellated structure also becomes denser as it approaches the exterior. The propriety of this arrangement will at once be evident, when we come to consider how the number of foramina perforating the bone must necessarily weaken its structure.

The pedal bone has two articular surfaces, one situated postero-superiorly, articulating with the corona, and continuous with that bone: running more inferiorly, it articulates with the navicular. Its articulation with the corona is divided into two concavities, by a central elevation of which the outer is the more extensive: and these adapt themselves to the corresponding convexities in the lower part of the os coronæ. The articulation with the navicular is very slight. It presents a simple concave depression continuous with the other articulation. Immediately inferior to this articulation is a roughened groove, into which is inserted the inferior ligament of the navicular; and just below this we observe another roughened depression for the insertion of the flexor pedis perforans.

The *os naviculare* in this animal has more the character of a cuneiform bone. It has the greatest extent of articulation of any in the animal body. By its anterior surface it articulates with the corona, presenting a double concavity. By its antero-inferior it articulates with the postero-superior portion of the pedal bone, while with the whole of its posterior surface it articulates with the lower portion of the perforans tendon. Immediately posterior to its articulation with the pedal bone is a roughened groove, from

which arises a powerful restraining ligament; and supero-anteriorly there exists another, but smaller, groove. Laterally its edges are roughened for ligamentous attachment.

Internally the bone presents a compact reticulated structure, whose density appears pretty equal. If any difference exists, it is at the outer border. The shell or crust of the bone is extremely fine, and of nearly equal thickness all around the bone, but it is a little more developed in that part which articulates with the flexor pedis perforans. The bone, when placed in its situation on the os pedis, will contribute to increase the extent of articular surface.

*Ligaments of the Foot.*

The ligaments obtaining an insertion into the pedal bone are twelve in number.

Laterally, three oblique, arising from the lower surface of the os suffraginis anteriorly, and running obliquely backward, being closely connected together, and inserted into the posterior part of the os pedis, and there becoming blended with the fibrous structure forming the heels. Two other bands arise from the posterior border of the os suffraginis, and the upper portion of the corona, and run in a direction contrary to the former, namely, obliquely forwards, becoming inserted into the antero-lateral part of the pedal bone, to which the fibres of these ligaments are closely attached, and seemingly blended with the bone itself. Antero-externally there are two lateral ligaments, arising from the lower surface of the os suffraginis, and running directly downwards to be inserted into the lateral part of the os pedis. Antero-internally is a lateral band from the inner and lower part of the os suffraginis, running to the inner part of the coronal process. Immediately posterior to that is an extremely powerful band, which arises from the lower part of the os suffraginis, running directly downwards to be inserted into the inner and lateral part of the os pedis, its fibres being easily traced to the bottom of that bone. Behind this ligament another broad band, but not so powerful as the preceding one, arises, and becomes inserted into the inner and posterior part of the os pedis; while more posteriorly arises a band from the postero-internal edge of the os coronæ, its fibres running principally to the fibrous matter composing the heels. As these ligaments reach the pedal

bone, their fibres spread out, forming a perfect capsule to the joint, and completely investing the bone.

From the anterior part of the coronal process arises a short but extremely strong ligamentous band running upwards to the anterior border of the os coronæ, just above the condyle. Its use appears mainly to be that of increasing the extent of the articular surface with that of the os pedis; it is lined on its inner side with synovial membrane, and lubricated by synovia, being, in fact, continuous with the joint.

### *Ligaments of the Navicular Bone.*

These are six in number. The inferior, or broad ligament, takes its origin from a scabrous pit in the antero-inferior surface of the navicular, being inserted into a similar groove in the posterior part of the pedal bone. This band is very short and thick, and, consequently, possesses great powers of resistance. From the lateral parts of the os naviculare arise two fibrous bands attached to the whole of the sides of the bone, which become blended with the fibrous structure of the heels: they approach in character to fibrous membrane. Supero-laterally arise two strong bands of highly elastic tissue of a nature analogous to the ligamentum nuchæ, being inserted to the upper and posterior edge of the coronæ on each side of that bone. Lastly, from the whole of the superior surface arises a thin ligamentous expansion, attaching itself to the posterior surface of the tendo-perforatus, just above its termination, and thus completing the capsule to the joint. It is lined on its inner surface by a continuation of the synovial membrane reflected over the pedal and navicular bones.

From this arrangement it will at once be evident that there are but two distinct synovial sacs entering into the structure of the foot, one covering the articulation of the corona with the pedal bone, and from thence continuing over the navicular; and the other existing between the tendo-perforans and the posterior surface of the os naviculare.

The tendinous terminations of muscles inserted in the vicinity of the foot are five in number. The *extensor adductor digitorum* arises from the external condyle of the humerus, runs down the front of the leg to the fetlock, where its tendon bifurcates, proceed-

ing along the interior and inner edge of the suffragineal and coronal bones, to be inserted into the coronal process of each os pedis.

The *extensor digiti externi* arises from the outer condyle of the humerus, runs down the front of the leg, and below the fetlock it receives a strong band from the suspensory ligament. A considerable portion of its tendon is inserted into the lower part of the os suffraginis and upper part of the os coronæ. The other division proceeds to be inserted into the upper and lateral part of the os pedis.

The *extensor digiti interni* arises from the outer condyle of the humerus and the head of the radius, taking the same course as its fellow: its tendon also follows the same arrangement, being inserted into the inner phalange.

The flexors are two in number, *the flexor pedis perforatus* and *perforans*. They arise in company from the internal condyle of the humerus and the posterior part of the head of the radius, run down the leg, and receive in their course two accessory tendons. At the fetlock their tendons bifurcate, the perforans still being within the perforatus. On a line with the upper part of the corona the perforans becomes external to the perforatus, runs downward over the navicular bone, where it forms a synovial articulation, and finally becomes inserted into a roughened depression on the heel of the pedal bone.

The *tendo perforatus* first sends a strong band to the lateral parts of the os coronæ, and ultimately is inserted immediately behind the lower articular surface of that bone in a scabrous depression above the condyles. These tendons below the fetlock are bound down by three strong ligamentous bands arising from the postero-external edge of the os suffraginis and coronæ, which cross over the tendons to be inserted into the inner edge of the same bones. The inferior one unites with its fellow in the centre, and becomes blended with the fibrous matter of the heels, thus uniting the digits posteriorly. The spaces between these bands are filled up by a membranous expansion, thus covering the two tendons by a complete theca. The perforatus and perforans tendons, in their course, are covered internally by a synovial membrane; by which arrangement, the movements necessarily taking place are much facilitated, and the ill consequences that would accrue from friction are prevented.

*The Arteries of the Foot.*

The ARTERIES supplying the foot are the large and small metacarpal divisions of the radial artery.

The *large metacarpal* takes its course down the inside of the leg, running obliquely to gain the posterior part between the bifurcation of the flexor perforatus at the fetlock joint. The vessel then runs in between the digits, first giving off short trunks, which bifurcate and proceed to supply the heels. The main trunk of the artery now splits into two equal divisions, each of which proceeds obliquely forward to penetrate a large foramen on the inner and upper part of the os pedis. The portion of the metacarpal artery below the fetlock may, for the sake of distinction, be termed the phalangeal. In its course down the leg the metacarpal sends a few small twigs to the structures it passes over; and just above the fetlock I have sometimes, but not invariably, observed a large anastomosing branch cross over the tendons towards the outside of the leg, uniting with a branch from the small metacarpal.

The artery within the bone takes a perpendicular direction downwards for little more than half way, when it splits into two branches, which proceed at right angles from each other. The anterior one makes its exit at the inside toe; the other proceeds back to a foramen in the outside heel: its branches are, 1st, ten or twelve superior lamellæ, given off soon after the vessel enters the bone; 2d, eight or ten inferior lamellæ, given off from the continuation of the artery after the bifurcation. Two considerable branches issue from corresponding foramina at the heels. On the inner side of the bone are three inferior lamellal twigs of some magnitude, emanating from three separate foramina. The inferior lamellal branches divide as they issue from the bone. The superior portions supply the lamellæ, while the inferior run downwards in small grooves in the bone, turning inwards and giving off plantar branches for the supply of the structures of that part.

Besides these branches proceeding from the phalangeal artery, there are, of course, innumerable minute twigs running into the structure of the bone itself, from which the blood is returned by corresponding and appropriate veins, making their exit

from certain foramina in the bone hereafter to be noticed when on the description of these vessels.

The small metacarpal artery, situated anteriorly to the large one, runs along the anterior border of the suspensory ligament, about half way down the metacarpal bone, where it divides; one division continues down the inside over the fetlock, to form the internal phalangeal; the other runs underneath the suspensory ligament, to reach the outside of the leg, where it unites with the branch coming from the large metacarpal, just superior to the fetlock joint; from which union springs the external phalangeal.

The external and internal phalangeal take their course down the posterior edges of the suffragineal and coronal bones, dipping into the fibrous substance of the heels. Just below the fetlock they send off large branches, which ramify over the lateral and anterior parts of the above-named bones, continuing down to the anterior part of the coronary surface, over which they spread with extreme minuteness. The phalangeals, previous to penetrating the substance of the heels, give off superior coronary branches, which distribute twigs to that part of the foot, and terminate in the external lamellal twigs: these dispose themselves over the outer surface of the foot, anastamosing with the branches emanating from the principal phalangeal.

*The Veins of the Foot.*

The VEINS returning the blood from the foot are large and numerous, ramifying superficially. The plantar veins are arranged in the form of a rete or net-work, being in greater numbers as they approach the toe. At the borders of the pedal bone they turn upwards, and become the laminal veins; and here, on the outer side, we observe a peculiar arrangement. A considerable vein commences from the outside toe, and runs obliquely upwards and backwards to the superior portion of the heels, and, receiving the lamellal veins in its course, it gradually increases in size till it terminates in one large trunk. The veins of the coronary surface are arranged in a rete all over that part; those more posteriorly placed emptying themselves into the lateral phalangeals, which also receive numerous branches from the heels. The veins at the anterior part of the coronary surface terminate by two short trunks,

which converge to form one: the short trunk, situated most anteriorly, receives an ascending branch from a foramen in the outer boundary of the coronal process. Returning some of the blood from the bony structure, on the inner side of the digits, there are two veins emerging from the foramen into which the posterior plantar artery enters, one on either side of that vessel, which, proceeding up the antero-internal border, empty themselves into a large transverse vein on the centre of the os suffraginis, connecting the anterior and posterior phalangeal veins together. More posteriorly we observe the internal lamellal veins converge into a single branch, proceeding on the inner side of the digits to terminate in the same transverse vein. The veins of the inner part of the heels unite to form a trunk, which, proceeding obliquely upwards and outwards, meets with a branch on the outer side, the two uniting to form the *lateral phalangeal veins*. The *anterior phalangeal vein* is formed by the union of the two trunks arising from the anterior part of the coronary surface. These proceed upwards to about the centre of the os suffraginis, where they unite to form a single vessel connected to the posterior phalangeal veins by the large transverse trunk before alluded to passing between the digits. From this union the vessel proceeds over the fetlock, inclining to the inside, where the name of the *anterior metacarpal* may be given to it.

The *posterior phalangeal veins* appear as a bifurcated continuation of the large transverse branch between the digits, receiving a few small branches from the heels. They proceed upwards between the bifurcation of the flexor perforatus, on each side of the large metacarpal artery, and, passing over the flexor tendons above the fetlock, continue their course as the posterior metacarpal, gradually inclining inwards in company with the artery. The *lateral phalangeals, extern.* and *intern.* take their origin from the veins of the heels and the posterior division of the coronary surface: they proceed along the posterior edges of the ossa suffraginis et coronæ over the fetlock; a few inches above which the external one joins, and passes under the suspensory ligament obliquely to the inside, where it unites with the internal immediately under the knee. These veins ultimately empty themselves into the axillary vein, and thence into the anterior vena cava.

*Nerves of the Foot.*

The NERVES of the foot are derived from three large trunks; the external, internal, and anterior metacarpal nerves.

The *internal metacarpal* takes its course on the inside of the leg, beneath the artery. About one-third down the bone it splits into two; or, more properly speaking, it sends off two large branches, which proceed to the lateral parts, to form the *postero-lateral phalangeals*. These nerves run posterior to the phalangeal veins and arteries. About the middle of the os coronæ each divides into two branches, the anterior one running underneath the vein and artery, and ramifying over the coronary surface; the posterior branch lower down also passes under the vein and artery, and sends some filaments backwards to the heels, but the main branch follows a very peculiar arrangement:—at the upper part of the coronary surface it dips underneath the plexus of vessels, and runs obliquely forwards and downwards to the toes of the pedal bones. Its filaments, diverging upwards and downwards, give to this branch the appearance of a feather.

The main division of the internal metacarpal then splits into two equal branches, which run on each side of the artery and vein, till they reach below the fetlock, where they get superior to the vein and artery, and unite into one trunk for the space of a quarter of an inch. Again bifurcating, they send two branches in company with the divisions of the phalangeal artery, in union with which each branch enters the same foramen, where it is lost to further dissection. The other branches are some small filaments to the heels, and a twig which proceeds obliquely forwards to the toe on the inside, supplying the inner lamellæ.

The *anterior metacarpal nerve* runs in company with the vein: about half way down the bone it splits into three branches, two of which proceed on either side of the vein; the other crosses to the inner side to reach the internal phalangeal vein, anterior to which vessel it takes its course down the inner side of the suffragineal and coronal bones forming the *antero-lateral phalangeal*, and continuing down, in company with the vein, it sends its filaments to the lateral parts of the foot and coronary surface. One thin twig, in particular, proceeds along the superior border of the coronet, and unites with a branch of the anterior phalangeal.

The two main branches of the nerve accompany the anterior phalangeal vein till they reach the bifurcation of that vessel, where they get superior to it, and unite into one. Again dividing, each branch proceeds with the corresponding branches of the vein, and distribute their filaments to the anterior and lateral parts of the foot.

The last nerve to be considered is the *external metacarpal*, which runs down the posterior border of the suspensory ligament, and, below the fetlock, forms the *external* and *antero-lateral phalangeal*. Its distribution is precisely analogous to the internal one, proceeding anterior to the external phalangeal vein, and supplying the lateral parts of the foot and the coronary surface. Besides these branches to the foot, those nerves give numerous filaments to the special structures over which they pass in their course to that organ.

*Structures forming the Bulk of the Foot.*

We observe that when the pedal bones are placed within the horny box they occupy but an insignificant portion of its interior; the greater space being filled up by a fibro-cartilaginous material covering every part of the bone, and firmly connected to it. This structure, as it proceeds posteriorly, exists in great quantities, forming the larger portion of the heels, and contributing vastly to increase the surface of attachment to the horny covering. The material itself presents a white fibrous character, the fibres being interlaced with each other in various directions, by which its elastic properties are much enhanced; at the same time it is capable of resisting considerable weight, to which at length it yields, and then recovers its pristine form. Between this fibrous material is a structure arranged most peculiarly: I allude to large globular masses of fatty matter interposed in many places with the fibrous material, but principally placed between the pedal bone and the heels. Here it is accumulated in considerable quantities, extending down to the sole, where it also exists largely between the bone and the sensitive sole. This structure may also be observed in all parts which are subject to friction, and more particularly between the digits, where it acts as a cushion of protection for the numerous vessels which otherwise would be injured by pressure. The matter is arranged

in a dense fibrous membrane, forming each globule into concentric layers, as seen on a section being made. It presents a bright yellow appearance, and has *elaine* as its principal constituent, which may be pressed out in a fluid state, and which would, of course, serve to lubricate the parts. From the dense character of the structure which contains it, the membrane possesses considerable elasticity, and therefore recovers its form as soon as the pressure which altered it is removed.

The whole surface of the foot is covered by a vascular secreting membrane, taking on an altered character in different parts over which it is reflected, and adapting itself to the peculiar functions it is required to perform. The membrane itself is a continuation of the dermis in a modified form, while the horny box enveloping it has been said to resemble the cuticle.

In that portion immediately continuous with the common integument, the membrane has a papillated appearance, analogous to the coronary band of the horse; but, as it does not form a complete ring in the ox, this term is here inapplicable. We may, therefore, call it, for want of a better name, the *coronary surface*. It extends about half way down the foot, and proceeds back on the outer side to the heels, where it ends abruptly and undiminished in breadth. On the inner side it does not reach more than half way backwards, where it terminates in a point becoming continuous with the papillated structure of the sole.

The membrane of the coronary surface is covered by innumerable projecting villi in every part, which have an important office to perform, namely, the secretion of the horny covering or wall.

As the papillated surface extends down the foot it gradually takes on the character of lamellæ, which increase in breadth as they proceed towards the ground surface, but do not attain to any thing like the same size as in the horse, although they are much superior in point of number. They extend back on the outer side to the heels, lessening in breadth till they end in a point in the same place as the coronary surface. On the inner side of the digits the lamellæ terminate abruptly, proceeding not more than half way back, where they finish in a line with the coronary surface.

*The sole* presents everywhere a papillated surface of extreme vascularity. It takes its origin from the ground surface or termination of the lamellæ, but extends higher up on the inner side,

thus forming a concavity from its outer to its inner border. As it proceeds backwards and upwards to cover the heels, it presents a somewhat altered character, being less vascular. Its papillæ are much coarser in their appearance, and fit into corresponding pores in the horn or hoof.

The outer covering or the hoof is a secretion from the vascular covering of the foot itself, and is analogous to the cuticle in composition. Like it, it is first softened and then dissolved by a solution of caustic potassa, or a concentrated mineral acid. It yields gelatine by long boiling, but this would appear to be a *product* rather than an *educt*. Physically speaking, it appears constituted of minute tubuli, formed by the aggregation of primitive cells; and a section of its various parts demonstrates a variety of substances entering into its structure.

It may be divided into two distinct tables or plates; the outer one forming the great bulk of the hoof: the inner one being constituted of a more plastic material, acting as a means of attachment to the soft structures. The interior of the horny box seems everywhere admirably adapted to its office, and corresponds with the arrangement of the vascular membrane covering the foot, being, like it, resolvable into the coronary and lamellated divisions. The two hoofs together may be said to form nearly a circle, having its posterior part flattened, and anteriorly the toes curved slightly towards each other.

A section shews the hoof gradually to increase in thickness from its commencement to about one-third the way down, the remaining distance being continued of equable thickness to its juncture with the sole. The outer wall is considerably thicker than the inner, both gradually becoming less as they approach towards the heels, which are extremely thin.

The sole is certainly the thickest part of the horny covering, as might be supposed. As it proceeds backwards to the heels, it retains its substance undiminished till it arrives at the point where the lamellæ terminate: it then abruptly finishes by a thin expansion of horny substance which is reflected over the heels, and is seemingly continuous with the common integument. The two digits are united by a similar thin expansion on the inner side, connecting one hoof to the other. By this arrangement it is evident that every part of the foot of the ox is covered by a horny exterior, by which the sensitive structures within are protected from injury;

and by the continuation of this elastic, lowly-organised matter to the underneath surface of the foot, the animal is enabled to sustain its weight on that part without any inconvenience.

The formation of this structure, and the special offices to which it is applied, will constitute a subject for consideration in the next division of this paper.

## Physiology of the Foot of the Ox.

In our investigation of the structure of this organ, we have seen the admirable arrangement of its tissues adapting it for the peculiar functions it is destined to perform. The bones entering into the formation of the foot play an important part in the physiology of the organ, acting as a basis on which the softer parts are placed, and forming joints by which freedom of motion is ensured. The fact of the ossa coronæ entering some distance into the hoofs will also, in a great measure, prevent a liability to dislocation.

The roughened character of the pedal bones gives a great facility for the firm insertion of their investing membranes; and although the perforation of these bones by numerous foramina must necessarily tend to weaken them, nevertheless this is amply compensated for by the density of their exterior, and the hardness and thickness of their outer shell.

The navicular bones are required principally as a means of increasing the articular surface of the pedal bones, and likewise to admit of a yielding motion in the descent of the foot. By their synovial articulations with the tendons of the flexor perforans, friction is prevented in the movements of these tendons during the flexion of the foot.

The various ligaments attached to the pedal bones are so arranged as to admit of freedom of motion, and, at the same time, to act as powerful restraining bands. It may be observed, that by far the greater number of these ligaments take their origin from the os suffraginis, and not from the coronæ, by which extent of leverage is given and their power is much increased; and, at the same time, they act as a complete covering to the ossa coronæ, and do not in the slightest degree impede the extent of the motion these bones possess.

The arrangement of the external oblique ligaments is admirably adapted for preventing luxation: two orders of fibres exist in them,

one running from behind forwards, and the other from before backwards, which will, of course, admit only of a ginglymoid action between the bones. On the inner side of the digits, the long lateral ligaments must also act as powerful restraining bands, allowing only of flexion and extension.

The ligaments of the navicular bones present certain peculiarities. The inferior or broad ligament acts chief as a powerful connecting medium; the two lateral bands, by their attachment to the heels, have likewise the same office. The use of the thin superior ligament is that of completing the synovial sac. The great peculiarity is, that the supero-lateral ligamentous bands are composed of yellow elastic tissue, which yields when the foot is put on the ground, and thus supplies the place of the lateral cartilages in the horse.

We have seen that the bones entering into the structure of the foot are covered in every part by a comparatively insensible fibrous structure, which must necessarily be the means of warding off concussion, as this would be sure to take place did the ossa pedis fill the whole of their horny cases; whereas, by this arrangement, a beautiful elastic cushion is formed, and, at the same time, extent of surface is gained; and besides which, there is a quantity of fatty matter deposited in various parts of the foot, more especially at the heels and soles.

The existence of fat in the sole of the foot is most admirably adapted to prevent concussion; being placed over the whole of the ground surface, between the bones and the fibrous soles, so that we have an elastic pad formed in this part, where, in fact, it is most needed. The presence of this fatty matter in the dense fibrous membrane in concentric layers renders the membrane very elastic; thus maintaining its integrity, and enabling it to resist pressure to a considerable degree.

This fatty substance, as before remarked, has elaine as its principal constituent, which is secreted by the cells of its investing tunic.

In examining the vessels of the foot, we cannot but perceive a marked difference in the arrangement of the arteries and the veins. The former are deep-seated, and run into the bone, as it were, for protection; while the veins are more numerous, and placed superficially, ramifying in a complete network over the surface of the foot (few being within the bone), and, moreover, they are devoid of valves. Surely this is most economical on the part

of Nature. The arteries, carrying an important fluid to the foot for the support of its various tissues, would be liable, if superficially placed, both to injury and impediment; and, by the pressure imparted to them, the current of blood would be frequently stayed in its progress: but by these vessels being deep-seated, running, for the most part, within the bones themselves, these evils are completely obviated.

The veins having for their office that of returning the blood from the foot, ramify superficially; and being without valves, their function is assisted, as the current of blood can, if required, proceed in another direction, when an impetus is given to it by the pressure imparted when the foot is placed on the ground; this acting as a kind of pump to propel the blood upwards. By injection we demonstrate the veins of the foot to be without valves; the reason of which is obvious, since their existence could only have proved an impediment to the circulation, as these vessels are continually subjected to pressure in the various movements of the limb.

The nerves supplying the foot are large and numerous, interlacing frequently with each other, and distributed freely over the surface of the organ.

The reason why there should be required such a number of nerves and bloodvessels to supply the foot of this animal is very difficult to assign; unless it be from the situation in which Nature has placed him, calling for a greater secretion of horn, in consequence of its more rapid loss. Whether this is really the case I cannot take upon myself to assert; but certain it is that the amount of blood sent to the foot is large, and the nervous filaments markedly preponderate over those in the horse. From this peculiarity the operation of neurotomy in the ox would be nearly impossible; for, provided you operated immediately below the knee, it would be necessary to cut down in three several places; and, if any where in the vicinity of the fetlock, the nerves must be excised in no less than six places.

The hoof is a secretion from the vascular covering of the foot, the greater part being from the coronary surface. But the horny lamellæ, and the plastic material which unites them, are secreted by the vessels of the sensitive lamellæ themselves, and not by those of the coronary surface, which is proved by the inner plate of the horny lamellæ being distinct from the outer table. Simple maceration will shew this to be the case, as thereby the plates are easily separated. That the papillated structure of the membrane is best

adapted for the secretory function cannot for one moment be denied; and that the sensitive lamellæ, in some measure, possess this power is to me equally evident. The horny sole is secreted from the papillated tissue of the under part of the foot, and is extremely thick on its outer or ground surface; but as it proceeds back to the heels, where it is less exposed to wear, it becomes very thin; and here also the secreting membrane takes on an altered character, being less vascular and coarser in its papillæ: these papillated projections fit into well-developed pores in the horn, by which a firm connexion is undoubtedly obtained.

The manner in which horn is secreted is the same as other tissues, namely, by a deposition of cells, which by converging form tubuli, of which the hoof appears to be constituted. It is one of those parts of the frame which never again is returned into the circulating fluid by the process of absorption; for as soon as the cells have completed their term of life, they are gradually pushed by new formations to the outer surface, where they are thrown off as flattened scales by the process of desquamation.

The walls of the hoof are much thinner than those of the horse; and this fact, together with the quantity of blood with which the organ is supplied, will, I think, in a great measure account for the fact of the foot of the ox being always warmer than that of the horse.

The foot in a state of rest will present the following appearance:—the digits are placed some little distance apart from each other, by reason of their inner borders having a tendency to press most on the ground when sustaining the weight of the animal's body; the coronal and suffraginal bones resting obliquely on the ossa pedis; the metacarpal and radius being supported in a perpendicular direction from them. In preparing to advance, the humerus is extended on the scapula, principally by the triceps muscle; the radius is flexed by the flexor brachii, the metacarpal by the flexores metacarpi, the coronæ by the flexor perforatus, and the pedal bones by the perforans. During this action the phalanges are drawn together by the bifurcating tendons; the navicular bones move upwards over the posterior condyles of the coronal bones; or it would, perhaps, be better to say, the latter glide downwards over them; the flexor perforans ascends in its sheath by reason of the heels of the ossa pedis being brought nearer to the posterior part of the coronal bones, moving slightly over the posterior articular surface of the naviculars. In this position, by the action of the

extensores metacarpi et pedis, the leg is advanced, the toes being still kept together by the extensor et adductor digitorum.

The digits expanding, the os pedis is extended on the cornary, which moves upwards over the navicular. And here we observe the special use of the elastic ligaments of the navicular bone, which by their extensibility allow the os coronæ, to which they are attached, to be removed a considerable distance from it; and from the tendency this tissue has to regain its form, it will help to give the first impetus in the elevation of the foot from the ground.

The flexor perforans moves downwards in its sheath, and consequently must have to withstand a considerable amount of force, when the weight is thrown on the back part of the limb from the heels being brought in contact with the ground, which movement necessarily carries the tendon with it. As the leg is brought further under the animal's body, the digits expand still more, and the ossa pedis are more extended on the coronal bones. The expansion of the digits is mostly mechanical: by the weight of the animal resting on the foot, the inner borders of each toe have a tendency to recede from one another; but they are prevented from inordinate expansion by the extensor adductor, and by the ligamentous union posteriorly, together with the reflection of the horny matter that unites the two hoofs.

During this action the os corona is further removed from the navicular bone, thus stretching its elastic ligaments; and in this position the foot must sustain a great weight, by being made a fixed point. Supposing the one we have been describing to be the right fore foot, the left hind foot is then advanced; and in the same manner this foot is flexed, and the limb brought forward, the toe being first placed on the ground. When down, the left fore foot is advanced, and immediately this is followed by the right hind one. The right fore limb is then again raised, and the movement which, in placing down the foot proceeded from toe to heel, is now reversed, proceeding from heel to toe, the leg being gradually flexed as it rises: the pedal bone is then extended on the corona, which glides upwards over the navicular, the elastic ligaments being extended. As the foot is lifted from the ground, the flexors come into action, and the navicular is assisted in its approach to the os coronæ by the contraction of its elastic bands, and by their tendency to recover their natural position. The tendo perforans glides over the navicular, and upwards in its sheath; the digits are drawn together; the limb

is then advanced, and the same movements are repeated as before described.

In the more rapid progression of the animal the like action will take place at a quicker rate. In the trot, when the body is projected forward, the animal is almost off the ground; consequently he would place the foot down with much greater force: and here we observe the value of the fibrous matter constituting the great bulk of the foot, and more especially the arrangement of the fibrous structure of the sole, with its intervening fatty matter, which, by its elastic property, resists the concussion and gives a spring-like action.

Notwithstanding the economy manifested by Nature in supplying the foot of the ox with every facility for movement, still the arrangements of the various structures, as compared with those of the horse, would seem more adapted for strength than elasticity. The smallness of the lamellæ, the immense strength of the ligaments, the size of the muscles, particularly the flexors, which in the ox are powerful and double-bellied, all seem to draw a distinction between this animal and the horse, and to shew the beauty of Nature's arrangement in the various structures of the foot to perform their especial functions.

### Anatomy of the Foot of the Sheep.

On taking a general view of the foot of this animal, it would seem to bear a striking resemblance to the same organ in the ox; but, as we proceed in our investigation of it, we shall find several marked anatomical peculiarities to exist.

In the first place, we observe that the common integument, on reaching the digits at the commencement of the horny covering, is reflected inwards between them, separating the two hoofs from each other; and running backwards, it gradually becomes narrower as it proceeds towards the heels, where it terminates in a point about an inch from them, the two digits being then united by a reflection of horny matter.

The digits themselves are much narrower in proportion to their height than those of the ox.

In the centre of the phalanges, in a line with the lower articulations of the suffragineal bones, we observe the mouth of a peculiar canal, termed the *interdigital canal.* It appears to be formed by an inflection of the skin: it runs first downwards and backwards, gradually enlarging as it proceeds; then curves upon itself, and

runs upwards and forwards, still increasing in size for the length of nearly an inch, and at last terminates in a rounded extremity.

The structure of the canal is analogous to the common integument, its inner surface being covered by hair, which is frequently matted together by a peculiar unctuous secretion; while its outer surface has a spotted appearance, from the great number of glandular follicles penetrating every part of it. It is imbedded in a surrounding mass of glandular matter, which has for its office the secreting of the above-mentioned fluid.

*The bones* entering into the foot of the sheep are precisely the same as those of the ox, so that it would be a work of supererogation to give a description of them. The only difference of any consequence that I have remarked, is the smaller number of foramina in the pedal bone; there being but one on the inner side of the coronal process for the entrance of the phalangeal artery, and only three of any size on the outer border, which are inferiorly situated.

*The ligaments*, however, are somewhat different in their arrangement. On the outside we have first a broad lateral ligament, which arises from the lower surface of the os suffraginis, and runs to the lateral parts of the os pedis, blending with the fibrous substance of the heels, and uniting with a band from the upper part of the suffraginis, thus helping to form a theca through which the flexor tendons pass in their course to the digits.

Just anterior to the origin of the above-named ligament a narrow band arises, running obliquely forward to meet a similar band coming from a corresponding situation on the inner side, crossing in its course the extensor tendon. The two bands unite to form one, which is inserted into the anterior part of the os pedis immediately behind its coronal process.

From the coronal process of the pedal bone arises, as in the ox, a short and strong ligamentous band proceeding upwards to the os coronæ: it is lined by synovial membrane, and it helps to increase the extent of the articular surface.

On the inner side of the digits are two broad lateral ligaments, which have their origin from the lower surface of the os suffraginis: they run somewhat obliquely backwards parallel to each other. The anterior one is inserted into the lateral part of the pedal bone; the other, is more closely applied to the os coronæ, and is inserted immediately behind it. These ligaments spread out at their insertion, forming a complete capsule to the coffin-joint; they are

lined on a portion of their inner surface by synovial membrane, and lubricated with its secretion.

The ligaments of the os naviculare are four in number; the inferior or broad ligament, two lateral ones attaching the bone to the fibrous heels, and a superior one formed by a thin expansion of yellow elastic tissue attached to the perforatus tendon and completing the synovial sac; there being an absence of the two yellow elastic bands which exist in the ox; their place being partly supplied by the superior ligament, which is composed of the same tissue.

The arrangement and insertion of the tendons of the extensores digitorum, and the extensor et adductor digitorum, together with the flexor tendons, are in every respect precisely analogous to those we have previously described as existing in the ox.

*The arteries* of the foot of the sheep, both in number and distribution, are also analogous to those in the ox. The artery, however, within the pedal bone, instead of dividing into two branches, one running backwards and the other forwards, divides into three equal portions, which make their exit by three several foramina in the lower border of the outer wall of the bone, and then split up and ramify over the lamellæ.

*The veins* are less numerous than in the ox, and empty themselves at the outer heels into two trunks, forming the external and internal phalangeal: the anterior phalangeal vein, which brings the blood from the front of the foot of the ox, does not exist in the sheep.

*The nerves* supplying the foot of this animal are derived from one source only, the internal metacarpal, which follows the same arrangement as in the ox. There is an absence of the external and also the anterior metacarpal nerves.

The special arrangements of the fibrous structure covering the bone, the intervening fatty matter, and the reflection of the vascular membrane, are all so similar to the same structures in the ox, that it is unnecessary to repeat their description.

There remains but one other tissue of the foot of the sheep to be considered, namely, the horny covering, which in its arrangement presents some marked differences from that of the ox. In the first place, the foot is more upright; the horny sole is likewise extremely thick, and of the same substance throughout; and even when it reaches the very termination of the heels, so far from decreasing in thickness, it perceptibly increases, and finishes by a

thin reflection upwards, which completes the covering and connects itself with its fellow posteriorly; the anterior part of the connexion between the digits, which is by far the larger, is formed of the common integument inflected inwards between them.

The hoof is composed of two distinct plates, as in the ox. The outer one, being denser and thicker, is better adapted to afford protection to the sensitive parts within. The inner plate is constituted of a plastic material uniting the numerous horny lamellæ to each other, affording a firm though yielding bond of connection to the sensitive lamellæ, and combining the advantages of a strong union with the function of secretion.

*Physiology of the Foot of the Sheep.*

As in our anatomical investigation we have observed a similarity of arrangement in most of the structures entering into the constitution of the foot of the ox and sheep, and the same admirable provision on the part of Nature to fit the organ for the special situations in which she has placed those animals, so from this we must infer a similarity of function to exist. But as Nature gives nothing in vain, we find certain structures to be present in one animal which we do not in the other.

In the first place, we find a difference in the number of the foramina in the pedal bone, these being much fewer in the sheep than in the ox. The reason of this is at once obvious: the extent of surface being much smaller, the artery was not required to take so long a course in order to supply the various tissues, as it would, had they been farther removed by a greater extent of surface.

In the ligaments inserted into the pedal bone, we also observe a marked difference both in their number and arrangement; while they are less powerful, from the foot having not so much weight to withstand: there is also an absence of the external oblique bands. The office of the obliquely placed ligaments is principally that of confining the movements to flexion and extension, and thus they operate as powerful restrainers to luxation.

The less number of nerves supplying the foot of this animal may also be accounted for by the fewer structures requiring them; and the same may be said of the veins, which in the foot of the ox discharge themselves by four outlets—two in the anterior and two in the posterior parts of the digits: these being unnecessary in the sheep, from fewer vessels having to empty themselves, and which they more conveniently do, into two vessels posteriorly

situated; the blood thence being carried onward in a manner similar to the ox.

It is difficult to assign any plausible reason for the separation of the two horny digits from each other by common integument, unless it be on the ground that less strength is needed. That the union of the two digits by horny matter in the ox must necessarily increase the power of endurance is incontrovertible, and, therefore, I think we may consider their junction by such means as unnecessary in the sheep, from the less amount of strength required for sustaining his weight; and by this economical arrangement the extent of secretory surface is likewise somewhat lessened. With regard to the formation of horn, although the advantage gained in this respect is not very considerable, nevertheless, it is perfectly consistent with the general economy manifested by Nature in all her works.

The existence of the interdigital canal seems to be connected with the integumental junction of the horny digits, from its secreting a sebaceous fluid to lubricate the parts, and to prevent the consequences of attrition, which would be more likely to take place in the foot of this animal than in that of the ox, from the protective power being considerably less.

The various movements taking place in the foot, consequent upon the progression of the animal, must be precisely like those that occur in the ox, as there is no difference of anatomical structure which would lead us to infer any alteration in this respect. The absence of the two elastic bands of the navicular is compensated for by the superior ligament being constituted of the same material.

When the foot is lifted from the ground, and the digits are drawn together, pressure must necessarily be imparted to the interdigital canal, which will expel its secretion, while, from the form of the organ, this is prevented from escaping in the quiet or resting position of the animal. This fact alone proves the use of the fluid, and shews it to be more particularly required during progression.

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## COMMUNICATIONS.

### ON THE ACTION OF LINSEED OIL ON THE HORSE.

*By Mr.* J. MELLOWS, *V.S., Half-pay 1st Dragoon Guards.*

I PERCEIVE that linseed oil is still retained in the Pharmacopœia of the Royal Veterinary College as a purgative agent; and as I have had some experience in the use of that article, I trust the following observations will not be unacceptable to the profession, and particularly to the junior members of it. Two kinds of linseed oil are kept for sale in the shops. The first, by oil and colourmen, which is used by painters; the second, by apothecaries and druggists, to be employed for medicinal purposes. But in country places, both kinds being often kept by the general dealer only, they are frequently confounded. The oil used in the arts is, I believe, expressed by the aid of heat, on which its drying property in some degree depends. Its colour is darker than the oil obtained simply by compression of the seed, and which is ordinarily called "cold-drawn linseed oil," or, by prescribers, "*oleum lini sine igne.*" The latter is never used by painters, as it dries too slowly for their purposes; and when artists require a vehicle of a lighter tint than linseed oil, they use the nut oil of the colour shops. The drying oil of painters is exposed a second time to heat, and to it is often added litharge, or sugar of lead: when the former, it is called simply "drying oils;" when the latter, "double-boiled linseed oil." The colour of the cold-

drawn oil is as pale as olive oil, or nearly so, almost tasteless, and is the only kind fit for veterinary use, that is, if the object be the relaxation of the intestines; although it must be admitted that the other, that to which heat has been applied during expression, has not wholly lost its purgative action.

The cold-drawn oil, however, approximates the colour of that obtained by heat, by long keeping, also by exposure to the air; and, perhaps, with the darker colour it acquires somewhat of its drying nature; such oil should, therefore, be kept in well-closed jars and vessels, in a cool place. These precautions being observed, I feel myself warranted in affirming, that, by this agent, a degree of purgative action may be produced in the horse that cannot be safely hazarded by the administration of aloes or croton. During the period of fourteen years, before I was on half-pay, I frequently had recourse to this medicine in the treatment of intestinal obstructions, especially of the stercoral character, associated with spasms. If consulted at an early stage, before we had cause to apprehend the commencement of inflammation, I sometimes gave with the first bottle of linseed oil three or four ounces of the oil of turpentine, and repeated the like quantity of oil every four hours, giving bottle after bottle till it produced the desired effect. But if some time had intervened, I omitted the turpentine, and administered, at once, two or three quarts of oil at a single dose; following this up every four hours, as in the other instance. By this means six quarts, and even two gallons, of oil have been exhibited by me, and the purging has often lasted for three or four successive days, till the stable sent forth an offensive and peculiar effluvium. I should have expected that purging, produced to a similar extent by aloes or any other cathartic, would in all probability have had a fatal termination, or that recovery would be followed by a long period of debility and physical exhaustion. In these instances the horses were but seldom griped, and then only slightly; and, being cautiously fed after the operation had ceased, were fit for their work in the space of three weeks, and often in a shorter period of time. It may, perhaps, be said, that, in the treatment of intestinal obstructions, the purgative effect of the linseed oil might have been increased by the addition of the oil of croton, and thus the inconvenience obviated of administering this medicine in such large quantities.

The properties of croton, however, were not then so well understood as now. Besides, my present purpose is not to recommend a method of treating intestinal obstructions, but to investigate the advantages of linseed oil as a therapeutic. The addition of croton would render the oil less innocuous in its action. I have known, in more than one case, severe griping produced by not more than a pint of castor oil being given; and I should expect a similar result if I increased the purgative power of linseed oil by the addition of croton. Nevertheless, I am well aware that diseases modify the power of remedies, and observations made on the action of medicines given to patients under a morbid influence cannot be implicitly depended on in its absence; therefore, in my practice, the effects of the oil being ascertained only in the removal of obstructions, may not apply when the organs are nearly in their normal state. I approve of the plan proposed by the homœopathists of ascertaining the effects by trials on the healthy subject. Smaller proportions of the oil may be sufficient in other cases; yet still I think, that, finding the superpurgation produced by linseed oil so free from injurious consequences, I am warranted in recommending that agent to the notice of the profession. I think, also, that linseed oil sometimes produces a nauseating effect, and that without increasing arterial action; and in some instances I have observed the nausea greater when a few drachms of the tincture of opium have been added. If this observation be borne out by the experience of other practitioners, it may be found a useful agent in diseases in which that peculiar state is desirable.

The exhibition of small doses of aloes has been advocated for this last-named purpose, according to the recommendation of our late venerated teacher Professor Coleman; and for several years I followed that plan in army practice. My custom was to administer consecutively small doses of this drug till the intestines became acted on, when the medicine was discontinued; the beneficial effects being attributed to the sickness induced, and not to the cathartic action of the aloes. I, however, could seldom detect the existence of nausea till a sufficient dose had been given to produce, almost to a certainty, purging. Besides, in many of those diseases in which it was administered, the irritability was so great, that small quantities had the effect of full

doses when the bowels were in their normal state; and as the purgative effect produced in such diseases is to be avoided, aloes, as a nauseant, I think has been judiciously discarded. Yet a constipated condition of the bowels is also unfavourable towards a cure being effected; and as this sometimes exists in those diseases, and it is always desirable that we should have a pultaceous state of the fæces, cold-drawn linseed oil is, in my opinion, a safe and useful agent; and if it be found, as I think it will, that the addition of opium gives to it also the property of acting as a nauseant, its efficacy will be thereby increased.

In most cases of spontaneous diarrhœa, it is recommended to aid nature by a gentle purgative previous to other treatment: for this linseed oil should certainly be preferred to aloes; and, perhaps, in such cases, that expressed by heat would be equally available as the cold-drawn. I have not, in my own practice, met with many cases of super-purgation artificially excited; but in cases that have arisen, or in which I had reason to think aloes had been incautiously given, I have always considered the exhibition of oil judicious before I adopted other remedial measures.

In referring to intestinal obstructions, I have confined my observations to the action of linseed oil. Of course, when inflammation has supervened, blood has been abstracted, and other means adopted to overcome the disease and restore health.

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## On the Action of Lobelia Longiflora on the Horse.

*By the same.*

My knowledge of the effects of this plant on the horse is not considerable, such being only accidentally acquired by me during the summer and autumn of 1838, while examining some horses proposed as remounts for the 1st Dragoon Guards and 7th Hussars, then in British America. Major Bigs and Mr. Hamersly were purchasing horses for those regiments at Torento and other towns in Upper Canada, assisted by me as veterinary surgeon. Some hundreds of horses were brought for sale, and I found that few had escaped a disease of a particular character; but, in consequence of its being common in those localities at that period of the year,

it was deemed by the owners unimportant, yet, in several cases, the severity of the symptoms would not allow me to pass the affected animals. There was great prostration of the vital powers; sickness that even seemed to threaten an inverted state of the stomach; profuse discharges of saliva; irregular action of the flanks, not much unlike the breathing in broken-wind; the pulse was somewhat quicker than in a state of health, and irregular: at one time it would be strong for two or three beats, then two or three feeble strokes would follow; and it was also quicker or slower at intervals. But as the worst cases were not purchased, I had no opportunity of making any subsequent observations. If, however, every affected animal had been refused, we could not have taken any, the affection appeared to be so prevalent: I, therefore, did not object to the less severe cases, though the symptoms present differed from the others only in degree. In all there was sickness, increased salivary discharge, perspiration in patches, and irregularity of the pulse. The symptoms appeared to me such as I should expect to arise from the administration of veratrum; but I should not apprehend the danger to be so great from the lobelia as from the hellebore. The effects, however, were not dissimilar, and I considered, at the time, and I still think, the former might be brought into veterinary practice. In Canada it is known only by the name Lobelia Longiflora; but I find it is commonly called in English the Cardinal Flower, of which there are forty-two kinds, and among them this is enumerated by Linnæus. There is a species of the lobelia mentioned in the *Edinburgh Dispensatory*, the root only being used; it is thus stated:—

"Radix Lobelia Syphilitica, Lin.—A perennial that grows three or four feet in height: it bears blue flowers, has a milky juice, and a rank smell; resembles tobacco in taste, and excites vomiting. The root is used by the Indians in decoctions, and is considered by them as a specific in the venereal disease. They, however, discontinue the administration when its effects become considerable, and then, after a period, renew it. It salivates strongly, and the same precautions are directed as under a course of mercury. It is not received into the London College, but well deserves a trial. It grows chiefly in the marshy parts of Virginia."

Its use as a syphilitic was, perhaps, inferred from its action on

the salivary glands, that being at one time supposed to be the means by which mercury operated as a cure. The lobelia, certainly, salivated the horses that had eaten it, but in such instances it was always associated with sickness. The only treatment adopted by the Canadian farmers was to give a solution of common salt frequently, and to allow the animals to drink tepid water as often as they were inclined. Our remounts, however, recovered in a few days without any particular treatment, and I did not hear of any horse in the neighbourhood being poisoned.

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[The late Professor Burnett, speaking of the LOBELIDÆ, says:—"The milky juices of these plants, although often acrid, and sometimes poisonous, vary in the degree of their acridity, and are even occasionally mild and insipid, as is the case in *L. tenella*. Their milk, especially that of the species growing in warm climates, contains caoutchouc; and from one, hence called *L. caoutchouc*, this very useful substance is procured. *L. inflata* has been much commended for the relief it affords in difficulty of breathing, and it appears to have been administered in asthmas, and even in croup, with much advantage; it is both emetic and diaphoretic, but it should be exhibited with caution, for several cases are on record in which death has been caused by too large doses. *L. longiflora* is also poisonous; and, from its destroying horses that feed upon it, it has been called in St. Domingo *chatta cavallo;* and in Spain, where it is cultivated, *rabienta cavallos*. The negroes resort to it occasionally as a poison; and Jacquin says the juice, if accidentally applied to the eyes, brings on violent inflammation. *L. urens* is likewise a very noxious plant, but *L. Tupa* appears to be the most acrid and deleterious of the whole. Feuillée says, that even the odor of the flowers will cause excessive vomiting; and, if applied to the skin, or taken internally, its acridity produces violent inflammation and pain, often followed by death. *L. syphilitica* has been much extolled for its influence in certain cachetic disorders, and *L. cardinalis* has been used as an anthelmintic, but neither of them are now held in much esteem. Thunberg mentions a species of *Lobelia*, a native of the Cape of Good Hope, the roots of which are eaten by the Hottentots, who call the plant *karup*."

The *lobelia inflata* was tried by us on the horse some years since, and found to possess narcotic properties. It allayed considerably the irritation attendant on chronic cough; but our experiments were not carried as far as they might and perhaps ought to have been. The American Indians employ it in the same way as tobacco; indeed, it is called "*Indian tobacco,*" and in large doses it doubtlessly acts as a narcotic poison. The "medicine man" resorts to it as a remedy for the bite of venemous reptiles, and especially of the mocassin snake, than which the virus of the rattle-snake is said to be far less energetic. The following extract will shew the manner in which the aborigines proceed to treat a wound thus inflicted:—"In a wigwam in which I was for a time domiciled, a fine Indian lad of eleven years of age, in gathering berries, was bitten on the back of the hand by a mocassin snake, which he had provoked, but which he at length succeeded in capturing, and bringing home in triumph. The squaw, the only person except myself present, immediately bound the arm tightly just above the elbow-joint with a strong cord: upon the wound on the hand she applied a succession of plantain leaves (the *alisma plantago)*, wetted with oil and milk; she then prepared a strong decoction of the *lobelia inflata*, which she gave the boy to drink freely, and placed him in a warm bed. She then strewed some salt upon the ground, burnt a hank of flax in her hand, muttered a form of prayer to the Great Spirit Manitou, and then repeated at intervals to her patient copious draughts of the decoction, notwithstanding the severe vomiting it occasioned. This treatment was kept up throughout the night, the plantain leaves being repeatedly changed for fresher ones. The following day the same treatment was followed with less vigour; and, in the evening, a poultice, made of the green leaves of the *geranium maculatum*, was applied to the wound, and the patient placed in a warm water-bath prepared with the balsam of the pine-tree. On taking him out he was pronounced to be well; and so in truth he was, excepting some degree of debility occasioned by the treatment. To my own knowledge he was in good health five years after this event."

Its action on animals appears not less marked. Horses and cattle have been supposed to be killed by accidentally eating it. The annexed, from *The Lancet* of May 13, 1837, communicated

by Mr. C. Whitlaw, will be read with some degree of interest:—

"The properties of the lobelia inflata having occupied some attention of late, and being, apparently, but imperfectly known, I am induced to offer a few remarks upon it, deduced from my own personal observations.

"About thirty years since, when in America, I was requested by a gentleman to visit his farm, and endeavour to ascertain what plant or plants affected his stock in such an extraordinary manner. In the spring, when they were turned out to pasture, they were mostly hide-bound, and covered with dandriff, from the dry food on which they had lived during the winter season; and I observed them search round the field for the lobelia, as if by instinct, when, after eating a considerable quantity, some of them laid down, while others stood motionless, apparently stupified, the saliva flowing as copiously as if they had been mercurialized. The young stock, that ate of it to any exent, 'died,' as the farmers termed it, 'of the slavers,' of the cause of which they were entirely ignorant. In South Carolina I found that the Indians had a method of curing the cattle, when under such a powerful salivation, by giving them cabbage, or any of the Brassica family of plants, for food. They are thus relieved instantly, and, if too much exhausted to eat, a quart of the expressed juice is poured down their throats. The health and skin of the animals are then soon seen to improve.

"This led me to make experiments on the lobelia, when I found them to differ materially in their medicinal properties, varying as the soils on which they grew, the same as the tobacco and other plants. On a wet, clayey soil, the lobelia inflata is a powerful poison, its narcotic power being then in great excess, and producing, in ordinary doses, the most alarming symptoms—continued vomiting, tremors, cold sweats, and death. The greatest value of the plant is in its administration in asthma, when grown on soils which develope it antispasmodic qualities in an eminent degree. Exposure to light deprives the tincture, or any of its preparations, of its antispasmodic power, whilst the narcotic remains. Great attention should be paid, in collecting the plant, to the proper locality, and, also, to the elaboration of the sap. It should then be dried in a dark room, tightly compressed in bundles, and kept in air-tight boxes, in order to maintain its peculiar pro-

perties. When thus prepared, and after keeping for years, its narcotic powers become weakened, but the antispasmodic qualities are retained.

"It is also emetic, expectorant, sudorific, diuretic, and sialagogous. The Indians have used it for centuries, combined with the eupatorium perfoliatum and ilex cassina, as one of their best emetics for cleansing the stomach and head previous to holding their great councils."

From the above extracts, the suggestion of Mr. Mellows, that some of the *lobelidæ* may be introduced as articles of the veterinary materia medica, seems worthy of consideration; since, where decided and energetic action follows the exhibition of an agent, its therapeutic properties may soon be ascertained by experiment or otherwise. It was a favourite expression of the late Professor Coleman, that that drug was of no use in veterinary practice which would not poison; and the celebrated Linnæus has recorded a similar sentiment, namely, that medicines and poisons, and food and physic, merge into each other by almost undefinable gradations.]

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## A Case of Atrophy of the Heart of a Pony.

*By Mr.* B. Garner, *M.R.C.V.S.*

Dear Sirs, *St. Ives, April* 20, 1848.

A case that does not occur every day having lately fallen under my notice, and it being one possessing some little interest, I venture to send it you for insertion in The Veterinary Record. Its history is as follows:—

On *Monday, March* 20, 1848, I was requested by Mr. Clayton, of this town, to see a black pony, twelve hands high, eight years old, and in good condition. When I first saw her she manifested no marked uneasiness; the pulse and respiration were nearly normal, and the visible mucous membranes but very slightly injected: she had, however, refused all food during the day, the extremities were cold, and rigors present. I administered a mild aperient, hand-rubbed and bandaged the extremities, and clothed the body; threw up an enema of warm water, and directed the

general comforts of the animal to be attended to, as, on inquiry, I ascertained that two days before the attack she had been a journey of thirty miles, which she had performed to the satisfaction of her owner, but the day was wet and cold. At 8 P.M. I saw her again: the pulse had become a little accelerated, being 40 in the minute; a peculiar beating at the flanks was also perceptible, which to the ear appeared to come from the posterior aorta: this too was very irregular, being at times much louder than at the heart itself; the respiration likewise had become somewhat quickened: the rigors, however, had passed off, but the legs and ears remained extremely cold. Believing the heart to be implicated, I withdrew blood until I made an impression on the pulse, which was effected after I had withdrawn about four quarts. The act appeared to afford considerable relief, as the pulsatory action at the flanks became diminished both in frequency and in force.

In concert with a medical friend, I saw my patient at ten o'clock, when she appeared much better; yet from the symptoms present we were induced to infer either that some organic change had taken place in the heart, or that an aneurism of one of the larger bloodvessels existed. As the bowels remained torpid, no fæces having been voided during the day, I repeated the laxative and threw up another enema; again hand-rubbed the legs, which continued cold, and re-applied the bandages. The groom being directed to stay up with the animal during the night, I requested that a clyster of warm water might be thrown up every two hours.

*March* 21, 8 A.M.—But little change has taken place. The animal has not partaken of anything during the night, and has evinced some slight abdominal pain: the bowels have not yet acted; the pulse ranges from 40 to 42 beats in the minute, its tone feeble; the conjunctival membrane has assumed a yellow tinge, and the beating at the flanks is less distinct, but the extremities are still very cold. Let them be stimulated, and afterwards re-apply the bandages; also repeat the laxative medicine, and continue the use of the clysters.

At 2 P.M. I found the patient much worse: the pulse had risen to 55, its character hard and full, and the beating at the flanks was louder. I again abstracted blood till the pulse began to falter, which took place as before, after the withdrawal of about

four quarts of blood. Gave a sedative, and again relief was afforded. In the evening the pulse was scarcely perceptible at the jaw, and for the first time since the attack the respiration has become increased, and perspiration covered the body: the beating of the flanks is now synchronous with the action of the heart, which might be heard at the distance of several yards; while the ear being placed at the side, a peculiar bellows-like sound is detectable. The animal, when moved, reels, as if about to fall. Mr. Green, V.S., perfectly concurred with me that some organic disease of the heart existed, and that there was no chance of a restoration to health, even should the animal recover from this severe attack.

*March* 22.—On visiting the pony this morning, I was informed that she had been pawing the litter during the night, as if in pain; had refused all food; the bowels had not responded; and yet the general symptoms differed little from those manifested last evening, At 10 A.M. very unexpectedly she suddenly fell, and died without a struggle.

*Post-mortem examination.*—In this I was kindly assisted by several professional friends. On laying open the cavity of the abdomen, the peritoneum covering the intestines was seen to be slightly reddened. The intestines themselves, and the viscera of the abdominal cavity generally, were healthy. The fæcal matter was in a semi-fluid state. On exposing the contents of the thorax, the lungs were perceived to be apparently in health, but the heart was evidently larger than natural: the pericardial sac and the liquor pericardii were normal, but the structure of the heart had become changed: it had lost its firmness and power of offering resistance, yielding readily to the pressure of the finger, and its fibres giving way. The right ventricle was dilated and filled with coagulable lymph, while both it and the auricle, and likewise all the cavities of the organ, presented an inflammatory blush; and the lining membrane, instead of being smooth to the feel and glossy in appearance, was roughened from effused lymph. The quantity of coagulated lymph thrown out on the other side of the heart was not so great. The valves were healthy, as were all the bloodvessels going to and proceeding from the central organ of circulation.

## A Case of Introsusception of the Cœcum in a Mare.

*By the same.*

*March* 31, 1848.—I was requested to attend an aged grey harness mare, in low condition, the property of a farmer in this neighbourhood. She had just completed a journey of twenty miles, and on her return had been attacked with what appeared to the owner to be spasmodic colic, and for which the usual remedies had been resorted to by him with seemingly good effect; but, three or four hours afterwards, the symptoms returned with increased violence, and it was then my assistance was required.

My treatment consisted in the exhibition of oleaginous purgatives, with opium, throwing up enemata, blistering the abdomen, and abstracting blood freely, as it was evident that inflammation had set in. Six hours after, much relief, apparently, had been afforded. The animal had partaken of a little mash, drank some tepid water, and was in less pain. The legs being cold, they were hand-rubbed and bandaged, the body clothed, and the box well littered down for the night.

*April* 1.—The groom who stayed up with the animal informed me that she had, during the night, been walking round and round the box, and frequently scraped the litter up with her fore feet, as if in pain; that she would lie down, look anxiously towards her belly—then stretch herself out at full length, and rise again without rolling. The pulse fluctuated between 50 and 55. During the day the symptoms underwent no marked change. Enemas were occasionally thrown up, and sedatives given.

2*d*.—The pulse has risen to 62 in the minute—the symptoms otherwise nearly remain the same as yesterday. The general appearance of the animal is highly unfavourable, and I entertain no hopes of an ultimate recovery; nevertheless, the pain is not severe. As the bowels have not responded, repeat the laxatives with opium, and continue in use of the bandages to the legs.

3*d*.—The patient is much worse to-day. The pulse has risen to 70, and the respiration is untranquil. She still walks round her box, continuing the gyrations for some time; then stops and paws the litter—lies down and looks at her flanks,

which are much drawn up. The visible mucous membranes are highly injected, and the extremities deathy-cold. Again blister the abdomen, and give the purgative as before, the bowels being obstinately torpid; likewise throw up enemata.

*4th.*—Pulse 80, and extremely feeble. Still the same restlessness is evinced, without any acute suffering. It is evident that the contest cannot be carried on much longer. There is that about the animal which tells the experienced eye that "hope has for ever fled." General treatment as before. During the night the animal died, without experiencing much suffering.

*Sectio cadaveris.*—On opening the abdomen, all the intestines were perceived to have been highly inflamed, and the cœcum was found introsuscepted in the colon, which gut had become gangrenous to some extent, especially contiguous to its sigmoid flexure; and it also contained a quantity of silt. Probably this had been taken in with unwashed potatoes, on which the animal had been for some time fed, and became the immediate cause of the attack.

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## A Case of Inflammation and Congestion of the Brain of a Horse.

*By Mr.* W. Woodger.

[Communicated by Mr. J. Broad, *M.R.C.V.S.*]

The subject was a brown carriage gelding, twenty-two years old, belonging to Mr. W——, near Kilburn, in whose possession he had been for many years; but not being able to perform his duty with the same splendid action and freedom he was wont to do, his owner pensioned him off for life, allowing him to spend his days at grass in the summer months, and to be in a straw-yard in the winter. It was whilst at the latter place, near Kensal Green, he was first observed to be ill, whence he was removed to his owner's stables, and attended for some three or four days by a farrier. The symptoms, however, becoming more aggravated, the farrier was informed that he would not be required to attend the case any longer. April 26th, at 9 o'clock A.M., Mr. Woodger was called in, when the following symptoms were present. Pulse 48,

and of a feeble character, but which became quickly increased by the slightest excitement; eyes dull and heavy; mucous membranes of their natural colour; extremities warm; bowels torpid, the fæcal matter being voided in small quantities, and its consistence hard and buttony; loss of appetite. If food were presented to him in a sieve, he would make several repeated snaps at it down to the bottom of the sieve, and hold a portion of it in his mouth, but would not attempt to masticate it. Occasionally he collected a little hay or green meat, but only to retain it in his mouth. The owner was at once informed that an affection of the brain existed, and the prognosis was unfavourable; but should the result be otherwise than was anticipated, a considerable time must elapse before a restoration to health could take place. The reply was, he was anxious that the treatment demanded should be entered upon, as he intended to again turn the animal out as soon as fit; but if, at the expiration of a week, there was then not any hope of cure, he should be at once destroyed. Being immediately removed to my infirmary, the horse was bled, the hair removed from the cranium and back part of the head, to which a strong blister was applied. A full dose of purgative medicine was with some difficulty administered, as the instant the mouth was attempted to be opened, he made a ferocious snap with his teeth, and a violent plunge towards the operator, so that it became dangerous to be in the box with him. He would stand for a few seconds quite listless, and in an instant make a violent plunge to the other side of his box, bringing his head suddenly in collision with either the wall or the stall-posts: this being frequently repeated, caused his head to swell very much. At other times he would continue to walk round in his box for a half-an-hour at a time. On water being placed before him, he would hold his head over the pail for some time without attempting to drink any of it. Enemas were thrown up during the day, and the animal kept as quiet as possible. Towards the evening these highly unfavourable symptoms had become much increased in severity, and his owner calling to see him, and being informed there was no chance whatever of his recovery, suggested that further advice should be sought, to which, with much pleasure, I assented. About half-past twelve o'clock in the night, however, I was called up by the man who was staying with him, and who stated that "the horse was mad, and tearing the box

down." When I arrived, I found phrenitis to exist in its most violent form. To go near him was an act I durst not venture on; for he continued to plunge about violently, laying hold of every thing that came within his reach in a state of frenzy. Cold water was thrown over his face and head, which only added to the excitement. He seized hold of a bar that crossed the stall, separating his box, and with his utmost strength endeavoured to drag it down. The highest resting-place that he could find for his head appeared to give him the greatest ease. Of course, all further treatment was now impracticable from the attendant danger. About six o'clock A.M. of the 27th, during one of the paroxysms, he forced down a bar which crossed over his door, and confined his head between it and the stall-post, and before it could be removed, a portion of the superior part of the masseter muscle, sufficiently large to admit a hen's egg, was torn out, exposing the maxillary bone. The pulse was indistinct, the eyes amaurotic, and his general appearance resembled that of a rabid animal. It was now evident that the most humane course to adopt was to have him destroyed; and at ten o'clock A.M. this was done.

*Post-mortem examination.*—A large amount of serum had become effused into the cellular tissue about the head, in consequence of the blows the animal had inflicted on himself; likewise a considerable quantity was found beneath the dura mater surrounding the brain, the bloodvessels of which were much enlarged and highly congested, presenting a purple appearance. The vessels which enter into the structure of the brain were likewise enlarged, bringing to view many which cannot be seen in the healthy brain, and which afforded proof that the substance of it was involved. Serous fluid had also collected in the lateral ventricles; but the most remarkable fact was, the absence of the plexus choroides, not a portion of which was to be seen. The third and fourth ventricles were healthy. The cerebellum exhibited the same general derangement as the cerebrum. But one circumstance connected with this part of the organ, and which renders the case one of much interest, was the existence of two bodies resembling small tumours, one on each side of the base of the cerebellum, and which appeared as if composed of a congeries of bloodvessels that pressed upon the origin of the

seventh and eighth and a part of the fifth pairs of nerves; and this goes far to explain the cause of many of the peculiar symptoms which exhibited themselves during the life of the animal.

The stomach was nearly twice its natural size, and excessively distended with a quantity of coarse provender. The liver was highly diseased, being altered in structure, and extensively tuberculated.

The tubercles, on being cut into, presented an appearance resembling fatty degeneration of this organ; but the effused matter was more dense in consistence, and of a greyish white colour. The intervening portions of the gland were soft, and readily broken down by the finger.

I am, your's obediently.

*Market-street, Paddington.*

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## Case of Purpura Hæmorrhagica in a Cow.

*By Mr.* W. M. Boag, *M.R.C.V.S.*

Sir, *Jedburgh, April* 17, 1848, *Roxburghshire.*

Excuse the liberty I take of forwarding to you a specimen of purpura hæmorrhagica taken from a cow. I am sorry to send it in such a very imperfect state of preparation; but it being a rare disease, I am unwilling your pupils should lose an opportunity of witnessing such a very good specimen. The symptoms of the malady are generally very marked, not being easily mistaken; consequently the disease is ever afterwards pretty easily recognised. This is the fourth case I have seen since I came to Jedburgh, four years ago, and the only fatal one. The subject was a cow near her calving. She refused her turnips and fodder on Saturday morning, the 15th instant, for the first time. Her eyes were seen, in the language of the owner, *bloodshot* on the day before; but no particular attention was paid to this circumstance. The sowing of seed also was progressing rapidly in the beginning of the week, but it sensibly diminished in the middle of it, and left more leisure. I saw her on the Saturday morning, after a brother practitioner had been called in. Her eyes were then watery and staring, and appeared, as a bystander said, *on*

*fire*. The lining of the lids, and the globe of the eye, had a very dark red aspect. The pulse was quick and weak, 104 in the minute; the membrane of the nostrils covered with small purple spots, some the size of a pin's head, others larger; a sero-sanguineous discharge issued from both nostrils; the under part of the tongue, and the buccal membrane generally, was studded with spots of the same character; numerous vibices, or ecchymoses, existed over various parts of the body, particularly where the skin was thin, as on the udder, flank, &c. Some of these had the appearance of bruises or extravasated blood. Her breathing was accelerated; her fæces hard, with a very fetid smell. She gradually got worse until the following night, when death terminated her sufferings. A few hours previous to death her respiration became greatly distressed, and she was unable to rise. In the cases I have had, and which recovered, the spots changed from a dark red or livid colour to a brown and then a yellow. Two of these had enormous tumefactions over different parts of the body, but they occurred in horses, and both cases supervened on strangles.

Should you have any specimens of this kind, I shall regret troubling you with this; but I have a particular wish to contribute, when in my power, to your collection of morbid specimens.

Believe me to be,

With very great respect and sincerity,

Your's.

*To Professor Spooner.*

[Purpura hæmorrhagica, we believe, is less frequently met with in the cow than the horse; and rarely is it the case that an opportunity presents itself for obtaining so interesting a specimen of the disease affecting the mucous membrane of the respiratory organs as that kindly forwarded to us by Mr. Boag. In our last number we recorded an instance of this disease occurring in the horse and supervening on strangles, communicated by Mr. Mannington; and two of the cases that fell under the notice of Mr. Boag followed the same affection. Can any relationship be traced between these maladies? Frequently, however, purpura is a sequela of other diseases, but sometimes it is purely idiopathic; and it

appears to be intimately connected with a debilitated state of the bloodvessels. Dr. Elliotson says, "It is a very singular disease, and sometimes occurs in the most opposite circumstances; occasionally with great debility, weakness of pulse, and exhaustion; sometimes with the most inflammatory state of the system."]

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## Case of Phrenic Hernia in a Horse.

*By* James Lewis, *M.D., M.R.C.S.E.*

*Maesteg, near Bridgend, Glamorganshire, April* 3, 1848.

Sir,—By the next mail I forward you a small box, containing an excellent specimen of diaphragmatic hernia taken from a horse belonging to the Llynoi Iron Company, which died about thirty-six hours after he was attacked. The symptoms were more like inflammation of the bowels than any thing else, in my opinion; but there was great obscurity about the case. When I saw him first, about twelve hours after the attack, there was a corrugated appearance about the nostril, but no great distress or rapidity of breathing; pulse 72, full and hard. He had been bled twice, to the amount of three quarts each time, been given a strong physic-ball containing aloes, and afterwards, for colicky pains (which I considered slight), an ounce of turpentine, with the same quantity of laudanum, in aniseed water: he had also been back-raked and clystered. The feet were rather cool, but the ears not so.

I ordered six quarts more of blood to be taken from the jugular vein, which produced a sensible impression on the pulse: had the belly clipped, and a large mustard poultice applied; directed the legs to be rubbed and bandaged, and the following ball to be given:—calomel ʒij; opii gr. xv.; antim. tart. ʒj. I saw him again in about eight hours. It was then difficult to get him up, and he staggered and was much weaker; pulse indicating a want of stimulus. (I have no doubt gangrene was commencing.) Ordered a clyster, and the belly to be blistered, but without much hope of any relief being afforded. He was dead before I saw him in the morning. I should say that the breathing was much more oppressed during my second visit than at the first: it seemed now

more like inflammation of the lungs, there being great heaving at the flanks.

On examination, there was found hernia of the small intestines through the diaphragm into the pleural cavity, the hernia being opposite an old fracture of the seventh rib; and there appeared to have been partial adhesion of the diaphragm to the fractured portion of rib. It was on the right side. There were also symptoms of inflammation in several portions of the intestines, and several spots of ecchymosis. I have not been able to ascertain that the horse had any cough, or had strained himself. She had not been the property of the Company many months; but I shall make further inquiry, and shall be happy to furnish you with any particulars I can. It appears to me to be a very unusual case, because of the *fractured rib*. I am the medical officer to the works, and, therefore, the little I know of veterinary matters is of very slight value. There being no veterinary surgeon in the neighbourhood, I thought the specimen was worth forwarding to you. I shall be very glad to hear what is thought of the case, and whether the treatment was judicious.

I am, Sir,

*To Professor Sewell.* Your's truly.

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## On Bronchitis in Calves.

*By Mr.* T. G. Webb.

Gentlemen, *London, April 14th*, 1848.

Having read the Veterinary Record, and gained much valuable information from it, I send a case for insertion in it, if it be considered by you worth a corner.

Bronchitis in calves I believe to be more prevalent at this time of year than at any other. About this time twelvemonths a friend of mine, living near the Fens in Essex, told me he had lost several calves, and his neighbours likewise had lost a great number of their young stock. I asked him if he had examined any of them after death, and noticed any thing particular in them: he told me that he had opened several of them, and found the wind-

pipe full of small worms (filariæ). He added that, shortly before death taking place, they had a husky cough. Some of them fed well, others ate but little. I felt perfectly satisfied that they were cases of Bronchitis, and wished him to try the effect of inhaling chlorine gas, telling him to place the animals in a confined place, and giving him directions how to disengage the gas.

I did not see my friend again for six months afterwards, when he told me that he had cured several calves and yearlings with the gas, and not only his own, but a great many belonging to his neighbours. This, of course, I was pleased to hear. I shall be obliged by your opinion how the worms get there. Is it that the ovum lodging on the pasture is taken into the system while the animal is feeding?

I am, Gentlemen,

Your obedient servant.

*To the Editors of the Veterinary Record.*

[The idea comprised in the question propounded by Mr. Webb is a very common one, and it applies to many of the ectozoa, but not to the entozoa, among which is the tribe vermes. But an inquiry into the production of parasites would, we fear, prove as lengthened as it would be an inconclusive investigation. Respecting it, two opinions seem to divide naturalists. First, that there is an universal diffusion of germs, for the development of life from which a fit state of the tissue or system is necessary. Secondly, what is called fortuitous or spontaneous generation exists; which, in reality, tells us nothing, while, at the same time, it is a barrier to all further inquiry and research. We confess that we cannot subscribe to the doctrine, that, while organic bodies by the action of the chemical forces are undergoing decomposition, the like forces effect the reunion of their elements, and bring about the formation of the simplest kinds of animal organism, and these by aggregation contitute the more complex structures; else what necessity is there for the sexes? and why is it we see no marked deviation from the beautiful system which obtains throughout animated nature? Not only is the type preserved among animals, and that of the lowest order, but the peculiarities of each species are also preserved. Nothing is taken away, nothing added thereto. It is as easy to

conceive the chance formation of a man as of a monad; of the gigantic oak as of the lowest conferva. Here we must leave the subject.

As certain conditional states of the atmosphere favour the generation of those worms that infest the air-passages, we, consequently, find them to be more prevalent at one period than another. During the continuance of the past wet season, both sheep and pigs, as well as calves, have been the subjects of bronchitic attacks, and in very many instances the cause has been traced to the presence of the filariæ bronchi. Some may say that these parasites are only the effect, yet, secondly, they become a cause.]

## EXTRACTS FROM JOURNALS.

### Aldehyde an Anæsthetic Agent.

[From the Medical Gazette.]

Chloroform has scarcely lost its novelty, when the discovery of a new anæsthetic agent is announced—possessing, it is said, some advantages over the two vapours, the properties of which have of late excited so much attention in the profession. The liquid which it is proposed to substitute for ether and chloroform has been long known to chemists under the name of *Aldehyde.*

According to the Giessen nomenclature, it is the hydrate of oxide of acetyle, and its formula is $C_4 H_4 O_2$ or $C_4 H_3 O + aq$. It differs from alcohol in containing more carbon and less hydrogen. It derives its name from the last peculiarity (*Al*cohol *dehyd*rogenated).

It is not a little creditable to the discoverer, M. Poggiale, Professor of Chemistry at the Val de Grâce, that, in the midst of the exciting scenes which have taken place in Paris, he has been able to carry on his experiments, and present a summary of the results to the Academy of Sciences. At the meeting of the 13th March he stated that the respiration of the vapour of aldehyde was speedily followed by the most complete insensibility. Its

stupefying action he found to be more rapid and powerful than that of ether and chloroform. So far as we can ascertain, however, his experiments have as yet been confined to dogs, and in these animals he found that the state of insensibility was perfectly induced in forty-five seconds. The eyes became fixed, the muscles completely relaxed, and the pupils dilated and motionless. This state lasted three minutes, at the end of which time the animal, though still insensible, rolled about, and experienced some involuntary movements. After eight minutes, respiration was performed in a natural way, and the sensibility of the skin returned. No accident followed the inhalation. In two experiments the respiration of the vapour was continued for *ten* minutes: the animal remained insensible and motionless, the muscles of respiration alone continuing to act. When exposed to a free current of air, the head of the animal was drawn backwards: respiration became convulsive, but afterwards regular: finally, the dog raised itself upon its fore legs, and drew after it its abdominal members, which were paralysed. It entirely recovered in about a quarter of an hour. It was observed that the arterial blood had the strong and peculiar odour of aldehyde.

M. Poggiale remarks, that, if the powerful odour of aldehyde is not found to be an obstacle to its employment in surgery, this liquid will be a very economical substitute for chloroform. Large quantities of it may be prepared at a very small cost, by the distillation of a mixture of alcohol and black oxide of manganese with diluted sulphuric acid, and subsequent rectification of the product by chloride of calcium.

Aldehyde is a colourless liquid, with an odour resembling that of ether, but more suffocating. It is neutral, inflammable, and burns with a pale flame. Its specific gravity is 0·79; its boiling point, 72°. The specific gravity of its vapour is not stated. It easily mixes with water, alcohol, and ether. It undergoes decomposition by keeping. It is decomposed and blackened by sulphuric acid; also by caustic potash; and, when a little ammonia is added to it, with nitrate of silver, the metal is reduced to a brilliant deposit, on heating the mixture to 212°.

## Difference in Composition between Arterial and Venous Blood.

The results hitherto collected concerning the comparative analysis of arterial and venous blood are very contradictory. While in five analyses made by Prévost and Dumas, and two by Lecanu, more water was found in venous than in arterial blood, the contrary result was obtained from three analyses by Hering, and two by Franz Simon, in animals. With regard to the relative quantities of albumen and of fibrine, Hering found more of these substances in arterial than in venous blood among oxen and sheep, but less in the horse. Simon, whose observations were made on the horse, found the relative quantities of albumen and fibrine once greater and once less in arterial than in venous blood. According to Prévost and Dumas, and Lecanu, arterial blood is richer in globules than venous; but in four analyses out of five, made by Hering and Simon, there were more globules in the venous than the arterial blood. Some information on this subject has been lately furnished by MM. Poggiale and Marchal, from the results of two apparently careful analyses of arterial and venous blood, drawn from a patient affected with erysipelas and cerebral inflammation. These analyses shew that the arterial blood contains more water and less solid matter than venous, but that the latter contains less albumen and fibrine than the former; while the quantity of globules, on the contrary, is greatest in the venous blood. Poggiale and Marchal, suggest, that if the existence of a larger quantity of globules in venous than in arterial blood is found in other cases, these particles ought probably to be regarded as elements of decomposition formed in the tissues, and possibly destroyed in the lungs.—*L'Union Médicale, 29 Janvier*, 1848.

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## Ozon, a probable Atmospheric Cause of certain Diseases.

*By M.* Schönbein.

M. Schönbein has for some years directed attention to a substance which is disengaged from the points of electric conductors, and also from the wires of galvanic batteries. This substance he believes to be identical with that which is formed

when phosphorus is in contact with moist air. He has named it ozon, on account of its penetrating odour. It is a powerful oxidizing agent, and acts upon silver at ordinary temperatures. It has a power, like that of chlorine and bromine, of irritating the respiratory mucous membrane, and producing catarrh. M. Schönbein thinks that it is constantly liberated in greater or less quantity in the atmosphere, according to the development of electricity. He has ascertained it to be generally most abundantly developed during winter while there is snow, or during stormy weather in summer. From these circumstances, and from its properties in respect to the respiratory functions, M. Schönbein is disposed to attribute to this substance the production of some of those epidemic catarrhs which so evidently depend on atmospheric causes. He has made observations on several epidemics occurring at Basle, and has found their development and decline to present a distinct relation to the quantity of this substance present in the atmosphere.

The means which M. Schönbein employs to test approximatively the amount of ozon in the atmosphere are very simple. He suspends a few sheets of paper, which have been dipped in a solution of starch and iodine of potassium, in the air which is to be tested. In an atmosphere where no ozon is developed, as is the case under a bell glass, these will remain unchanged for an indefinite length of time; but whenever this substance is present, a blue colour is developed in a moist, and a brown colour in a dry, atmosphere. The time required for the coloration varies from a few hours to as many days, being dependent on the quantity of ozon present. In a chamber well secured from draughts, the coloration is very slow; whereas in a free current of air, and in certain states of the weather, it is very rapid. Sulphurous acid and sulphuretted hydrogen gas have the property of destroying ozon; so that in the neighbourhood of public necessaries, and other places where the air contains much of these substances, M. Schönbein finds the papers to retain their colour permanently. It would be interesting to know if workmen, or others who are much exposed to the influence of sulphurous vapours, or mephitic emanations containing sulphur, enjoy any peculiar immunity from epidemic catarrh.—*Zeitschrift für Rationelle Medizin.*

## On the Comparative Efficacy of the Hydrated Sesquioxide of Iron and Magnesia as Antidotes to Arsenic.

*By* Caventou *and* Bussy.

Caventou supports, in opposition to Bussy, the superiority of the hydrated sesquioxide of iron over magnesia as an antidote to arsenic. He regards the compound formed by arsenic with the iron antidote as much less apt to be decomposed by the salts of the stomach and bowels than that formed by it with the magnesia antidote. These two chemists are in particular at variance as regards the effect of the hydrochlorate of ammonia within the alimentary canal on the magnesia-compound with arsenic. Caventou objects that the arsenite of magnesia is much more readily acted on by the hydrochlorate of ammonia than the arsenite of iron; so that, when the former is produced by the antidote, more arsenic is apt to be again reduced to the soluble form than when the latter is the product of the antidote used. Bussy, however, affirms that an excess of magnesia being employed, the hydrochlorate of ammonia is destroyed, so that no such re-solution of the arsenic follows. Caventou replies, that the decomposition of the hydrochlorate of ammonia by the excess of magnesia cannot take place without the extrication of free ammonia, which, by its irritating qualities, must complicate the case, and concur with the arsenic in injuring the mucous membrane. Caventou, however, in the end acknowledges that magnesia should be used if the iron antidote be not at hand, care being taken that it is not too much calcined. —*Gazette Médicale de Paris*, Jan. 22, 1848.

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## On the Effects of the Introduction of Common Salt directly into the Stomach.

*By M.* Bardeleben, *of Giessen.*

On introducing, by a fistulous opening through the abdominal parietes, a small quantity (forty-five grains) of domestic salt into the empty stomach of a dog, a series of phenomena was constantly observed, which does not take place when the same quantity is

taken by the mouth. Every part of the membrane in contact with the dry salt secretes very rapidly a nearly colourless mucus, varying in quantity. The stomach is then thrown into brisk contraction; the animal is agitated and uneasy, and is seen to swallow large quantities of saliva. The respiration is accelerated, and in four or five minutes vomiting is produced. After the vomiting has ceased, the gastric juice is frequently, though not invariably, alkaline. This alkalinity of the gastric secretion is frequently met with in the empty state of the stomach, or even after the introduction of indigestible substances, such as sponge or pebbles; but during digestion secretions of the stomach are always acid. The above-described action of salt is peculiar to it; for pepper, which is regarded as a much more irritating substance, is very well borne, and increases the gastric secretions without provoking any of those contractions and vomitings described.—*Archives Générales de Medecine*, December 1847.

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## Poisoning of two Cows by the accidental Administration of the Acetate of Lead.

*By* B. Ritter.

[From the "Journal de Belgique."]

Instead of eight ounces of the sulphate of soda, intended to be given to two cows, eight ounces of the acetate of lead were administered by mistake. At the first indication of the action of the poison the animals were sent to the butcher. The flesh of the first cow was sold for consumption; but, on information being conveyed to the authorities, that of the second was submitted to the inspection of the sanitary police.

The day after the administration of the agent a total loss of appetite took place, but the thirst became extreme: the beasts shook themselves frequently, licked their muzzles, became dull, and laid down; tenesmus was present, with violent contractions of the elevators of the tail. The alvine evacuations and the urine

were at first scantily voided, but afterwards the fæcal matter was passed involuntarily, and of the consistence of gruel. The muscles presented no unnatural appearance: on the external surface of the intestines were several spots of a dark red colour, and likewise a quantity of small agglomerated vesiculæ; some of the blood-vessels were also considerably injected. The whole of the intestinal canal seemed to have been spasmodically contracted, and contained only a small quantity of mucus of more or less viscosity. Vestiges of inflammation were perceptible on several parts of these organs.

The rumen felt hard, and was distended by a notable quantity of green food in a very dry state. The mucous coat was of a dark red colour, much softened, and easily detached from the subjacent membrane. The second and third gastric divisions were much contracted; the reticulum contained a small quantity of semi-fluid ingesta; the omasum was filled with dry substances; the abomasum was much diminished in size, its mucous coat softened, and considerably inflamed towards the pyloric orifice. This portion of the stomach also contained a small quantity of a greyish substance adhering to its parietes. The liver was atrophied; the gall-bladder filled with very limpid bile. The spleen and lungs and heart were smaller than natural. There was but very little serum in the pericardial sac. The matters in the stomachs, the mucus adhering to their coats, the muscles, &c., yielded not the slightest trace of the acetate of lead.

The meat was of a beautiful appearance, and, being tasted by several persons without any inconvenience resulting, it was judged fit for consumption. Prudence, however, dictated that the liver, lungs, heart, &c., should be buried.

M. Ritter quotes several authorities which seem to shew that saturnine salts may penetrate the solids, and thereby communicate toxic properties to the flesh. The results of the experiments of Wasman and Pappenheim prove that the acetate of lead introduced into the stomach combines with the pepsine, and form a pepsinate of lead, which is at first precipitated and afterwards dissolved by the free acid in the stomach: the re-absorption would be thus easy, and a general poisoning take place. The experiments of Wasman demonstrate further, that part of the acetic acid of the salt combines with the pepsine, and form an acetate of pepsine, which is also precipitated. Nevertheless, all the pepsine is not

precipitated; and when the precipitant is in excess, then it is slowly separated from the mass precipitated. It is when poisoning with acetate of lead takes place that only a small quantity of the poison has combined with the pepsine, which being re-absorbed, may produce fatal effects. The quantity not combined with the pepsine would only produce a local action.

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## On the Division of Tendons in the Extremities of Solidungulated Animals.

*By* M. Tirart.

[From the "Journal l'Ecole de Lyon."]

If the importance of a subject be proved by the attention paid to it, and by the number of opinions to which it gives rise, the division of the flexor tendons in solidungulated animals doubtlessly is one of remarkable interest. It will also be allowed that tendiotomy is one of the most brilliant operations in the practice of surgery. Besides which, by its frequent and easy performance, and immediate results, it is very favourable to the reputation of the operator; and notwithstanding the many opinions advanced respecting it, most desirable effects are obtained from it in maladies previously considered incurable.

In this short Essay I do not propose to take the subject generally into consideration, but simply to discuss a few points, which, if they have not been entirely neglected or wrongly interpreted, do not appear to me to have been sufficiently explained nor duly appreciated.

I shall divide the affection termed "bouleture" (viz. bow-legged) into two kinds, which require the operation of tendiotomy. 1st. When the joints are bent one over the other, so that the interior part of the limb presents a curve, anteriorly and uniformly convex, the toe only coming into perfect contact with the ground. This abnormal position of the foot, termed "pincard,*"

* A technical term used to denote a horse which constantly pitches on the toe.

is mainly attributable to the contraction of the perforans tendon, which is inserted by a tendinous expansion into the plantar surface of the os pedis. The second kind of the affection is the forced and permanent flexure of the fetlock joint alone, viz. of the pastern over the cannon, the foot resting on the ground as in a normal condition. In this case the flexed pastern is brought forward sometimes to such a degree as to advance beyond the line of the toe; and in its articulation with the coronet and the foot a curve is formed anteriorly concave, the more marked in proportion to the severity of the case. This singular affection is caused by the shortening of the perforatus tendon, which regulates the flexion of the two first joints, but has little influence over the third. It is of rarer occurrence than the one previously mentioned, and is only met with in young horses, as a sequel of a bad constitution or premature exertion.

The distinction of these two varieties of "*bow-leg*" leads to different surgical conclusions. No one can deny but that the former kind of affection is much less serious and easier to cure than the latter, in which the articulating surfaces are altered by inordinate wear of the bones; thus causing a tendency for the limb to remain in its vitiated position, while it prevents the parts assuming their pristine and relative situations, and evidently proves an obstacle to the success of the operation. The majority of veterinary surgeons have remarked, that, under these circumstances, the limb is but little if at all adjusted by the simple section of the perforans tendon, and that frequently we are obliged to divide the two tendons, or the perforatus alone, in order to remedy the evil; whereas, in the first form of disease, the simple section of the perforans is immediately followed by a complete adjustment of the limb, with the exception of certain complications which I shall hereafter mention.

Generally, the violent tension of the tendons, the inordinate traction accompanied by inflammatory symptoms, are the direct and most frequent causes of "*bow-leg*." In the tendinous structure occurs an accumulation of humours, or of various kinds of fluid, by the interposition of which the tendinous fibres are separated, and, their normal arrangement being altered, the tendon consequently becomes shorter.

The tendons or flexor muscles of a limb being too short in pro-

portion to the length of the bones moved by them, these maintain an abnormal position; and moreover, in their action, are so restricted, that the animals are not adapted to perform their work well.

In order to restore the limb to its natural position, the tendons are to be divided. But this satisfactory result does not always follow the operation of tendiotomy; and, consequently, the veterinary surgeon must be acquainted with the circumstances upon which the success of the operation depends; with those also which offer but little hope of any good resulting, and, finally, to be enabled to distinguish those cases in which the performance of the operation is useless, or even prejudicial. When the defect is but little marked, the limb being simply straightened with a tendency to project forwards, it is attributable to a local engorgement of the tendon accompanied by pain, and indicating a recent affection; and it may be corrected in a fortnight or three weeks, by giving rest to the parts with the adaptation of proper shoes. For this purpose we are to apply elevated calkins, so as to keep the articulation moderately flexed. This plan, followed up by the actual cautery, is frequently employed with benefit against tendinous engorgements, which are improperly termed ganglia. If the animal is young, vigorous, and well made, and if the defect is exempt from all complication, we may perform tendiotomy with perfect confidence, its good effects being certain.

The "*bow-leg*" of the second variety is more obstinate, and the operation frequently proves of no avail for it. The engorgement and reunion of the two tendons preventing the beneficial results of the simple section, calls for a second division of the parts, which may occasionally lead to a cure. But if the contraction is of remote date, accompanied by deformation of the articular surfaces, by adhesions between the tendons and the bones, anchylosis, exostosis, &c., the performance of the operation is useless.

*Accidents that may accompany Tendiotomy.*—1st. Lesion of the tendinous sheaths may occur without leading to any serious consequences; but commonly this is developed as a sequel of the phlegmonous engorgement in the whole part, which causes the lameness to become protracted, impedes the formation of a cicatrix, and terminates in suppuration, or in the formation of an abscess.

2dly.—Hæmorrhage, which mostly follows the wounding of a vein. The internal metacarpal artery of the fore legs is the only one which we are likely to wound. In all cases the colour of the blood, and its mode of escape, prevent us from mistaking the bloodvessels wounded.

This fluid soon fills up the interspace between the two tendons, and forms a coagulum, which subsequently becomes decomposed; a sero-sanguineous fluid oozes from the wound, abscesses are formed, and the subsequent suppuration at least retards the cure, if it does not lead to even more serious results. The healing process may be rapid notwithstanding the hæmorrhage, which generally ceases as soon as the dressing is placed over the part.

3dly.—A lesion of frequent occurrence, but not sufficiently noticed, is the division of the plantar nerve. The simple wounding of the nerve is productive of no other inconvenience, except that it produces violent struggles, by which the operator is liable to an accident, and the neat surgical performance of the operation is opposed. Much more serious consequences may accompany the complete section, all sensibility being thus arrested.

The organs being by this means deprived of nervous influence, the tissues are without energy, without reaction, and a number of pathological derangements may follow. Notwithstanding, the divided nerve may become reunited, if the two extremities correspond exactly, and are in immediate contact.

4thly.—The wounding of the tendons is of little consequence if it does not implicate half or more of their thickness.

### *Method of Operating.*

Without entering into a critical description of the different methods adopted for tendiotomy, I shall remark, that all those which are not based on the subcutaneous plan are in opposition to sound principles of surgery, and are to be abandoned by practitioners of the new school. As to the subcutaneous method itself, if its rules are fixed and invariable as regards the section through a very narrow opening, it is not so with the rest of the process, this being subject to variation. In all cases, its advantages are not disputed by any one, there being a cicatrix

scarcely visible, tendinous reproduction more speedy, and a cure more complete and radical.

Before operating it is always necessary to shoe the foot appropriately. In the first kind of "*bow leg*" the foot is to be pared out, the heels slightly lowered, and a shoe put on the toe of which extends beyond the horn two or three centimetres at most: rarely is it requisite to use a shoe more lengthened at the toe.

The second form of the affection sometimes requires a shoe curved upwards at the toe, so as to induce greater extension; this being an indispensable condition in replacing and retaining the pastern bone in its primitive and normal position. The operation may be performed on either side of the extremity; nevertheless, the inner one is to be preferred, on account of the different position which is given to the wound, and because we are not so likely to puncture the artery. The dividing instrument, which has been called "*tenotome*," varies in its formation as much as the surgical process itself. I do not attach any importance to the various modifications to which it has been subjected, and which have been dictated by the caprice of some practitioners; therefore I shall simply observe, that it is a bistoury, or a scalpel, having a very narrow and pointed blade.

The animal being cast, the operator fixes the limb in a suitable position, so as to ensure his personal safety and facilitate the operation. In all cases it is requisite to extend the limb. The surgeon is to bear in mind that the different anatomical arrangement of the tendinous sheaths in the anterior and posterior extremities is deserving of his attention. In the former, the interspace between the superior and inferior sheaths is at the utmost five or six centimetres, whereas in the latter it is not less than twelve or thirteen centimetres. It is in this interspace that the instrument must be passed; and the precise spot for the puncture in the fore legs is between the inferior third and superior two-thirds of the tendon, and in the hind legs in the centre of it. It is necessary to preserve from injury the bloodvessels and nerves, and for this purpose I recommend the following method:—The point of the instrument is to be forced through the skin, but not through the substance of the tendon; it is then to be glided

forward over the surface of the perforans, so as to press back with the back of the instrument those parts which we are desirous of preserving from injury. The instrument having penetrated between the suspensory tendon of the pastern and the perforans, with the left hand we are to encompass the great and the deep-seated tendons: we are now to separate and isolate them one from the other as much as possible, in order to protect the incision, and at the same time, by a methodic and consistent movement, we are to divide the tendon. The violent struggles of the animal generally prevent the completion of the tendinous incision at one effort; but it is preferable to withdraw the instrument from the wound, and to wait until quietude takes place, so as to complete the division. I repeat, that it is better to perform the operation with prudence, and at various moments, than to operate at one single cut, thus producing derangements in the parts, and compromising or rendering abortive tendiotomy.

As soon as the section is completed, a jerk, accompanied by a cracking noise, is produced: the limb becomes suddenly elongated, that is, the foot becomes extended; and the two extremities of the tendon contract within their cellular sheath, leaving between them a hollow space proportionate to their degree of separation.

The phenomena of the operation are not always similar to these. When adhesions exist between the structures, exostosis, or other alterations, the limb is not so perceptibly straightened: there is no jerk of elongation, no cracking noise; and sometimes the extremity does not regain its normal position before two or three days have elapsed. The operation being completed, we are immediately to apply over the wound a dry pledget of lint or one dipped in alcohol; and to fix the same by means of a moderately tight bandage, which is to be renewed every four or five days. In general, it is not beneficial to exercise the animal after the operation, even when the limb is not perfectly straightened: the gradual weight bearing on the leg is sufficient to remove all obstacles which might be opposed to an immediate extension; and rest, besides tending to the alleviation of pain, favours the organization of the cicatrix. Exercise is required at the end of a fortnight, and in most cases the animal may be moderately worked after five or six weeks. But in all cases it is not before the third or fourth month that we are to expect continued service

from him. I do not pretend to say that at this period the tendon has acquired its full solidity and strength; on the contrary, I believe that the cicatrix only acquires firmness for some time afterwards. If, too frequently, veterinary surgeons have failed in obtaining satisfactory and durable results from tendiotomy, it is because they have arrested the tendinous organization by premature exertion. Some practitioners are in a hurry to apply the actual cautery, to get rid of the persisting engorgement. This is bad practice; and experience proves that the cauterization, by its revulsive action, is prejudicial to the restorative process. In every vital phenomenon a certain amount of irritation is requisite, otherwise the reproduction of a tissue is impossible; and a certain period is likewise necessary for Nature to perfect her work. The cautery can only be advantageous when the cicatrization of the tendon is completed; if not with a view to disperse tumefaction, at least to improve the condition of the leg.

Rarely do we perform the double section: meanwhile, when the tendons have become so adhered as to form but one solid mass, the single division would prove fruitless, and we are then obliged to separate the two. This extreme operation is by no means so safe as simple tendiotomy, and it may lead to unavoidable accidents. The anatomical complication of the parts, the insidious position of the bloodvessels and nerves, the larger wound, the frequent inordinate extension of the limb after the operation, demonstrate the importance to be attached to such cases, and the uncertainty of the surgical process; yet, notwithstanding all these untoward incidents, the double section of the tendons is sometimes crowned with success.

As it may be perceived, I give preference to that process of tendiotomy which consists in the division of the tendons from before backwards, and I do not follow the example of those practitioners who recommend the incision to be made from the posterior to the anterior part; because, if by the former method we are liable to wound the perforatus tendon, we evitate the other accident, the lesion of the nerves and bloodvessels, which I view as infinitely more serious and important.

## DIPLOMAS.

NAMES OF THOSE WHO HAVE OBTAINED THEIR DIPLOMAS FROM THE ROYAL COLLEGE OF VETERINARY SURGEONS, LATE STUDENTS OF THE ROYAL VETERINARY COLLEGE, DURING THE SCHOLASTIC SESSION 1847-8.

*Certificates of Membership* of the VETERINARY MEDICAL ASSOCIATION have been granted to those before whose names a single asterisk appears. Those having two asterisks have received *Certificates of Fellowship* for Essays introduced and defended by them at the hebdomadal meetings of the Association.

### *April* 27, 1848.

*Mr. J. T. Cockrane, Clonmel
**Mr. B. Cartledge, Bawtrey
*Mr. J. Worthington, Manchester
**Mr. J. Weston, Smalley, Derby
*Mr. J. Swaine, Ashton-under-Line
*Mr. J. Lane, Hadnet
*Mr. R. Cook, Erith, Kent
*Mr. J. Dickson, London
Mr. J. Roberts, Chipping Sodbury.

### *May* 11, 1848.

**Mr. W. Clements, Liverpool
**Mr. W. B. Lord, Bristol
*Mr. Edwin Harrison, Garthorpe
**Mr. H. J. Fitter, Wolverhampton
*Mr. B. B. Aris, Northampton
*Mr. Page Wallis, Haslingfield
**Mr. C. N. Carter, East Dereham
*Mr. F. Ward, Great Haywood
*Mr. J. Cuthbert, Wakefield, Yorkshire.

### *May* 17, 1848.

*Mr. J. Meredith, Yockliton, Shropshire.

## TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION.

DECEMBER 8, 1846.

The TREASURER in the Chair.

ON the table were laid the two fore feet of a cart-horse, forwarded by Mr. H. Taylor, V.S., Sheffield, in which the pedal bones had become fractured. The animal was unnerved by him four years ago; since which he had worked sound, although for seven years previous he had been lame. He was 21 years old. The usual train of symptoms was evinced before the animal was destroyed, the hoofs having sloughed, &c.

A case of ruptured stomach in a horse was communicated by Mr. W. Allen, V.S., Cheshunt. It supervened on an attack of flatulent colic apparently, but the stomach presented traces of organic disease, and the quantity of ingesta that had escaped into the abdominal cavity was considerable.

The Meeting was further occupied by the consideration of an Essay on QUITTOR, introduced by Mr. C. Twist.

The discussion that took place was marked by no novelty, although it did not lack spirit.

*The Author of the Essay* stated that, in seven cases which had fallen under his notice, and in which caustic agents had been injudiciously employed, he had done little more than leave Nature to her own resources, by binding up the diseased parts with compresses of tow, and combatting any constitutional excitement that may have been set up by purgatives, and, also, by the abstraction of blood. Of course, from time to time, the dressings required to be renewed.

*Mr. Harman* preferred the use of emollients and relaxants as local remedies under such circumstances, conjoining blood-letting and purgatives when any irritation of the system was manifested.

In cases where the joint had become opened, he advocated the application of a paste made of the solution of the diacetate of lead, alum, and flour, so as to coagulate the synovia; from the use of which he had witnessed most beneficial results.

*Mr. Reeve* considered it extremely desirable, in all cases of open-

joint, to prevent if possible the entrance of air; and, if it can be effected, the coagulation of the albuminous discharge will prove most effectual for this purpose.

*Mr. Twist*, in reply to the question, said he highly approved of the introduction of a seton, so as to form a depending orifice for the escape of matter from the sinus, when this latter could not be laid open so as to constitute a common wound.

*Mr. Broad* thought the treatment called for in most cases of quittor was very simple, and especially so in the first stages. If only one sinus existed, the horn contiguous should be thinned, and sulphate of zinc, in coarse powder, passed down to the bottom of the sinus, applying over the whole a poultice. The introduction of the sulphate of zinc would call for repetition on the second or third day after, but the poultice should be frequently renewed. By this means the adhesive inflammation is set up in the sinus, causing its parietes to cohere, and a healthy state is soon induced in the wound. If two or more sinuses existed, he would endeavour to connect them by means of the bistoury, but, were this impracticable, he would pass a seton through them. By adopting this plan of treatment he had generally been successful, and he at all times preferred it to the use of caustic agents.

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DECEMBER 22, 1846.

The PRESIDENT in the Chair.

*Mr. South* laid on the table some morbid specimens, and gave the histories of the cases in which they had occurred.

### 1.—CASE OF DOUBLE STRANGULATION OF THE ILIUM BY MEANS OF A PEDUNCULATED FATTY TUMOUR.

*Mr. South.*—The history of this case is brief. Last evening the horse was left by the stableman with several others in apparent health. During the night the coachman thought he heard a noise in the stable, but, as it was not continued, he took no further notice of it. On entering the stable in the morning, however, he found the horse dead. During life the animal had not been known to be the subject of any abdominal disease, but he was a confirmed crib-biter.

The *post-mortem examination* at once disclosed the cause of death. A fatty tumour, the size of a closed fist, having a lengthened peduncle, and growing from the roots of the mesentery, had become twisted around the ilium in two places, causing strangulation of the gut, which was intensely inflamed, and sphacelated in several parts.

### 2.—Case of Fractured Ribs, and Anchylosis of the Spine of a Mare.

The animal had been used to light harness work, and was very fast in her paces. Frequently Mr. South had been consulted respecting her. The first time was on account of indigestion, arising principally from a diseased state of the teeth. By filing of them, and administering some tonic agents, with an occasional laxative, health was apparently restored. She soon after, while in harness, fell, and it was feared she had injured her spine. However, in about six months she went to work again, during which time the usual remedies were resorted to, with active counter-irritation. Two months after this she was attacked with inflammation of the lungs; from this, too, she recovered: but, about a month since, she fell in the stable, and was unable to rise. It was evident that some organic change was taking place in the lungs; and it was also feared that an anchylosed state of the spine had resulted from the first fall she experienced when in harness some months before. Although, when raised, she could stand, yet, when down again, she was altogether unable to get up; and as she now began to lose condition, and was quite unfit for work, she was destroyed.

Inspection of the body after death shewed no less than seven of the ribs to have been fractured, some of them recently, and others long since, as re-union had taken place in the divided ends of the bones. Several had been broken in two or three places, and the heads of the two first, on either side, were adherent to the spine by ossific matter. The spine itself, from the fourth dorsal, and including all the lumbar vertebræ, was extensively anchylosed, the spinous processes presenting a mass of ossification. There appeared to have been a marked disposition in the system to the throwing out of ossific matter, the limbs and several of the joints being thus affected. This was also strikingly shewn in the junction of the

last lumbar vertebra with the first bone of the sacrum. The cartilage had been removed, and deposits of osseous matter in the form of granules studded the surface, which, had time been allowed, would doubtless have resulted in a complete union of the bones.

The following Essay was then read :—

## ON CORNS IN THE HORSE.

*By Mr.* W. Geo. Reeve.

Mr. President and Gentlemen,

The subject of the following thesis embraces the disease of the foot of the horse ordinarily denominated Corn; its treatment in its varieties and stages, and the anatomy of parts more immediately connected therewith; also a glance at the physiology of the whole, with such remarks upon the animal and the organ, the foot, as may from time to time have suggested themselves.

In the prosecution of any subject, nothing is more essential than that principles should be our guide. Were we to proceed without these, our expectations would rest upon an uncertain basis, our treatment be obscured by the cloud of ignorance, quackery and empiricism assert their sway, and the result of our labour be a mere chaos.

This premised, it will be obvious that, before speaking of the *pathology*, we should be conversant with the *physiology* of an organ; and, to obtain the latter, anatomy alone holds out the means. To this, then, I am compelled (though but briefly) to advert. I will commence by placing before you (in imagination) the foot of a horse, and will suppose that you view it with the inexperienced eye of a tyro. And what does it present?—certainly nothing to strike you with admiration. It presents a heavy, unsightly, and disagreeable aspect. So far from affording pleasure, it is often kicked away in disgust.

Thus would it affect those, ignorant of its construction, who investigate no further. But

"Nature cries aloud through *all* her works:"

the humblest is not without its interest; and it shall be partly my task to raise the veil which covers that of our present subject. We will divest it of its rude exterior, and expose to view the

mechanism within—will inquire into its structure, and review each function; and shall then doubtlessly find sufficient even here displayed to prove the design of Infinite Wisdom in the arrangement of matter to the accomplishment of an end.

The hoof removed (and, viewing it anteriorly), now brought to our view is the sensitive foot.

We perceive a multitude of longitudinal plaits, whose high degree of vascularity is at once rendered obvious by their bright scarlet colour. These, between five and six hundred in number, cover the front and lateral surfaces of the foot, and are attached by a highly elastic intervening body to the bone and cartilages beneath them. These all receive between their sides plates of corresponding size, situate within the horny hoof, the connexion being effected by a delicate tissue, admitting of considerable motion in one direction. This attachment is further strengthened by the existence of fine denticulations upon the edges of the horny laminæ.

The design of all this is to increase the surface of attachment; for we shall presently find that, in consequence of certain deviations from nature, almost the whole of the animal's weight is thus supported.

Of what use would have been the small area of the hoof for such a purpose? It would have been far, very far, from adequate to the required support. Therefore has Nature, by this simple yet beautiful contrivance, multiplied the surface to the required and vast extent. These, termed the sensitive laminæ, are surmounted by the coronary substance, a convex circular band surrounding the upper part of the foot and part of the cartilages. Its vascularity is equal to or greater than that of any part of the frame. It may be said to consist of three layers,—an elastic bed, a network of bloodvessels, and an exterior villous or papillated surface. These villi, the secreting or appropriating terminations of the arteries, are received into corresponding holes within the concavity upon the upper part of the crust, and serve to strengthen the bond of connexion. From this, the coronary substance, the crust is formed.

The base of this part, the sensitive sole, is little less remarkable for its vascularity and organization. Appropriate papillæ stud its surface, the uniformity of which is broken by the sensitive frog.

This, a highly elastic body of triangular shape, the apex turned forwards and partly cloven at its base, is so constructed, that, upon receiving pressure, its sides diverge; a motion which is facilitated by a concavity on either side. Its surface, like that of the sole, is studded with minute villi. Supported upon its superior, and intimately blended therewith, we find an elastic substance inclosed by the integuments behind, the frog and sole below, the cartilages laterally, and flexor tendon above: it becomes an important cushion, upon which a great portion of the weight is received, and acts as a pillar of support to the tendon and the oblique bone above it. To these add the pedal bone, the posterior alæ of which are extending into the angles of the sole, necessarily formed by the triangular frog; the navicular bone, placed at its upper and back part, acting as a pulley, and increasing the mechanical power of the flexor tendon which plays over it; and we have, together with arteries, veins, nerves, ligaments, and absorbents, the contents of the horny hoof.

Of the veins I will say a few words more. Though the *arteries* are numerous, they for the most part run within the pedal bone, protected from injury; but the veins are more superficial, abounding on the surface, anastomosing in every direction, and forming large and important plexuses upon the lateral cartilages. These have *no* valves. The lining serous membrane of their canals is smooth and uninterrupted; an anatomical fact of great physiological importance.

The hoof, whose various parts, known under the technicalities of coronary band, crust, sole, frog, bars, commissures, angles, or heels, must be so familiar to those individuals whom I address, that, labouring under the inconvenience of brevity of time, I will not proceed to details; but merely further remark, that a perpendicular section of the crust, from the coronet to the toe, presents one uniform thickness of horn; whilst a horizontal cut through the whole hoof would demonstrate the inferiority of the quarters in this respect, the *inner* of which is weakest, most elastic, and incurvated. This is a point bearing upon our subject, and therefore worthy of remembrance.

We will now glance more generally at the physiology of those parts so briefly and therefore imperfectly described. To understand which we must not look at the foot of an animal in a state

of domestication, nor can we altogether judge from the foot of a colt; for, although labour has not yet deranged his frame, still hereditary evils often affect him. We must view it in a state of nature. The foot of the horse is no more the same as that which Nature formed, than is the animal to which the foot belongs. And if the horse be changed, how much more must that portion of his frame be to which the greater evils of domestication are directed? If we wish to become acquainted with the horse in a state of perfection, we must view him long ere domestication had entailed its thousand ills upon him. We must view him as far back as our records will permit. Let us retrospect.

I will introduce you to the oldest author extant (i.e. whose writings are extant). The city in which he dwelt had been lost to the world, until within a few years, for twenty centuries. An author whose position in society procured him such respect, that he was approached with awe. His locality was where the horse is found in perfection, and therefore he was a competent judge. Yet this author, amidst all his greatness, did not consider it beneath his dignity to convey to posterity the praises and quality of the horse. These are his words:—"Hast thou clothed his neck with thunder?—The glory of his nostrils is terrible. He paweth in the valley, and rejoiceth in his strength: he goeth on to meet the armed men. He mocketh at fear, and is not affrighted; neither turneth he back from the sword. The quiver rattleth against him, the glittering spear and the shield. He swalloweth the ground with fierceness and rage: neither believeth he that it is the sound of the trumpet. He saith amongst the trumpets, Ha, ha! and he smelleth the battle afar off, the thunder of the captains, and the shouting." Here is a description! Here is true sublimity! And such *was* the horse, even after having been used by man. What *is* he now? His docility is proverbial. The Arab stables him in his tent, loves him as his child, and is repaid in the affection of the brute. Look to the pitiful objects our own streets present, and view the contrast. Who, upon viewing the former picture, could have anticipated the change? Yet was it written, "Man shall have dominion;" and behold the fulfilment! It must be evident, then, that the foot of the horse was not constructed for our M'Adamized roads. In his native wilds he trod upon the soft soil, or softer herbage: its yielding surface received the im-

pression of his foot—not upon the *crust* alone, but the extent of sole and heels and frog; and, to comprehend the action of parts, we must bear this in mind. It has so happened, that writers upon this subject have confined themselves too closely to the motions of the hoof. To peruse their works, one would think nothing was worthy of notice beyond that. Its obliquity, its form, the simplest minutiæ, did not escape them; nay, the contest has been, a Cone *versus* a Cylinder, and Cylinder *versus* Cone. Shoes of all kinds, and even a nightcap for the frog, have been invented. There was the expanding shoe of Mr. This eclipsed by the expanding rod of Mr. That. Clips were attached for overlapping the bars in one case, whilst a screw was passed along the heels of another. There were——but it is useless to multiply; we need only ask, Where are they now?

The minds of these persons were too much occupied with the horny hoof, when they should have been contemplating the mechanism within. The hoof is intended as a defence against external injury—to sustain the necessary wear and tear in progression—to avoid concussion, to obviate which it was so connected with the interior, that the very shadow of such a thing was avoided. It was the horse's natural boot; its elasticity and expansibility were adapted to the motions of the parts within. If the sole descended and the cleft of the frog diverged, these motions were the consequents of action within, and were adaptations of the horn to internal motion.

To consider the alteration of the foot to depend upon the shape of the horn is assigning to *effect* the property of *cause:* therefore those were in error who sought to remedy diseases solely by mechanical appliances to the horn. The motion of the hoof is *secondary;* and thus are its movements produced:—No sooner does the toe reach the ground than the weight of the animal is extended to the heels; the elastic cushion receives its share, which, meeting with resistance by the counter-pressure from below, conveys, by its elasticity, a lateral pressure to the cartilages, and a downward one to the frog. The navicular, covered by the flexor tendon, presses upon the frog and sole; the pedal bone, by its laminal connexion, conveys an important share to the crust, to which, by that very skilful contrivance, we have seen it so extensively attached. Thus, whilst the connexion in front affords a yielding

resistance, it permits of sufficient descent to give the fore part of the sole a slight bearing. The posterior alæ, covered by the heels of the sole, descend, pressing with greater force upon the point included between the junction of bar and crust. The toe being fixed, it acts with the mechanical power of a lever. Did not then an expansion take place, serious effects would follow. But the horny sole is convex above. So are the commissures; and these, being implanted on the ground below, and receiving pressure, as described, from above, must, if they possess elasticity at all, expand that part of the crust *capable* of such motion; whilst the sensitive frog, receiving the superincumbent pressure imparted by the cushion, and upward force from the horny frog *below*, dilates the heels and supero-lateral parts of the foot.

I have remarked, that from the concavo-convex form of the sole and commissures, pressure from above and resistance from below at the same time would expand the walls. This, of course, would be in proportion to the resistance made by the crust (the natural antagonist); the resistance of the crust would depend upon its thickness and toughness; therefore, wherever the crust was thickest, opposite to that part would the sole descend the least. This admitted, the converse must follow; and, consequently, the inner quarter being the weaker, the descent of sole would be the greatest at that part.

It must further be remarked, that, from the conformation of the superior parts of the leg, the line of direction falls more immediately on the inside heel.

We shall, then, not lack causes for derangement here, should any thing happen to pervert the intention of Nature in this beautiful structure. It must be obvious that these various motions can only take place, and the parts perform their functions, whilst they receive due pressure from below; prevent which, and the whole machine is deranged: that which was intended for ease becomes an exertion; that which should give elasticity now loses its power. A construction altogether different is necessary; solidity and strength must *now* supply the place of ease and elasticity. All this is brought about by a very necessary evil. No sooner is the horse shod, than the bearing is taken from the under part of the foot; the ligaments and tendons have lost a great support; the weight which should have been sustained by the earth is thrown

upon them, and they instantly appeal to Nature. She, responsive to the call, readily lends her aid, destroys the motion between the metacarpal bones by means of splints, ossifies the previously elastic cartilages, and (that form being most adapted to sustain weight), by contracting the heels and thickening the sole, converts the under part of the hoof into an arch. Here we have the cause of contraction. Smiths may put on their hinges, their screws, their clips;—it is a match against Nature, and she seldom fails to drive her opponent off the field.

It has been shewn, 1st, that great weight is thrown upon the inside heel by its being in the line of direction; 2dly, that this is increased by a peculiar leverage; and, 3dly, that the *inside* heel descends most freely. Hence, whenever abnormal pressure is applied to the foot, we see that its effects are most likely to be manifest at the heels; and, further, from the combination of two causes, that the innermost heel is in the greatest danger. Now the *shoe* produces this pressure. In nine cases out of ten are corns produced by the shoes: shoes either misapplied, or by being allowed to remain too long without removal, and which press upon and are embedded in the seat of disease. It has happened that, from the abnormal thickening of the sole in a contracted foot, the sensitive sole receives an undue pressure; but this, I think, occurs very seldom. The foot most disposed to corn is the flat open foot; a foot whose sole is always weak, and the pedal bone of which assumes the same flat appearance. Here we at once perceive the reason why this kind of foot commonly suffers most. Were the surface oblique, the pressure would be less; were it entirely flat, it would be greatest of all. The various degrees of obliquity of the sole, from the very concave down to the flat and pumiced foot, will indicate the degree of liability there is to the disease of corn. Thus, we perceive the disposing cause to be a flatness, &c. of the foot, together with the other auxiliaries mentioned; whilst the exciting cause is the pressure of the shoe.

It will be evident, then, that I define corn to be a bruise of the heel of the internal and sensitive foot; an extravasation of blood from the vessels of this part into the horny structure beneath; manifesting itself, externally, by an ecchymosis or bruised appearance of the horn in the angle included between the junction of the crust and bar. I need not stay here to quarrel with the term "corn"

for such a disease; its absurdity must be manifest. It is upon a par with the sapience of farriers in general. They reason thus:—Cornu—Latin for horn—from which we derive the term corn, in the human subject, for a hard, horny appearance of the cuticle. The disease of the horse being extravasation of blood into subjacent textures, nothing is more fit, apposite, and suitable for the quadruped; therefore they term the equine *pinch* a "corn."

*Symptoms.*—The symptoms of corn are rather marked. A decided lameness is the consequence when the corn is severe. In some cases the lameness may be slight, but generally acute pain is present. And this, I may observe, is always a concomitant of inflammation attacking the sensitive foot, caused by the confinement to which it is necessarily subjected; other parts of the body relieving themselves by serous effusion and by swelling. The animal's gait is particular, throwing the weight upon the outside of the foot. If the disease be far advanced, heat may be detected over the superior parts; these, together with pressure and rapping of the foot, which occasion flinching, will be sufficient indications for instituting a search at the angle of the sole. As corn has been shewn to be the consequence of pressure followed by extravasation, both which may be the work of an instant, so may the production of a corn be sudden and unexpected. A horse may leave his stable sound, and return an hour afterwards affected with incipient corn. This leads me to the

*Varieties of Corn.*—It must be borne in mind, 1st, that extravasation takes place at the superior part of the sole into interstices of the horny fibre; 2dly, if the cause be removed, extravasation ceases; the newly-formed horn propels the ecchymose spot downwards, and isolates it between the superior and inferior horn; 3dly, as the horn descends, so is the spot brought lower, until it becomes visible at the surface of the foot. Therefore, if the corn be superficial and easily pared away, it is not of recent origin. If the horn must be removed to bring it into view, the injury has been yet more recently received. But should the ecchymose spot only be discoverable by removing the horn down to the sensitive sole, we have proof demonstrative that the corn has existed but a very short time indeed. It not unfrequently happens that the horse is continued at work without remedial means being applied, until, from the intensity of inflammation, suppuration has taken place,

matter has been formed between the sensitive and horny sole, which constitutes another variety; viz. Suppurative Corn. We have, 1st, simple bruise, extravasation or ecchymosis; and, lastly, the formation of pus, and, as a thing of course, all the varieties between these two stages.

*Treatment.*—Should it be of the variety first named, the removal of the cause will be generally sufficient. Let the shoe be taken off, the horn pared out of the heel, and, if the ecchymosed spot be thereby removed, little more will be required than replacing the shoe with care, so that all bearing be removed from the part, and stopping the foot at night. Should it be of more recent production, and the bruise be in conjunction with the sensitive sole, pare out well the foot as before; give a little extra relief by rasping the inner quarter and heel; let the shoe remain off for a time: use warm fomentations and poultices. Should much heat be present, give an aperient. The cause removed, and your antiphlogistics followed up, the inflammation will subside, and healthy horn begin to grow. Avoid pressure as before, or put on a bar shoe; stop the foot with tar ointment, and but little more will be necessary.

In the suppurative corn give vent to the confined pus; assist Nature in the evacuation of that which is formed; freely pare away the surface. In some cases it will be necessary to remove part of the crust: if so, take it away at once; but, in so doing, exercise great caution with regard to the coronary substance above. *That* must never be injured. Next apply the warm poultice and fomentations, the emollient effects of which will be highly beneficial. This treatment should be continued until inflammation is removed, and the parts assume a healthy appearance; beyond which they must not be continued, for too much moisture would prove injurious. In this stage we may have recourse to such applications as the solution of the sulphate of zinc, whose detergent and tonic influence may be applied conjointly with, and after, the discontinuance of the poultices. This mode of treatment, with slight variation, will leave the internal parts convalescent.

The secretion of horn may, for a time, be weak. The stimulating and tonic effects of the compound tar ointment will now prove beneficial. These therapeutics must be supported by proper shoeing, in which all bearing must be taken from the parts; for which purpose we employ the three-quarter shoe, the tip, Mr. Turner's,

and the bar shoe, avoiding too much pressure upon the frog with the latter; for it must be remembered, there is a sensitive *frog* as well as a sensitive *sole*. By attention to these principles, and care in subsequent shoeing, occasionally stopping and keeping the feet cool, the sole and crust acquire their former strength; and, if the original cause be avoided, the foot will be restored to health.

There are other terminations: the disease may so have affected the secreting parts, that, instead of true horn, an unhealthy secretion is produced, which, in many cases, never assumes a natural appearance. To this we can apply mitigating remedies in some of the beforementioned forms, but a permanent cure is not effected. In other cases the confined matter finds egress from the coronet, after having produced sinuses in the softer textures, and then we have to deal with a disease denominated quittor; one which has been already commented on by the members of the Association.

The *Author of the Essay*, in reply to the inquiry put by Mr. Herand said, it did not necessarily follow that, if shoeing were altogether done away with, that which is designated a corn would not exist, since a thickened and unnatural state of the horny sole itself will sometimes give rise to it on hard roads, as well as bruises produced by other means; yet, doubtlessly, shoeing is the general cause of this disease. The mechanism and beautiful contrivances met with in the foot of the horse are far more delicate and complicated than have been thought by the many. Whilst the organ is admirably calculated to ward off concussion, and to give the wonted elasticity to the movements of the animal, it may also be compared to an hydraulic machine, since, by the motion imparted, the blood is pumped onwards and upwards. What wonder, then, that so complex a structure should be often injured by the expedient had recourse to of nailing to it an unyielding rim of iron, and that frequently by persons altogether unacquainted with its anatomy and function?

*Mr. Gowing* asked if the toe of the foot would become more elongated by the shoe being firmly nailed to the quarters, as is the common practice, than if the inner quarter were left free, according to the plan of shoeing advocated by Mr. J. Turner? He inclined to the opinion that by this latter mode the *lateral* growth of the foot was promoted.

*Mr. Reeve* said, that the usual time a shoe was on the foot—provided it was properly attended to—would make but little difference in this respect, the natural growth of the foot being always allowed for by a good workman when he put on the shoe: nevertheless, he advocated keeping the nails from the heels as much as possible, as this rendered the fetter less injurious.

The hind feet are never so often the subject of corns as the fore: the difference in the shape or conformation of the feet is one reason, and, in addition, the functions the hind and fore legs have to perform; the latter being the props or means of support to the body, while the former are used as propelling agents: thus in progression it is the *toe* of the hind foot which sustains the force, and not the *heels* as in the fore feet.

*Mr. Wilkinson* observed, in proof of this last position, that the hind shoe would be frequently found embedded in the foot, and yet no corn result. In reference to the foot extending by its growth over the shoe, this would occur with shoes of all kinds, despite the efforts made to prevent it: it is a natural process. It is not, therefore, good practice to allow the shoe to be put on too short, since the shoe, by getting forward, would cause the heels to be pressed upon at the seat of corn.

*Mr. Gowing.*—Then it matters not in what way or what kind of shoe is affixed to the foot.

*Mr. Wilkinson* dissented. Nevertheless, the growth of the foot would take place. As to what is called the expansion of the foot—for he had yet to learn if this was any thing more than the downward growth of the horn—he considered it very desirable, for the true performance of the functions of the foot, that this should be allowed to take place; yet, even in weak-quartered feet, he should not much object to fixing on the shoe with nails, and also clips, both inside and outside, were it necessary, not fearing that it would interfere with the growth of the horn. In what kind of foot would Mr. Reeve have recourse to the tip?

*Mr. Reeve* replied, in that kind of foot which, from the condition of the horny sole, exposure might be allowed without pressure being imparted to it on the foot coming to the ground. This should be carefully guarded against. When a protective covering is called for, the leather sole forms an admirable one, and then the three-quarter shoe may be employed. As a general shoe he pre-

ferred the bar-shoe during the existence of a corn. He believed that corns are not now so frequently met with as they used to be, and, were the principles of shoeing more inculcated and better practised, they might altogether cease to be.

*The President* gave it as his opinion that shoeing was the only true cause of corns. He concurred with the observations made by Mr. Wilkinson in reference to the hind feet of horses, for often he had seen the shoe imbedded in the foot to a considerable extent, and yet no corn result from it. Besides, the horny matter is more elastic or yielding in the hind feet than the fore, and hence the less liability to the production of corns. He also agreed with him as to what is designated the expansion of the foot. He did not believe that this took place to the extent generally taught. Of all shoes for corns, the bar-shoe, well laid off at the heels, is to be preferred. The evil that sometimes results from its use arises from the continued pressure given by it to the frog, from the lowness of the heels, by which an absorption of it—the frog—is produced; and a degree of pressure necessarily communicated to the heels; this should always be guarded against by bevelling the under surface of the shoe, it being of paramount importance that no weight should rest on the heels, or the cure of corn cannot be effected. Many horses, however, are particularly disposed to corns, let the plan of shoeing adopted be what it may; and he illustrated this, by reference to a horse of his own, that was only prevented having them by the wearing of tips.

The time for adjournment having arrived, the meetings were discontinued till after the Christmas holidays.

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JANUARY 5th, 1847.

The Association met this evening, pursuant to adjournment over the Christmas holidays, the PRESIDENT in the Chair.

## A CASE OF CONCUSSION OF THE BRAIN OF A HORSE.

*Communicated by Mr.* T. SOUTH.

*Mr. South* stated that, when called in to see the horse, he was reported as having been ill for about a week, although he could gain but very little information from the attendants beyond this except that he had fallen in a fit. The symptoms then present

were not urgent, but peculiar, especially the pulse, which numbered 80 beats in the minute, its character vibratory, its tone feeble and indistinct; in fact, altogether indescribable. The visible mucous membranes were somewhat injected; a degree of prostration of the vital powers was evidenced; the bowels were torpid; but the appetite was unimpaired. He had little doubt of the brain being implicated, but he was not prepared to state the nature of the affection: this, in a great degree, arose from the very imperfect history he obtained of the case. Had he then known what he was subsequently informed of, he should not have hesitated a moment in forming his diagnosis. Fearing a recurrence of the fit, he abstracted blood and gave a laxative ball.

On the following day the medicine began to operate, and with it the symptoms apparently underwent a favourable change.

On the third day, however, they returned as before. On instituting a closer examination, he perceived that, when walked out, the animal held his head to the off side, and the eyes were amaurotic; also that, when not roused, he appeared in a comatose state. Mr. South was now confirmed in his suspicions that the brain was the seat of the disease; still it was not possible for him to state the particular disease existing in that organ. He administered a sedative, and threw up enemata of warm water. On visiting the patient the next day he found him down, and in a state of extreme exhaustion. The appearances then presented, he said, resembled a horse in the last stage of tetanus. The breathing was stertorous; the frame shook with convulsive twitches; the pulse had become imperceptible: and although he was convinced all means would prove futile, yet he ventured to give a diffusible stimulant. The animal, however, died before night.

On instituting a post-mortem examination within the abdominal cavity, nothing abnormal was met with. On laying open the chest the lungs were found much condensed in parts, and spots of ecchymosis existed on the heart. The head was sent to his own house, for the sake of making a more careful dissection of it. On removing the bones of the skull, a large quantity of blood was perceived to be extravasated between them and the membranes covering the brain, which were highly inflamed. The bony parietes of the brain were minutely examined, but no fracture could be detected; yet he felt assured a blow must have been inflicted.

Stating his convictions, he was now for the first time informed that about ten days since the horse, being a high-couraged and fast-paced animal, on being ridden out suddenly reared up and fell backwards, striking his head on the ground. He was returned to the stable in a dull and depressed state, and soon afterwards experienced a fit, as they designated it, which was followed by another. A practitioner was at once sent for, who attended for some days; but no relief being obtained, he (Mr. South) was requested to attend the animal, which he did, and with what results he had made known to the members. The brain itself had been kindly examined by Mr. Varnell.

*Mr. Varnell* said, the horse's head sent by Mr. South to the College for examination had the bones covering the superior part of the cerebrum and cerebellum, with the dura mater, removed before it arrived. The posterior lobe of each hemisphere of the cerebrum presented a diseased appearance. On the right lobe was a black spot the size of a half-crown piece, and for some distance around this spot the brain was of a yellow colour. On the left lobe was a similar black spot, about the size of a shilling, with the same yellow tinge surrounding it. The arachnoid membrane and pia mater covering the diseased spot on the right side was ruptured, and a small portion of the broken-down black substance of the brain exuded from the opening thus made. This, I imagine, took place at the time Mr. South removed the bones covering the superior portion of the brain. On making a section through the diseased parts, taking the right lobe first, to the extent of about an inch and a half into the lobe, the brain presented a soft broken-down black mass, having a small quantity of dark-coloured pus in the centre; the yellow tinge extended for some distance into the substance of the organ, and a yellow serous fluid exuded from it. The left lobe was not so much disorganized; the black spot extended only about half an inch into the substance of the brain, having the same yellow tinge around it. On laying open the lateral ventricles, the abnormal appearances there presented were, an absence of that small quantity of fluid we find in a healthy brain, and adhesion of the membrane reflected over the roof of the ventricle to that of the hippocampi. The whole surface of the brain, particularly the cerebellum and medulla oblongata, shewed a degree of vascularity greater than natural.

An elaborate Essay On the Physiology of Vision, by Mr. T. J. Merrick, was read, and its consideration occupied the remainder of this and the following evening. We regret that want of room precludes the introduction of the Thesis entire, it being lucidly drawn up, and illustrated by several neatly executed diagrams. We select that portion on which the discussion principally turned, namely, "Shying."

"I will now venture to offer a few remarks on the probable causes of that common, and in many instances dangerous, habit known by the term 'shying.'

> "And now remains
> That we find out the cause of this effect;
> Or, rather say, the cause of this defect;
> For this effect, defective, comes by cause."

"That this habit frequently arises from fear, playfulness, or newness of objects, I freely admit; but when it is considered that the organic arrangement of the eye of the horse is in most respects so similar to that of the human being, it will, I think, be readily conceded that the former may be liable to many of the defects which are known to exist in the latter, and would be likely to produce the effect I am now speaking of. In the human subject, the most common causes of imperfect vision are myopia and presbyopia, and to these imperfections I have previously alluded.

"The same effect may be produced when the eyes of the subject differ in their refractive power; many instances of which daily present themselves to opticians, and are by them known as *peculiar* sights: it has also occurred to me, that the horizontally oblong pupil of the eye of the horse may be unfavourable to distinct and perfect vision; but these I will separately consider.

"The forms of defective vision known as myopia and presbyopia have been stated to be entirely attributable to defects in the optical adjustment of the eye. In the former, its refractive power is too great, generally arising from the cornea and crystalline lens being preternaturally convex, but it may also be produced by an increased density of the humours; and if we admit the adjusting power to be seated in the muscles of the eye, any imperfection which would weaken their power would be likely to produce the same effect; under these circumstances, the rays emitted by objects at an ordi-

nary distance would be brought to focal points before they reached the retina, thus rendering the impression confused and indistinct. On the contrary, in presbyopia the refractive power is too weak: this commonly arises from the cornea and crystalline lens being of an insufficient curvature; but decrease of density in the humours, and also imperfect muscular power, may produce a similar effect: in such a case moderately divergent rays will require a greater distance for their convergence than the eye will admit of. Of these two forms of imperfect vision I am induced to think that instances of myopia are of far more frequent occurrence in the horse than those of presbyopia, and more likely to be productive of unpleasant results. I come to this conclusion from the fact, that the indistinctness of perception in myopia embraces all moderately remote objects; whereas in presbyopia the contrary is the case, such objects only being indistinct as are within the range of two or three feet.

"The unusual fulness or convexity of the cornea is in general sufficient to enable us to distinguish myopia.

"Reasoning from the experience obtained in human practice, I should expect to find presbyopia more common in horses of advanced age; it may then be attributed to the diminished convexity of the cornea and lens, in consequence of the gradual wasting of the tissues generally: this will in some measure account for the fact so often observed, that shyness in the horse increases with his age.

"The *peculiar* sight above alluded to is produced by the eyes varying in their refractive power; hence, the focal points not corresponding, imperfect vision must be the result: and is it unreasonable to suppose, so frequently as this occurs in human beings, that the horse may not sometimes be the subject of a similar defect?

"The horizontal shape of the pupil in this animal I have frequently thought likely to give rise to a *certain* amount of obscure vision, because no spherical surface, such as that possessed by the lens, can accurately refract all rays emitted by objects to a common focus: and an important use of the circular pupil is to exclude all but those rays that impinge it near its axis, which could not be effected by a pupil of another shape; and therefore, unless there is

some other provision in this animal in addition to those to which allusion has previously been made, partially obscure vision must be the consequence.

"That every living animal is formed by infinite wisdom, and endowed with those faculties best calculated for the position it was originally intended to fill, I do not for an instant presume to question; for the horse, by being furnished with a transverse pupil, is not only enabled to see objects directly before him, but is also given a more extended lateral field of vision, which may perhaps be of greater importance to him, in a state of nature, than a more generally perfect sight would have been.

> "Nature is made better by no mean,
> But Nature makes that mean; so, o'er that art,
> Which, you say, adds to Nature, is an art
> That Nature makes."

"The human subject, when labouring under defective vision arising from any of the above causes, can immediately obtain relief by having recourse to glasses; and though we may lament our inability to relieve our patients in a similar way, it must be as satisfactory to ourselves as to our employers to be in possession of the scientific and probable reason of this unpleasant habit."

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*Mr. Merrick* stated his conviction that horses could see in light that was comparative darkness to man, but yet not so well as animals of the feline tribe, in which the tapetum lucidem is more developed, its reflecting surface throwing the light on the retinal expansion for this purpose. It is on this account that shying horses most frequently manifest this disposition at night. He was also of opinion that the habit increased with diminution of the vital energies, whether this were the result of disease or loss of condition.

*Mr. Wilkinson* considered it extremely desirable that a true definition of what shyness is should be laid down. He felt convinced that all the indications of this habit had been shewn by horses when in the neighbourhood of decomposing animal bodies, the gaseous matters eliminated proving extremely offensive to them, so that they would start and plunge, and be with difficulty caused to pass the place. Thus other senses besides the sense

of seeing is at times a cause of shying. The condition of the animal was also a modifying circumstance. Thus, high condition favours shying; while lowness of condition, from depressing the powers of life generally, or lessening the nervous energy, renders a horse less likely to "shy." Again, there is much in association. Troop horses rarely go alone without manifesting much fear and starting at surrounding objects, yet in the ranks they go steadily and with courage. Fear, therefore, is very likely to become a cause of shying. It is likewise well known that horses will not readily pass a place where an injury has been inflicted on them, and some express a dread of certain objects; there are, consequently, many causes for this vice or habit, rather than its being dependent on merely defective vision.

*Mr. Lord* related several instances of offensive smells proving productive of all that had been stated by Mr. Wilkinson; the decomposing carcass being on the opposite side of the hedge, so that the horse certainly could not see it.

*Mr. Varnell* remarked that white-coloured objects often prove a cause of shying, and this more especially in the night time, when surrounding objects, being indistinctly seen, do not contribute to give confidence to the animal.

*Mr. Bass* could not concur in the view taken that any peculiar form of the eye, either as it respects the cornea or the lens, has any thing whatever to do with the production of myopia or presbyopia in the horse. What proof was there of such effects following these alterations of structure in the lower animals, he would ask? He rather thought that, as Nature is ever perfect in her works, if to the cornea she gave a more than usual convexity, she compensated for it by giving to the aqueous and vitreous humours less density, and *vice versâ;* so that defective sight does not take place. Parity of reasoning might certainly be allowed to some extent, but it was no proof. He would, in preference, refer shying to fear, or the association of ideas arising from past occurrences, as the remembrance of injuries, &c.; yet he was not prepared positively to assert that the change of structure stated, and indeed known, to be occasionally present, did not, in some degree, render vision less perfect. He, however, was inclined to consider the eye as an educated organ, and that by long-continued use

functional derangement led to organic changes, a diseased form not being naturally existent in it.

*Mr. Merrick* thought that what are called "wall-eyed-horses," this originating in the iris being void of colouring matter, were very likely to become affected with some impairment of vision from the rays of light not becoming absorbed, which interfered with their direct passage into the posterior and dark chamber of the eye. Such horses are usually said by dealers never to go blind, but for what reason he knew not.

*Mr. Weston* related a case of cataract existing in the eye of a horse of his own which was what is called "wall-eyed."

*Mr. Brown* remarked that he had had to do with several, and although he had not observed that any disease of the eye existed, yet they were very self-willed or stubborn. He could in some degree substantiate the views Mr. Merrick had advanced, since several instances of horses having an increased convexity of the cornea had come under his notice, and they were very much given to shying, the result, as he believed, of myopia.

*Mr. Merrick*, in answer to the question, said he should certainly feel it to be his duty, as a professional man, when consulted respecting the purchase of a horse in which this peculiarity of conformation of the eyes existed, to state to the buyer the probable consequences of it, or what he should apprehend from it. And if this is to be viewed as an organic defect, it certainly would come under the head of unsoundness.

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JANUARY 12th, 1847.

The TREASURER in the Chair.

ON the table were laid several morbid specimens. They consisted of,

1. An accumulation of a large quantity of adipose matter between the muscular and peritoneal coats of the intestines, especially the rectum: forwarded by Mr. T. W. Gowing.

2. An œsophagus of a heifer, in which a stricture existed about the middle of the cervical portion of that tube: presented by Mr. Varnell, of which he gave the following description:—

CASE OF STRICTURE OF THE ŒSOPHAGUS.

A HEIFER, two years old, was bought by the College for dissection. She was much emaciated, and a large swelling existed about midway between the sternum and jaw at the inferior part of the neck, inclining to the left side. On examining the parts it was evident that this enlargement arose from some substance being impacted in the œsophagus. It was on this account deemed advisable to return her, it being the middle of the Christmas holidays; but she died the next day, and the parts were sent to the College.

*Inspectio cadaveris.*—About two-thirds of the way down the cervical portion of the œsophagus a stricture existed, and the tube was so much diminished in size as scarcely to admit the finger. Above this stricture the œsophagus was very much enlarged for the space of about six or seven inches, forming a sort of pouch, which was filled with coarsely masticated hay. On making a longitudinal section through it, and removing the contents, the lining membrane was found to be lacerated in two places for the space of about three inches. The muscular coats of the œsophagus, forming the upper part of the pouch, were much thickened. At the inferior part of the pouch the muscular coats were thin, and in some places much inflamed.

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3. Ruptured uterus of a cow: sent by Mr. B. Garner, with the following history of the case in which it occurred :—

*To the Veterinary Medical Association.*

Gentlemen, *St. Ives, Jan. 9th,* 1847.

I HAVE forwarded for your inspection a somewhat rare morbid specimen—I believe, the ruptured uterus of a cow. I have sent it just as it was removed from the animal. She was two years old, and in good condition. The owner informed me that about a fortnight since she was attacked with the aphthous disease, affecting both the mouth and the feet, had received no injury that he was aware of, and was expected to calve in seven or eight days. It was her first calf. When I saw her the symptoms present were,

kicking at the abdomen—stamping with her feet—anxiously looking towards the flanks—grinding of the teeth—moaning frequently: she would lie down for hours together, the head being elevated, the eye glassy and protruded, the pulse bounding, the breathing laboured, and now and then parturient pains came on, but they were very slight. Apprehending that some affection of the womb existed, and that probably of an inflammatory character, I abstracted blood, and gave an aperient combined with opium; ordered her to be kept very quiet, and restricted the diet to gruel.

She lived for three days, during which time the general comforts of the animal were attended to, and, to mitigate the pain she endured, sedative agents were from time to time exhibited. Parturition seemed, on the third day after my visit, to be about to take place, from the throes becoming more violent; but the general unfavourable symptoms were on this day also more acute. There was no discharge of any kind from the vulva; but I could feel the head and fore feet of the fœtus as if naturally presented, and there appeared to be no malformed state of the pelvis. Despite all our care and attention, she died on the evening of this day.

On opening the abdomen after death, the uterus was found to be extensively ruptured, and the greater portion of the fœtus protruding into the abdominal cavity, which contained a large quantity of fluid, with the membranes. All the other viscera, both of the chest and abdomen, were healthy, with the exception of the lungs, which were slightly inflamed. The fœtus was very large, weighing eleven stones four pounds, eight pounds to the stone.

I am,

Respectfully your's.

*Mr. Varnell* had removed fœtuses half as large again as that described by Mr. Garner, and therefore he could not think that the *size* alone was the cause of the rupture of the uterus. Besides which, there were no indications of a preternatural distention of the womb. The lesion he viewed as the result of some unascertained mechanical injury.

*Mr. Skelton* said, it was very common, during a breech presentation, by the contractions of the womb or its contents, that the parietes gave way. Under such circumstances he had occasionally met with this result.

*Mr. Bass* believed a very common cause of these formidable lesions to be unnecessary meddling with the parts during the time of parturition whenever the slightest obstruction appeared to exist. It is true, that the aid of the veterinary surgeon is called for during false presentations and the existence of lusus naturæ; but the greatest care in manipulation is always necessary, although at times the degree of force to contend with is great, and the difficulties to be overcome are considerable.

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## Case of Tumour causing Strangulation of the Ilium of a Horse.

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

My dear Sirs, *Stratford-on-Avon, Jan.* 7, 1847.

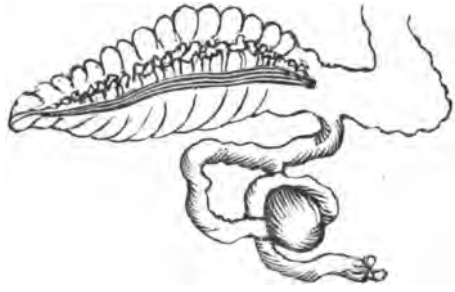
I have sent per rail a scirrhous tumour, taken from the abdomen of an old dun-coloured horse, and it being altogether a singular production, I have thought it not unworthy of the consideration of the members of the Veterinary Medical Association.

The history of the case is briefly as follows:—

*Jan. 5th,* 1847.—I was requested by a gentleman in this neighbourhood to give my opinion respecting a remarkably fine dun horse which had nearly arrived at the extraordinary age of thirty years, and had never been "sick or sorry" before, nor ever "balled, bled, or blistered." On inquiry, I was informed that the horse had not been out of the stable, only to his water, for a month, except that yesterday he was put into a team, and went a short journey merely for exercise. He came back, ate his supper, and appeared quite well. In the morning the wagoner found him in great pain. On my visiting the animal, the most excruciating agony was manifested, evidently from an acute attack of the bowels. He lay his whole length, would then rise, crouch, press his nose against his flanks, unsheath the penis, but did not roll or paw the ground. The pulse was 60, and feeble—the tongue furred—extremities cold—the breathing laborious; but the countenance was not particularly dejected, as is generally the case in bowel complaints.

On account of the symptoms being so exceedingly unfavourable, and the horse a very great favourite, the proprietor made up his mind to have him dispatched at once, which was done. On laying

open the cavity of the abdomen, near the centre, the intestines presented a most strange appearance. I thought, at first sight, they were tied in a knot, thus causing an obstruction, by perceiving what I considered to be an accumulation of hardened fæces; but by handling the mass, I discovered that it was a hard tumour, attached firmly to the ilium, about fifteen inches from its ending in the cœcum. The intestine was entangled round this tumour, and by dissection it proved to be a portion of the ilium, which, being twisted round the tumour, not only compressed that part of the bowel to which the tumour was attached, but caused strangulation of a portion of the same. When the tumour was removed and the bowel straightened, the portion of the gut which was twisted round the tumour was black, congested, and almost gangrenous. The inflammation had extended anteriorly up the bowels, to the distance of about five feet; but that part to which the tumour was attached was healthy, and likewise the part below, to the termination of the ilium with the cœcum. The subjoined rough sketch, which I have sent may give you some idea of the relative positions of the parts.



I retain in my possession another similar tumour, of less magnitude. This was attached to the posterior portion of the stomach, and partially embedded in the omentum, which was slightly diseased near the tumour.

*Observations.*

The tumour approaches the character of melanosis, barring the layer of dense matter near the surface. It certainly resembles that disease more than cancer, as it did not have direct communication with the healthy parts whence it derived its nourishment.

Moreover, in cancer we find the base extends over a large space adjacent to the sound parts. Another thing, the subject was a light dun-coloured horse; and I believe it is a generally admitted fact, that light-coloured horses are more susceptible of melanosis than others; at least as far as my experience goes it is so. I know three grey mares at the present time; one has hard melanotic tumours attached to the base of the ear, extending down the parotid gland; another, a large tumour of the same kind attached to the lower jaw, which I think would weigh fifteen pounds: it actually rubs against the ground when she is grazing, friction thereby preventing its growing larger. The third has curable and true ones on the spine of the scapula, containing a black fluid, which, no doubt, is strongly characteristic of melanosis.

It is fair to conclude that the gut got turned round the tumour during the journey the previous day, by an increase of the peristaltic motion, caused by exercise.

I had nearly forgotten to state, that the rest of the abdominal viscera, and also the pelvic and thoracic, were perfectly healthy, which is surprising, particularly as the animal had arrived at a great age. He was a fine stamp for a roadster, having beautiful symmetry, and without spot or blemish.

I am, dear Sirs,

Very truly your's.

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Tuesday, JANUARY 19th, 1847.

Mr. J. WILKINSON, V.P., in the Chair.

On the table were laid the respiratory organs of a pony that died from hæmoptosis. They were forwarded by Mr. Wilson, of Brentwood.

The evening was occupied by the consideration of the following paper:—

## ON PARTURITION.

*By Mr.* E. CRUNDALL.

IN the present thesis it is not my intention to enter into the minute anatomy of the organs concerned in parturition; nevertheless, a knowledge of the structure of these parts is indispensable to the veterinary surgeon, called upon, as he frequently is, in dif-

ficult and protracted cases, and also in unnatural presentations. A brief review of the parts must suffice.

The uterus is a hollow musculo-membranous organ, situated between the bladder and the rectum, in which is received and developed the embryo. It is divisible into a body, two cornua or horns, cervix or neck, and mouth; from which is continued posteriorly the vagina, a canal of large dimensions, extending from the os uteri to the vulva. The whole, in its virgin state, has been compared by Mr. Percivall to an insect of the beetle tribe (and it is no inapt simile); the vagina representing the body, the uterus the head and neck, and the cornua the horns: but after impregnation its size is considerably augmented, and it never afterwards acquires its natural form.

Entering into the structure of these parts is a mucous lining membrane continued from the vulva to the Fallopian tubes, which is thrown into numerous rugæ or folds when the organs are in a collapsed state, it being thickly studded with mucous follicles which pour out their secretion on its surface. A muscular coat envelopes the mucous, and is composed of dense fibrous matter possessing a considerable degree of strength and extensibility: the fibres are arranged in various directions, longitudinal, circular, and decussating each other, and also varying in colour and development in different parts of the organ; over which is partly reflected a peritoneal tunic, which is acquired from the viscera and abdominal parietes retaining those organs in their relative positions.

The Body of the Uterus is that portion extending from the anterior portion of the vagina to the commencement of the cornua; and these bodies sweep backwards and outwards to the loins, where they terminate in the Fallopian Tubes, attaching them to the Ovaries.

The Cervix is that portion projecting from the body into the vagina, ending by an aperture called the Os Uteri.

The Vagina is most capacious posteriorly, somewhat constricted at the point where it joins the Meatus Urinarius, and again enlarges in size to the external orifice: its internal structure is soft, and thrown into numerous folds, and its parietes are easily dilated.

All physiologists agree that the power of producing a substance necessary for the development of the fœtus resides in the ovaries, since animals in which these parts have been extracted lose the

power of fecundation. Many theories have been advanced as to the exact point at which the fertilization of the ovum takes place. It appears to arise from the contact of the vital principle of the semen of the male with the ovum prepared by the ovaria of the female; and whether this takes place in the ovaria or in the Fallopian tube is a matter of no moment: but that the embryo is enclosed in a sac containing a store of nutriment for its growth and development is beyond a doubt; and during the period of its passage through the Fallopian tube it receives an additional layer of albuminous matter, secreted from the walls of the tube, and becomes surrounded by a fibrous membrane, forming the chorion, a membrane of great importance, it being the medium through which the subsequent nutrition of the embryo is derived. This is, at first, taken in by numerous villous processes from the surface of the chorion, giving it a spongy or shaggy appearance, and absorbing the fluids afforded by the parent. In this state the ovum arrives in the uterus. But it is necessary I should now describe the change that has previously taken place in the lining membrane of that organ, from the surface of which the further development of the fœtus is derived.

The internal lining membrane of the uterus, when impregnation has taken place, becomes more highly vascular; its capillaries increase in size, and form a dense capilliary net-work of bloodvessels between the follicles developed on its surface; and into these spaces are fitted the fœtal tufts or villi (projections of the chorion) through the medium of the placenta, which is nothing more than a development of cells from both the infantine and the uterine membranes. In the mare this connexion extends closely over the whole inner surface of the uterine cavity; but in the ruminant, although the connexion is similar, it is formed by specially prolonged portions scattered at intervals over the whole surface of the chorion, and these attachments are called the COTYLEDONS; the fœtal parts of which consist of the branches of the umbilical vessels, forming by their ramifications the principal portion of its substance. Each villus contains a capillary vessel, which forms a series of loops communicating with an artery on one side and a vein on the other, and is enveloped by a similar arrangement from the maternal portion. From the delicacy of the coats of the uterine vessels, the fœtal blood is exposed to the action of the blood of the mother, and

becomes oxygenated by the same process of endosmose and exosmose, which we know to be going on in the respiratory organs of the higher animals and man. It also derives from the maternal blood the materials employed for the nutrition of the fœtus, these materials having been selected and partly elaborated by the two sets of intervening cells forming the placenta.

There is no more direct communication existing between the mother and the fœtus than this; and these nutritive functions are carried on by means of the umbilical cord, containing the umbilical veins, arteries, and urachus, united together by cellular tissue; assisted by the membranes, the amnion, the allantoid, and the chorion. The AMNION is the membrane placed next the fœtus, secreting a fluid in its cavity in which it floats, called the liquor amnii, and for which purpose vessels ramify extensively over its surface: its interior is smooth, its exterior rough and shaggy, and is in connexion with the ALLANTOID MEMBRANE, which is also reflected over the inner surface of the chorion, continued from the urachus, and which conveys the fœtal urine from the fundus of the bladder into this the allantoid sac. The CHORION is the outer membrance of the fœtus, and the umbilical vessels ramify over its surface, and terminate by numerous papillæ in the mare, and cotyledons in the ruminant.

I have thus endeavoured to explain the development of the fœtus from the period of impregnation, until we find it in the uterus deriving support from its parent by means of vessels ramifying over its membranes; and when it has acquired a sufficient degree of strength to enable it to carry on a separate existence, then it is disconnected from its attachments, and, carrying with it the membranes with which it was enveloped, is expelled from the womb, and this is called DELIVERY.

The average period of gestation differs in various animals; but I intend to confine my remarks more particularly to the cow, as it is to this animal the veterinary surgeon is most frequently called. In mares delivery is speedily effected, and I believe it is of rare occurrence that they require any assistance. The same principles, however, would guide us in all our domesticated animals, the mare requiring more prompt and decisive treatment.

*The symptoms of pregnancy* are not very well marked in the first stages of utero-gestation; but as we may be called upon to decide

this matter (more frequently in the mare), it is necessary to be acquainted with the best methods of ascertaining its existence or otherwise. The primary symptoms would be cessation of the œstrum, a tendency to plethora, and consequent dulness; also thriving, followed by falling in of the abdomen at the loins, and a rotundity of the inferior parts: but these are appearances from which we cannot speak positively. By examination *per rectum* we may detect a body (of course, shapeless to the touch) in the uterus, by which we may be tolerably certain; and as the development progresses, we may frequently by manipulation detect the fœtus, or, by observing the off flank after the animal has partaken of cold water, some motion will be excited in the young animal. Auscultation is recommended as the readiest and most scientific method; but I confess I have not had opportunities enough to test its efficacy. If the hand be passed into the vagina when the uterus is impregnated, the os uteri will be found closed; but this is a practice I would avoid, as I think it likely to produce abortion.

The *precursory* symptoms of parturition are, enlargement of the mammary glands by the secretion of milk; swelling of the vulva, with general relaxation of these parts; and a glairy mucous discharge from the vagina. The dropping of the abdomen is more evident, and symptoms of uneasiness present themselves. The animal generally separates herself from the herd, and her uneasiness rapidly increases: she lies down and rises again; her tail will be elevated, and the throes or labour-pains commence, caused by the contraction of the body of the uterus; and as these pains become stronger, they are accompanied by the action of the diaphragm forcing the uterus backwards, assisted by the abdominal muscles pressing on its contents. The whole body is now in extreme agitation, and the pulse and respiration are increased in frequency. The cervix of the uterus, which from its greater thickness had before resisted, yields to these efforts, and becomes sufficiently dilated to allow of the escape of the fœtus; the chorion becomes detached, the membranes break, and a part of the liquor amnii escapes, lubricating the parts and facilitating the passage of the fœtus outwards. The back is roached, the legs are set wide apart, and the fœtus is forced backwards, the membranes protruding from the vulva in the form of a bladder, which, bursting, allows of the further escape of the liquors; and in this position

delivery is generally effected, the young animal, in falling to the ground, rupturing the umbilical cord.

If, however, the labour be protracted by the throes decreasing in strength and frequency, and the powers of the animal seem to fail, we may have a resource in the ergot of rye, which appears to possess a specific stimulating influence over the uterus. Two-drachm doses, combined with a carminative and given in ale, may be repeated at intervals of from half an hour to an hour if required; but there are many circumstances which militate against its use. It should never be given where there exists any natural defect in the pelvis or soft parts of the mother. The presentation should be natural, and no necessity existing for any change in the position of the fœtus; and the os uteri should be sufficiently dilated and relaxed; in fact, no obstacle to delivery should exist. All medicinal agents may, however, fail from the large size of the fœtus, and we should then be justified. in assisting nature; and if the fœtus be sufficiently advanced to enable us to reach it by steady traction applied at the legs, we may succeed in effecting delivery. If this be unsuccessful, from the force required, attach a rope to each leg and the lower jaw, and by the aid of an assistant delivery will be effected. I need scarcely describe the position of the calf in a natural presentation. The fore legs should present themselves with the head resting between them; and in cases of unnatural presentation, which are very common in the cow, one broad principle should always be our guide. By manual examination endeavour to ascertain the exact position of the fœtus, and we must then exert our ingenuity to bring it into its proper position, or one as favourable for delivery as possible.

## False Presentations.

*The feet are frequently presented, the head being bent back on the shoulder*, and some difficulty in manipulation commonly arises from the throes of the animal driving the body of the fœtus forwards, which, however, may be combatted, in a measure, by applying a bandage around the animal posterior to the shoulders, which lessens the throes by preventing the expansion of the chest,

and the contraction to a corresponding extent of the muscles of expiration. I would first secure the legs by a rope, and endeavour to return the fœtus into the uterus, which would tend to bring forward the head; and, if the lower jaw can now be grasped and a rope attached, gentle traction will bring it into its natural position. It sometimes, however, happens that the head is so far back that we cannot reach it with the hand: I would then introduce a rod with a hook at the end of it, and placing, if possible, the hook in the orbit, bring the head back by this means; when, by attaching a cord to the lower jaw, and applying traction to it with the one on the legs, delivery may readily be effected.

*When the head protrudes, the fore legs being doubled back,* I would endeavour to pass the fœtus sufficiently far back as to enable me to introduce the hand to bring the legs forward: if this cannot be effected, we should be justified in sacrificing the life of the fœtus. In doing which reflect back the skin of the head, and remove the head with as large a portion of the neck as possible, bringing the skin over the remaining portion, and securing it by a cord. Now return the fœtus, and by manipulation bring the legs forward: this can be facilitated by introducing a rope and attaching it to the leg, an assistant pulling at it, while the hand is engaged in manipulating the leg upwards: when this is effected on both legs, no difficulty remains.

*Sometimes only one leg is presented,* and I would, in this case, endeavour to get the other leg up, and then proceed to bring forward the head as before directed.

*At other times the head will be bent down under the pelvis.* Under such circumstances secure the legs by a rope, and, by placing the hand on the top of the shoulder of the fœtus, endeavour to return it: the head will tend to resume its proper position by every effort we make. We may manipulate the legs over the ears of the fœtus, and bring the head up in that manner, or by grasping the head by placing the finger and thumb in the cavity of the orbits. Now secure the jaw by a rope, and the presentation is natural. What is called *the breech presentation,* although not very common, is occasionally met with, the hind legs being bent up under the body. Introduce the hand, and endeavour to flex the hocks, tying a rope around the leg; and while an assistant is pulling at it and pushing at the breech, manipulate the rope to the lower part of the leg,

steadily applying force, and bringing the leg backwards guided by the hand; and when this is accomplished on both legs, there will be no difficulty in getting away the fœtus. If we cannot succeed in getting a rope around the legs with the hand, introduce it on a rod between the legs, and endeavour to reach it at the flank: care must be taken, in manipulating the legs upwards, not to injure the uterus.

*Again; we may have one leg and the head presented, and one leg lying back.* And in this position delivery may be effected; but there is danger, from the force required, of rupturing the uterus. However, we have only to choose between risking this and destroying the fœtus. Reflecting back the skin from the leg and securing it, loosen the shoulder from its attachment to the trunk, and draw out the extremity. In like manner reflect back the skin of the head, and, securing it by a rope, remove the head with as large a portion of the neck as we can command: return the fœtus, and no impediment will be offered to bringing forward the other leg, when delivery will be easy.

*The fœtus sometimes is turned in the womb, lying on its back with its feet against the spine;* and there is great difficulty in turning it into its natural position. I would endeavour to secure the legs and lower jaw, and force the fœtus as far back as possible into the uterus; then, by manipulating the back part of the neck, while force was applied to the rope, we may succeed in turning it over; or if the fœtus is placed straight, and the head directed into the pelvis, we may succeed in extracting it without turning.

*The shoulder may be presented, the fœtus lying, as it were, across the uterus obliquely.* When this is the case, I would endeavour to push back the fœtus, tending to straighten its position, and bring it into something like a natural presentation. But it is impossible to lay down specific rules for all the varieties of false presentations we may meet with in practice, and, among others, *lusus naturæ*. In the majority of instances we shall not be called in until the uterus had so firmly contracted on its contents, that to alter the position of the fœtus would be difficult or altogether impracticable: the destruction of the fœtus is then inevitable, and we must dissect it away in the best manner we are able.

Labour may continue for some time, and no presentation take place, arising from a scirrhous or indurated state of the os uteri.

This is easily detected from the os uteri in its natural state; for although the orifice may not be dilated in a normal condition, the internal membrane will be soft and relaxed: being satisfied by manipulation that we have a scirrhous state of the part, we ought not to be too precipitate in cutting into it, as it is an operation attended with great danger, and such cases rarely do well.

CONGENITAL HYDROCEPHALUS, HYDROTHORAX, and ASCITES, sometimes offer considerable opposition to delivery, from the enormous size the parts acquire. With a proper instrument we may slit up the head, and thus allow the fluid to escape in hydrocephalus; and in hydrothorax and ascites we may in like manner get rid of the fluid, by forcing a long trocar into the cavity of the chest or abdomen, withdrawing the stilette, and allowing the canula to remain in; or, this not being sufficient, we may eviscerate the fœtus.

In cases of protracted parturition there is, occasionally, much swelling and thickening of the external genital organs and vagina. Considerable relaxation and relief are afforded by the injection of tepid water into the vagina for some time previous to manipulation.

Sometimes, from maternal defects, or from malformation of the pelvis, caused by osseous tumours or fractures, it may be impossible to effect delivery in the natural way, either whole or by dissection, and the CÆSARIAN OPERATION has been recommended as the only prospect of success. If it be adopted, it should not be delayed, but performed in the first period of parturition, before the animal has become irritable and excited by fruitless efforts being made to bring forth.

It is recommended that the animal should be cast on the left side, and so confined as to be kept as quiet as possible. The right side is selected to operate on, as the right horn of the uterus is the one generally impregnated, and the rumen being principally confined to the left side, which tends also to incline the fœtus to the right. In the human subject the incision is directed to be made along the linea alba, for two reasons;—it is more free from bloodvessels, and we should not be separating muscular fibre to such an extent as we do in any other part. But in quadrupeds there is an insuperable objection to this: it is the most inferior part of the abdomen, and, from the weight of the viscera pressing

on the wound, it would not unite so readily as in other parts differently situated. The same situation is preferable as that selected for puncturing the rumen in hoven, on the left side, midway between the anterior spinous process of the ileum and the first rib, about a hand's breadth from the transverse processes of the lumbar vertebræ, almost perpendicularly downwards, inclining, however, a little forwards.

First, make a small opening and introduce the finger; then with a probe-pointed bistoury cut outward, to avoid the viscera; and, an assistant pressing the uterus upwards, the operator will be enabled to manipulate the fœtus. Place the hand upon the uterus, and by the pulsation of the main trunk of the uterine artery, avoiding that vessel in making the incision, which should be large enough to extract the fœtus, and, separating it from its envelopes, tie a ligature around the umbilical cord in two places, separating it between them; thus preventing hæmorrhage into the cavity of the uterus or abdomen in removing it, which must be done as quickly as possible. The human accoucheur extracts the placental membranes, but the cotyledons offer an objection to our doing so; they must therefore remain to be naturally expelled. Stitch up the uterus, and bring together the external orifice by suture, over which place some soft lint and a bandage, and treat as a common wound. Although I have attempted to describe the manner in which this operation is recommended to be performed, I opine that humanity would rather dictate that the animal should be destroyed; as I cannot imagine such a formidable operation would be attended with success, when we consider the immense supply of blood the uterus has been receiving for some time past for the support of the fœtus, and consequently its high vascularity and excited condition. It is also recorded that, where the operation has been attempted, it has almost invariably terminated fatally.

Much controversy has arisen as to the propriety of giving sedatives in difficult cases of parturition. From what I have seen and likewise gathered from the opinions of experienced practitioners, they are rarely required; and I would almost, if not entirely, exclude their use. Surely, if we can effect our purpose without them, we do not want to depress the vital powers of an animal that has been exerting violent efforts tending to produce debility as soon as the exciting causes are removed. There may

be cases where it would be proper to administer a sedative in order to enable us to overcome the resistance to our manipulation, to place the fœtus in a favourable position for delivery, or to dilate the os uteri; and I should then give preference to the watery solution of opium.

As stimulants, in long protracted cases, when the vital powers are sinking, the spiritus ætheris nitrici, liquor ammoniæ acetatis, or the carbonate of ammonia, may be found useful, administering a mild aperient in three or four fours after calving in ale or gruel; and I would recommend that all the milk which the calf does not require should be abstracted, giving directions that the mother be allowed tepid water; and if the weather be cold, or she be roughly housed, that she be kept moderately warm and comfortable.

With regard to the retention of the placental membranes, they should be discharged soon after calving; but occasionally they are retained from a variety of causes, such as want of tone in the uterus, or the cotyledons not being detached in the cornua, irregular contraction, &c. We can ascertain by manipulation if they are detached, and if so remove them; *but use no force:* the probabilities are, that, as soon as the system has somewhat recovered its wonted energy, the uterus will further contract and expel them. If they are retained for any length of time, we may either introduce the hand and detach them as gently as possible, or attach a kind of lever to them, by winding them around a stick and fastening it to the back part of the animal, twisting it tighter as they relax, when they will eventually be thrown off.

In submitting the above to your consideration, I beg to subscribe myself,

Your's respectfully.

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It was remarked by the Chairman, that although the use of sedatives seems to be contra-indicated during parturition, and by many practitioners these agents are justly condemned, yet it has been argued that, when the throes are preternaturally violent, and nature is almost exhausted by the ineffectual efforts made to give birth to the fœtus, their administration has proved of service, by overcoming this undue excitement, and thus aiding in bringing about a return of the normal action, by which the labour is per-

fected. Only in cases of protracted parturition, however, should they ever be given.

*Mr. Simonds* could not advocate their employment under any circumstances whatever after parturition had commenced. Rather would he assist Nature's efforts by the administration of some therapeutic agent that would act as an excitant on the uterus, such as, for instance, the ergot of rye; and should stimulants of this class fail to accomplish the desired end, he would, nevertheless, not have recourse to sedatives. Indeed, it was not until *after* delivery that they were at all admissible.

The *Author of the Essay*, in reply to the question, said, that after the placental membranes had been removed or were thrown off, he would certainly not allow the animals to eat them, nor leave them exposed, although he did not apprehend that which was feared by many persons, namely, that the odour emitted from them would cause abortion in other animals.

He also thought that manipulation of the parts in the first stages of utero-gestation often proved highly prejudicial. In having recourse to percussion as a means of ascertaining if impregnation had taken place, he had rarely found it available until four months had elapsed.

*Mr. J. S. Carter* observed, that, on drawing the teats, if a viscid secretion flowed from the mammary gland this was a sure sign of impregnation. He had been able by this means to ascertain the fact sixteen or eighteen weeks before the test by auscultation, or any other with which he was acquainted, would give an indication that could be relied on. Even this, however, will only be found available with heifers.

In cases of extremely strong contractions of the os uteri, when its dilatation cannot be effected but by the use of much mechanical force, which is at all times most objectionable, and the animal powers are fast becoming exhausted, he would refrain from all endeavours forcibly to accomplish delivery, but exhibit a dose of opium to allay the irritation, lubricate the parts with oil, and leave Nature to her own resources. In from twelve to forty-eight hours a return of the paroxysms may be anticipated; although he had known instances of six, eight, and ten days elapsing before the natural pains returned. When this lengthened delay occurred, it had usually been with cows having the second or third calf. Some-

times these cases had been mistaken for a scirrhous state or condition of the os uteri, and practitioners had injudiciously resorted to the use of the knife. He believed true scirrhus of this opening to be very rare indeed.

In a case that fell under his notice, in which he had occasion to affix the rope for the extraction of the fœtus on the jaw, it broke off, and he was obliged to pass the cord around the head, near to the ears; and he had since adopted this latter plan in preference to the former, from the apprehension of a like unpleasant result.

*Mr. Varnell* related similar instances of the suspension of parturient pains as those adduced by Mr. Carter, and also remarked that these occur more commonly in young animals than in old ones.

*Mr. Chamberlain* did not approve of the employment of stimulants in cases of unnatural action of the uterus, fearing a rupture of that organ would follow, or some of the soft parts give way.

*Mr. Crundell* considered the retention of the placental membranes arose from a want of tone or power in the uterus to throw them off, and the act he viewed as partly organic and partly mechanical. Another cause resulted from unequal contractions of this organ; it becoming more contracted in one part than another, thus offering a mechanical impediment to the dislodgment of these membranes. He deprecated the use of much force so as to dislodge them, the state of the cotyledons militating against its employment.

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TUESDAY, JANUARY 26, 1847.

Mr. G. VARNELL, V.P., in the Chair.

## TWO SALIVARY CALCULI TAKEN FROM THE DUCT OF THE SUBMAXILLARY GLAND OF A HORSE.

*Presented by Mr.* T. TEAT.

*Mr. Morton* said it was unfortunate, although by no means infrequent, that no history of the case in which these concretions were found could be ascertained beyond that of their being taken from an aged cart-horse in good health and condition.

When the skin was being removed from the head of the animal after death, they were discovered by the operator impacted in the salivary duct.

Their formation is, doubtlessly, referrible to a detention of the salivary secretion in its conduits for a longer or shorter time, when a precipitation of the less soluble constituents of the saliva takes place. The two together weigh ʒj ʒvj troy; the larger one weighing one ounce and twenty grains. They are very hard, made up of concentric layers, and in form very irregular, resembling rather truncated portions of a calculus than perfect or entire ones. A fragment exposed to the action of flame, aided by the blow-pipe, blackens, and by intense heat becomes white. When heated with potash, ammonia is exhaled.

By hydrochloric acid nearly perfect solution is effected, accompanied with the evolution of much carbonic acid gas, and minute flocculi of albuminous matter remain suspended in the menstruum.

From the solution oxalate of ammonia throws down an abundant white precipitate. The solution being neutralized with pure soda, on the addition of nitrate of silver a yellow precipitate falls, which quickly changes on exposure to the air. The inference is, that these concretions consist of the carbonate of lime with the phosphate of lime, and a small quantity of animal matter, this being, probably, salivary mucus. The preponderating constituent is the carbonate of lime.

The evening was further occupied by the consideration of an Essay on

## The Constitution of the Atmosphere, and the Changes induced in it by Combustion and Respiration.

*By Mr.* D. R. Foy.

[The reason already assigned precludes the introduction of this thesis. The theories generally received were ably commented on, and a clear review taken of the influence of the air in effecting those varied changes that occur both in organic and inorganic bodies. The argument, although somewhat discursive, was not without spirit and interest. We subjoin an outline of it].

*Mr. Morton*, in reply to the inquiry, stated, that a few years since he had instituted some experiments on the respiration of

the horse, and found the amount of air taken into the lungs at each inspiration to be rather more than three and a half imperial pints, really 107.2 cubic inches; and this was returned charged with about seven and a half per cent. of carbonic acid. According to Boussingault this gaseous compound is the result of the union of the oxygen, absorbed by the blood, with the carbon of the food; the horse consuming above eight pounds of this elementary substance daily for the purpose of generating animal heat.

*Mr. Foy* was inclined to question the validity of the Liebigian theory, which taught that it was indispensably necessary, in order to form the various tissues of the body, that nitrogen should constitute a part of the aliment, and adduced, in confirmation of his views, the natives of India, who do not eat animal food, but subsist on hydro-carbonaceous matters principally, as sugar, ghee, &c.; yet they are healthy and robust, and attain to a moderate age. He believed the quantity of carbonic acid gas expired would be less during a diseased state of the lungs than in health, from the necessary changes in the blood by the air not becoming perfected in these organs. During the existence of inflammation of the lungs, he preferred a cool humid atmosphere for the animal to breathe.

*Mr. Reeve* thought the experiments resorted to by physiologists of feeding animals on substances altogether foreign to their nature, so as to ascertain whether or not they would support life, to be highly objectionable. Under such circumstances, he considered it as likely that these animals would die of inanition from this cause as from the absence of nitrogenized compounds. "Use becomes second nature." Moreover, it is well known that animals will not live on purely nutritious matter, both bulky and coarser aliment being required by them, so as to impart a due stimulus to the stomach and intestines.

As it respects the nitrogen necessary to form the tissues, he considered that which is taken in with the saliva might, by combination with the amylaceous or fatty matters, give rise to compounds that would be appropriated by the organism.

*Mr. Twist* objected to the latter part of this statement, and contended that it was indispensably necessary, for nitrogen to be taken into the system, that it should exist in combination with alimentary matters, since that which is entangled by the saliva is

thrown out entirely by the perspiration, it playing no part in the animal economy beyond this.

*Mr. Fahey*, nevertheless, thought that before its excretion in this form took place it had been appropriated in the organism.

*Mr. Twist* denied this, averring, that had this element been in combination so as to make up the tissues of the body, they, on becoming effete, would undergo combustion, and their nitrogen would then be separated, and go to form urea or choleic acid,—nitrogenized principles that are met with in the bile and urine, and which give to these secretions their characteristic properties.

*Mr. Varnell* did not consider the climate of England so congenial to the horse as some parts of America; for instance, Long Island. There the temperature was higher, but the atmosphere not so humid as it is in England. He drew this inference from horses being able to undergo greater exertion there than here during hot weather. He had known a pair of horses perform a hundred miles in ten hours. That a dry warm climate was also more conducive to the health of the animal was proved by the last summer, which was the hottest remembered for some years, and fewer cases of sickness were then met with, so that it became a subject of remark and conversation.

*Mr. Fahey* agreed with Mr. Varnell, and thought his observations received support from the fact, that the horse is a native of a much warmer climate than England, although it might be said that he has become naturalized in this country, and in some respects improved in breed and conformation.

*Mr. Twist* had certainly noticed, that during hot weather in this country, the horse was more able to endure fatigue; but he had also observed that congestion of the lungs, and other inflammatory affections, were then more rife.

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FEBRUARY 2, 1847.

The PRESIDENT in the Chair.

A paper on EXOSTOSES, by Mr. R. SKELTON, occupied the time usually devoted to discussion.

The Author of the Essay, although he had named the abstraction of blood from the toe during the existence of the inflammatory

stage of the splent, nevertheless thought it did no more good than if the blood were withdrawn from any other part of the body; still, unquestionably, during this stage he would have recourse to depletion, with other antiphlogistic remedies of a relaxant kind, as poultices, fomentations, &c. He was well aware that some practitioners advocated the application of blisters; the benefit derivable from which could only be referred to their setting up a new action, which overcoming the diseased action, resulted in a restoration to health: he preferred the former class of agents. He was not favourable to the removal of bony tumour by means of the chisel or saw, especially when it was situated near the knee-joint, as he feared that, by the extension of the inflammatory action, the joint itself would ultimately become implicated, from which the worst consequences might be apprehended. This form of splent had been thought analogous to spavin: it was commonly the result of blows, designated "cutting," and did not arise from concussion, the common cause of the hock-disease.

*Mr. Twist* had seen splents removed by this means, and the result had been perfectly satisfactory. The operation was performed, so to speak, subcutaneously. An incision through the skin was first made below the tumour, and the integument reflected back, then with a small hammer and sharp chisel the exostosis was struck off. A seton was subsequently passed over the part, and after the edges of the skin had been brought in apposition, the roughened surface of the bone quickly became smooth by absorption being set up, and little or no blemish was perceptible.

*Mr. Connacher* felt assured that whenever an abnormal deposit of ossific matter takes place on cylindrical bones, constituting an exostosis, it contained a less amount of the phosphates than is natural to the constitution of bone. He had been in the habit of removing such tumours from under the suspensory ligament, first dividing the fibres of the ligamentous structure, with the action of which it interfered. Inflammatory action quickly supervened, and the roughened surface was soon rendered smooth.

*Mr. Wilkinson* adverted to a practice of the farriers in which they had recourse to what is designated a "charge" for the removal of splents, and from the use of which he thought he had occasionally witnessed benefit to follow. By it rest was necessarily given to the animal, while the agent employed acted as a

counter-irritant, and at the same time it communicated pressure. He, however, felt assured that in those bursal distentions about the sessamoids that supervene on attacks of influenza, he had known the "charge" to prove of service.

As it respects the use of what are called mercurial charges, he much doubted their efficacy beyond that which arises from pressure being given to the part with the counter-irritation that is set up by them, in common with other similar topical remedies. And in the use of cantharides, or any of the compounds thereof, in combination, considerable care was called for, lest undue action should be excited in the skin; and the discharge that then took place would negative the good produced by the "charge." When constant attendance could be given, he had found the ointment of the potassio-tartrate of antimony an admirable compound; of course, exercising all caution in its application so that ill-conditioned sores were not produced by it. Nor would he wait till what is called the inflammatory stage had passed over, but begin its employment early. There was yet another practice of the old school which he had heard commended: it consisted in making a small hole in the bony tumour by means of a red-hot iron, and afterwards introducing some caustic agent, as corrosive sublimate, when a portion of the bone would be sloughed away, and the surrounding inflammation thus excited divert the current of blood, so that the deposition of osseous matter would, for a time at least, be checked.

*Mr. Fahey* had witnessed the removal of a large exostosis on the metacarpal bone by this means. The pointed iron being inserted, it was followed by the introduction of a small quantity of bichloride of mercury; a bandage was then applied, and when sloughing had taken place, the wound was treated in the ordinary way. The lameness was completely dissipated, and from the action set up entire removal of the tumour effected.

*Mr. Pearson Ferguson* advocated the admixture of a small quantity of the oleum cantharides with the composition for the "charge," from the greater amount of irritation that would be created by it; yet he perfectly concurred with the observations that had fallen from Mr. Wilkinson as to the necessity of care being exercised that the quantity introduced should not be so great as to act as a vesicant. Of the powerful action of the potassio-tartrate of antimony as an

irritant there could no doubt. And he thought the influence of this agent as a diaphoretic to the horse was now established. Some of the members might remember a case, not long since in the infirmary, of a horse to whom this drug had been for some time given, and in parts the skin had become depilated, shewing most markedly the influence of this agent on the common integument.

*Mr. Skelton* thought it possible that the "charge" might prove serviceable in the incipient stage of splent, but doubted its usefulness afterwards. Whatever were the means employed, he questioned our capability of staying the deposit of ossific matter when this has once commenced. The value of the compounds of iodine as agents for bringing about the absorption of bony deposits awakened some difference of opinion among the members. Messrs. Wilkinson and Ferguson, with Mr. Cartledge, believed that they had made use of the ointment of the biniodide of mercury with decided advantage; Mr. Twist and Mr. Skelton said they, too, had used the compounds of iodine, but could not say they had witnessed any good to follow. Mr. Twist, however, had generally employed the compound ointment of iodine, not the ointment of the biniodide, which on all hands was allowed to be a far more active and efficacious therapeutic.

*Mr. Ferguson* remarked, that subcutaneous periosteotomy for exostoses had been highly extolled by some practitioners, and by others as much deprecated. He had often found the operation extremely useful, but thought an error was generally committed by allowing the seton to remain in too long afterwards. By it unhealthy granulations are thrown out, giving rise to much thickening, which it is often difficult to get rid of. He viewed its influence as two-fold: 1st, the removal of tension by the division of the periosteum; and, 2d, the setting up of counter-irritation. Nor must the depletive effects be altogether lost sight of.

His practice had been to allow the seton to remain in until a free suppurative discharge took place, then gradually to lessen its size, and ultimately withdraw it: being careful that no pus became pent up in the channel formed, on which account cleanliness should be especially observed. As to the period requisite for the throwing out of this lowly organized matter that gives rise to a permanent thickening of the part, it would depend much upon the idiosyncrasy of the animal, and also other causes.

The comparative effects of blisters and the firing-iron, with a view to bring about absorption of ossific deposits, in connexion with their *modus operandi*, awakened an animated debate. Setons were not deemed sufficiently active if *alone* employed; and what is called light firing was placed on a par with the action of blisters.

*Mr. Ferguson* said the difference in the effects produced by the firing-iron would depend upon the amount of caloric infused; nor should he hesitate to have recourse to this remedy in cases of bony enlargement, when other remedies had failed.

*Mr. Worm* had resorted to deep firing both for spavins and splents, and found it most efficacious.

*Mr. Twist* believed that the counter-irritants usually had recourse to acted rather by causing a greater deposit of ossific matter, thus perfecting the formation of the exostosis, or by bringing about anchylosis of the joints, by which there is a loss of pain at the expense of freedom of motion, than by promoting its absorption, which he was of opinion never was effected.

*Mr. Wilkinson* said that, as ossific deposits often become removed in old age, it was not too much to anticipate that such an effect would be induced by the employment of the varied means that had been advocated this evening under the names of pyropunctuation, subcutaneous periosteotomy, &c.

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FEBRUARY 9, 1847.

The TREASURER in the Chair.

*Mr. Teat* presented a transversely fractured metacarpal bone of a horse. The accident which gave rise to it occurred during a race, by the animal's getting his foot in a hole and falling forwards.

A bladder taken from an ox, with the urachus attached to the umbilicus, and pervious, was received from Mr. W. Wright, V.S., accompanied with the following note:—

Dear Sirs, *Burnham Overy, February 4th*, 1847.

I send you a bladder, which I have removed this day from a bullock, four years old, and which had been observed for a long time past to be frequently urinating, the fluid escaping just anterior to the prepuce. Rarely, I believe, do such cases occur, and

my lengthened practice has not furnished me with a similar one. The animal's general health appeared to be but little interfered with, and being in good condition, he was killed by the butcher for sale.

I am, truly your's.

*To the Veterinary Medical Association.*

*Mr. J. B. Simonds* said, that cases of open urachus are common enough among young animals, but very rarely are they met with in the adult; indeed, he did not remember having seen an instance of the kind before. [Some observations made by him on open urachus will be found in THE TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION for 1843-4, p. 49.]

*Mr. G. Varnell* described the alterations which had taken place in the parts. The bladder was reversely cone-shaped, and about half its ordinary size, the fundus of the viscus forming the apex of the cone, from which the urachus was continuous, extending to the umbilical opening, and of a funnel shape; a fact which shews that the urine escaped through this canal, and not by means of its natural channel; for had such been the case, the urachus would have become sacculated at its termination.

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A communication was read from Mr. J. Smith, V.S., Tewkesbury, containing a description of a disease affecting the knee and hock joints of lambs, from which many had died.

These cases were perfectly analogous to some laid on the table by Mr. Yeomans, the property of a farmer at Tottenham.

*Mr. Simonds* observed, that abscesses in the joints of lambs are not uncommon in many districts, especially in the county of Norfolk, where the disease has received the provincial term of "scole" —probably a corruption of "scoliasis," from the distorted state of the animal when affected with this malady. It is evidently of a constitutional character, and more prevalent during some seasons than others. Agriculturists are of opinion that pregnant ewes fed on light land recently clayed predisposes the progeny to this disease, and consequently they do not allow the ewes to lamb on soil of this kind.

It is singular that the disease manifests a preference for the stifle, hock, and knee joints, and pathologically it may be desig-

nated CONSTITUTIONAL SYNOVITIS. Generally it is ushered in by all the usual phenomena of local inflammation, accompanied with great disturbance of the system. Many die in the early stages of the affection, while others resist its influence until it assumes a chronic form; but such animals are valueless, and at length sink from marasmus.

The post-mortem appearances in the earlier stages are, extensive inflammation of the synovial membrane, particularly on that part reflected upon the inner surface of the capsular ligament; the albuminous secretion within the joints is nearly solid, and depositions of lymph exist extern to the capsular ligament. In protracted cases the inflammation proceeds on to suppuration, when pus forms in the interior of the capsular ligament, which either ruptures or gives way to the ulcerative process, and the articulations become affected with both deep-seated and superficial ulcerations.

The general treatment would consist of the application of local stimulants, even in the early stages of the disease, the inflammation being of a peculiar kind, and resisting the ordinary topical agents, such as fomentations, scarifications, &c. Due attention should likewise be given to the mother, the diet and locality changed, and the system brought into a healthy state by the administration of gentle aperients, by which the secretions being altered, the lamb will derive benefit.

*Mr. Chamberlain* had frequently seen this disease in Norfolk, and believed it to be correctly designated by Mr. Simonds. It was certainly most prevalent on clay lands and in wet seasons. In some few instances the enlargements about the joints do not take on the suppurative inflammation, this being more especially the case among the older lambs.

*Mr. Worm* corroborated the statements made by Mr. Chamberlain, and he believed the disease to commence in the joints, which became highly inflamed, and the secretion of synovia either stayed or so much altered in character, that they became almost inflexible.

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The further consideration of Mr. Skelton's paper on Exostosis was then entered on, prior to which the following letter was read:—

## On the Performance of the Operation of Subcutaneous Periosteotomy for Spavins.

*By Mr.* D. Moulden.

My dear Sir, *Winchester*, 24 *Jan.* 1847.

Being fully convinced that you always feel pleased with that which tends to advance our common profession, and to receive information connected with its onward progress, I have thought you would be gratified to hear of the success that has followed the operation of subcutaneous periosteotomy in several cases of spavin and exostoses that have lately fallen under my care. I refer more especially to those instances in which the bony tumours are of such a size that the owners of the animals can see that the disease exists, and that to a considerable extent; for otherwise, it is often the case that the professional man is disbelieved, and when obvious benefit follows the operations resorted to by him, doubts are entertained if disease to any amount really was present. This is one of the unpleasantnesses we frequently meet with, and it often proves very annoying, to say the least of it.

In the year 1845 I operated on a very clever grey mare, and she has stood sound ever since. Two other cases quickly followed, which were attended with the like result. One of these was so lame that the owner had determined on having the animal destroyed. In three weeks after the operation he was comparatively sound, and has continued to do his work well ever since.

I have frequently had recourse to the operation for exostoses situated below the carpus on the inside of the leg with the wished-for success; and I am glad to be enabled to say, that I have never, in any one instance, had any unfavourable symptoms or consequences follow. Yet care is called for in performing the operation, that the capsular ligament is not wounded when dividing the periosteum, thus causing an open joint. Should this occur, I would immediately set to work and close it, by excluding the atmospheric air by the intervention of some cement, as the plaster of Paris, which would act as it does in cases of broken knees. I have recently had a case of lacerated hock from the animal's falling while in harness and being dragged along the ground, when the integument covering the os calcis was cut through, and

the synovial discharge became profuse : the pain was so great that the horse could not rest the foot on the ground. I treated the wound as above described, and in a short time my patient was able to walk, and within a month the wound had healed, and all lameness disappeared. Indeed, were you now to see it, you would be puzzled to tell which hock had been affected.

I am, dear Sir,

*To Mr. Morton.* Your's most obediently.

*Mr. Varnell* considered the operation alluded to not only admissible but perfectly safe, when the bony deposit was principally on the cuneiform bones of the hock. But little fear, he said, need then be entertained of opening the capsular ligament, nor should he apprehend any danger would result even were the tendons of the flexor metatarsi divided; still, for the successful performance of the operation an acquaintance with the anatomical structure of the joint was called for, and likewise the exercise of judgment in the selection of fit cases.

*Mr. Twist* had in the course of his dissections frequently met with ossific matter enveloping the tendon, and thus protecting it. In such cases division of the periosteum may be readily, and without any fear, be had recourse to.

*Mr. Skelton*, in replication, said, that he thought peculiarity of formation of the hock joint had more to do with the existence of spavin than what is called hereditary predisposition. Still it was difficult to draw the distinction, inasmuch as the peculiarity of form might be viewed as hereditary, and on the slightest cause being applied, this disease would be set up, from the disposition or tendency previously existing in the system.

In colts, from six to nine months old was the earliest period at which he had noticed a spavin to exist, before, of course, they had been subjected to any kind of work. In such he had rarely seen lameness present, and this he believed to be indicative of an hereditary taint.

*Mr. Twist* considered hereditary tendency had more to do with the development of this disease than peculiarity of conformation; for in such animals he had observed a disposition on the part of the system to throw out bony tumours in other parts of the body besides the hock on the infliction of the slightest injury to them.

*Mr. Worm* believed in hereditary disease, since he was acquainted with several instances of spavined horses producing progeny that were spavined, and horses with splents begetting colts similarly affected.

*Mr. Chamberlain* related an instance of a mare with anchylosis of the knee having a foal which was affected in the like manner.

*Mr. Varnell* stated, that an entire horse, called "*Monarch*," had covered many mares in the county of Norfolk, and on his colts being broken, at three and four years old, the majority of them were found to be affected with spavins, splents, or ringbones, yet he himself was entirely free from any of these diseases. Another horse called "*Sepoy*," that was brought from India, had numerous exostoses, which were attributed to blows received while on board the ship. His progeny, however, were all similarly affected, and he was consequently no longer used as a stallion.

*Mr. Twist* stated that the stock of "*Amulet*" was extremely prone to take on ossific disease, yet he was perfectly free from it.

*Mr. Cartledge* added, that a horse called "*Fifty-three*" begat foals, and of these no less than twenty-six became affected with curbs before they were twelve months old, yet he had no curb.

*Mr. Wilkinson* observed, that in the purchase of horses for the cavalry it is occasionally the case that one is accidentally bought in foal; and it had occurred to him, while at Windsor, that a mare dropped a foal having curbs. It was not what is so commonly met with, namely, merely enlarged hocks, since the remedies usually resorted to effected their reduction.

*Mr. Skelton* considered what is called *occult hock-joint disease*, really ulceration of the synovial membrane of the joint ultimately involving the cartilage and bony structure, to result from concussion or extension of inflammation set up in the ligaments of the hock by sprain. From the lowly organised tissues involved, the progress of disease was necessarily slow, and difficult to combat, and his aim would be to bring about union of the bones as quickly as possible. He questioned the good that would result from the division of the tibial nerve in this form of hock-lameness, especially if the ulceration were situated anteriorly.

In the earlier stages of spavin, when active inflammation had just commenced, he would resort to antiphlogistic means to overcome it, and thus prevent the deposition of ossific matter; but

when he was convinced that this had begun, he would hasten its accumulation so as to anchylose the joint, feeling assured that we possessed no means to prevent this termination taking place ultimately. He argued that, by this procedure he should spare the animal much suffering, and render him both sooner and more useful to his owner. The pain that is present in incipient spavin arises more from the inflammatory action set up in the tissues implicated than from distention of the periosteum. In diseases of the hock-joint, much consitutional disturbance is often set up, calling for the adoption of prompt measures to allay it; and during the first stages of inflammation we shall also have increased secretion and deposit.

*Mr. Twist* contended that this observation would not apply to glandular structures. In them it is during the stage that immediately precedes inflammation, namely, irritation, that augmentation of their secretion really takes place; and immediately that inflammatory action begins, there follows a diminution of the secretion. True inflammation, he thought, was only seen in the production of pus; since we may have swelling and redness from engorgement merely, and pain also, as in some nervous affections, without the existence of inflammation. He was likewise of opinion that congestion, as a general rule, preceded inflammation, and instanced what often takes place in the lungs from over-exertion and other causes. Yet he allowed that occasionally it might supervene on inflammatory action, by the vessels becoming so much debilitated as to be unable to pass onwards their contents.

*Mr. Reeve* took precisely an opposite view, believing congestion to follow inflammation most commonly: the "heaping up" being the result of the diseased action which is set up in the capillaries; whence results an alteration in their appropriating power, tending to abnormal secretion, with the general phenomena attendant on inflammation.

FEBRUARY 16, 1847.

Mr. C. TWIST, V.P., in the Chair.

The evening was occupied by the consideration of a paper

ON ROARING.

*By Mr.* C. CONNACHER.

THE discussion on this essay was very desultory, and the points touched upon also very varied, still not altogether without interest. A disposition appeared to be manifested to designate all abnormal and really audible sounds produced during respiration by one common appellative, namely, "roaring."

The noise that is heard when this affection exists was considered, by *Mr. Reeve*, to occur during *in*spiration, arising, in all probability, from the laryngeal nerve being in a diseased state; whence results partial or complete atrophy of the muscles supplied by it, so that their natural action is interfered with.

*Mr. Varnell* believed what is called "grunting" to take place during *ex*piration, and that it was in many cases a habit merely. He was not yet convinced that, in broken wind, we have always, and of necessity, atrophy of the trachealis transversalis muscle. In an aged horse that had been affected with broken wind for a long time, he found, after death, this muscle to be as fully developed as it could be expected to exist in an old animal. He, however, found the muscular portion of the diaphragm to be less powerful than is natural; which, being concerned in respiration, it may have been associated with the disordered breathing during life, this being a consequence rather than a cause, while the abdominal muscles were necessarily called upon to perform more than their wonted duty.

*Mr. Twist* considered loss of power in the diaphragm would give rise to symptoms simulating broken wind, as would division of the phrenic nerve. He viewed this atrophy of muscles as the effect, and not the cause, of broken wind; the true cause being emphysema, which arises from the permeability of the tissues to air. In confirmation he adduced the statement of Liebig, that those Germans who partake freely of imperfectly fermented wines

have carbonic acid gas eliminated in large quantities in the stomach, and this finds its way into the lungs by endosmose, producing a sense of asphyxia, the antidote to which is the inhalation of ammonia. He thought the partial vacuum that is formed in the lungs in the act of respiration facilitates this passage of air into them. The same thing is witnessed in wounds of the cellular tissue.

To relieve an animal affected with roaring, he doubted if the tracheotomy tube could be worn for any length of time. He feared it would act as a foreign agent and create a great amount of irritation. He believed it quite possible the horse might, for a time, be put to slow work with it in, or even a racer run and win a race with it; yet ultimately it would prove a source of annoyance and exitement. A great objection to it, in his opinion, arose from the tube allowing the passage of dust and other light matters into the lungs, the inspired air not having to pass through the sieve-like turbinated bones before it enters these organs.

*Mr. Varnell* thought the rushing in of cold air upon organs so delicate as the lungs could not but be attended with ill effects. Naturally, the air has to pass over a large extent of surface, by which it becomes warmed, and thus the lungs experience no constringing influence.

*Mr. Fitter* had known a horse work in a cart with a tube in his trachea for twelve months. It had then been accidentally removed, and, the bystanders not being able to re-insert it, the animal soon after died from suffocation.

*Mr. Harrison* knew a horse that had hunted for two seasons, in Sir Richard Sutton's hunt, with a tube inserted in his trachea.

"HIGH-BLOWING" was considered by the Author of the Essay a habit merely; the result of a fluttering made with or by the false nostrils.

*Mr. Twist* referred the noise to a malformation of those parts, they being large and pendulous; and, if it did not materially interfere with the function of respiration, he should not place it among the causes of unsoundness.

*Mr. Varnell* concurred with the view taken by Mr. Twist.

*Mr. Fahey* believed it to be a voluntary act, indicative of courage.

*Mr. Crundall* had observed that horses designated high-blowers possessed powerful organs of respiration, and that when much

excited they ceased to be so. This was explained by Mr. Reeve to depend on the contractile state of the muscles during excitement, which dilated the nostrils to such an extent as to allow of the free ingress and egress of the air to and from the lungs. He also contended, that the noise in roaring being lessened by the strap placed on the nostrils, arises from the velocity with which air enters being checked, as well as its quantity being diminished. Perhaps another cause may also be in operation, that of equalizing the caliber of the tube through which the air passes.

*Mr. Weston* remarked, that he had often experienced much difficulty in causing a horse to cough when affected with roaring, which might arise from rigidity of the cartilages of the larynx, or their having become ossified.

*Mr. Twist* agreed, that often it is difficult to produce coughing in horses, and especially cart-horses; yet he could not think that such of necessity were roarers; rather would he refer it to a loss of sensitiveness in the mucous lining membrane. Atrophy of muscles he made dependent on increased muscular action, since it was during action that the metamorphosis of the tissues took place, and not when they were at rest.

*Mr. Connacher* stated, that roaring has been known to exist in colts unbroken, and then it must be referred either to peculiarity of conformation of parts or idiosyncrasy. Oftentimes it is the sequela of strangles, laryngitis, influenza, &c., when a thickened state of the lining membrane will be found to exist as the immediate cause of the unnatural sound eliminated. If broken wind occurred suddenly, he should refer it to a rupture of the air-cells of the lungs; but when, as is generally the case, it comes on gradually, he believed emphysema was the cause, the gaseous infiltration being the result of endosmose from the bronchial tubes.

FEBRUARY 23, 1847.

Mr. G. VARNELL, V.P., in the Chair.

ON the table several morbid specimens were laid, and the abnormal changes were commented on by the Chairman.

## 1.—RUPTURED STOMACH OF A HORSE, FORWARDED BY MR. W. ERNES, *M.R.C.V.S.*

THE history of the case, Mr. Ernes stated, was brief and simple. The animal had been with others in a wagon, laden with malt, to Croydon, and when there was attacked, as the carter thought, with colic: yet the symptoms were not so severe as to cause him to seek medical aid. On the return of the team at night Mr. Ernes was sent for, who soon perceived that all remedial measures he could adopt would prove altogether of no avail, and, as he expected, the horse lived but a short time afterwards.

On a post-mortem examination the stomach was found extensively ruptured in two places, the largest lesion being in the villous portion of the viscus, the parietes of which were thin, and the lining membrane inflamed.

## 2.—RUPTURED AORTA OF A HORSE.

*By Mr.* G. WHITE, *M.R.C.V.S.*

Dear Sir, *Hill Hall, Lichfield, February* 18, 1847.

RATHER an unusual case having just fallen under my notice, I cannot forego the gratification of sending the particulars of it to the members of the Veterinary Medical Association.

A valuable horse, the property of a Mr. Harding, of Shenstone, died two days since, suddenly, he being in his usual health up to the time of his death. He had been harnessed for the purpose of going a journey, when he fell down and died instantaneously, without even a struggle. On the following day, that is, yesterday, I was requested to make a post-mortem examination. On opening the pericardial sac, I observed that it was nearly filled with blood; and upon farther examination, I found it to have proceeded from a rupture of one of the aorta. The heart I have forwarded, per

railway, to you. Being very much engaged at the time, I am sorry I did not take out the parts so carefully as I ought to have done; but I have no doubt that your worthy Chairman will be able to demonstrate the nature of the lesion.

I was attending some other cases at this gentleman's house a week or ten days previous, when my attention was by him directed to this animal, which I was informed had a cough, and they were afraid he would become broken-winded. I applied the stethoscope to the chest; but being unable to detect any abnormal sound, I concluded there might be some thickening of the lining membrane of the trachea or of the bronchial tubes, and recommended his being placed under a course of the biniodide of mercury, given in small doses, for a lengthened period, which I have found serviceable in similar cases: this, however, was not adopted.

The animal was aged, and in high condition, having little more than exercise.

I remain, dear Sir,

*To Mr. W. J. T. Morton.* Your's very respectfully.

*Mr. Varnell* stated that the parietes of the heart were found entire, but pale, thin, and flabby. At the base of the organ, between the right auricle and the pulmonary artery, an extensive transverse rupture of the aorta had taken place. From the attenuated state of the coats of the artery, it was evident that dilatation to a considerable extent had existed, and, the vessel giving way, a quantity of blood had become effused into the surrounding cellular membrane, which, yielding in its turn, necessarily allowed of its escape into the pericardium. The rupture was immediately above the semilunar valves, and doubtlessly, from the appearances presented, aneurism had existed for some time.

*Mr. Wilkinson* observed that, in the human subject, aneurismal tumours of this kind, by pressing against the lungs, are oftentimes productive of so distressing a cough as to lead the medical attendant at times to suspect the existence of phthisis pulmonalis; and he thought it probable that this was a case of the same kind occurring in the horse. It was to him a matter of some little surprise that a rupture of the pericardial sac had not taken place.

## 3.—Case of Chronic Diarrhœa in a Horse.

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

The subject whence the morbid parts on the table were taken was a brown mare, fourteen years old, well bred, of excellent temper, and a good worker. Unfortunately, being a great favorite, and the property of a lady, she was not worked sufficiently even to maintain health, and during the winter and spring seasons was turned into a straw-yard—at least, during the last two years, for since her feet were cured of canker she has regularly worked in harness. Being always a gross feeder, she occasionally came under my care for derangement of the digestive organs. I was first consulted respecting her in 1841, since which period almost every year my professional services have been required. A disposition to sloughing of the skin of the heels, with thrushes in the feet, was soon evinced, and this latter ultimately degenerated into canker, all four feet becoming affected, and that most severely. The diseased action so rapidly progressed, that I began to despair of effecting a cure. I can safely say it proved the worst and most obstinate case of canker I ever saw, in which the whole of the feet were involved. I expressed my fears as to the result without any hesitation, and was urged, in return, to do all I could so as to restore the animal to health. The topical agents I employed consisted of the bichloride of mercury, dissolved in a solution of chlorinated lime; and in three weeks from the commencement of the application of this compound, the fears I at first entertained were dispelled, and I anticipated my patient would soon get well. I need hardly say that I conjoined constitutional remedies; and after the solution had been freely applied to the diseased sensitive parts of the feet, common tar was smeared over them, and pressure given by means of pledgets of tow. This treatment I have most successfully adopted in many similar cases since.

The hind feet healed very freely, as did the near before; but there was a small spot on the centre of the frog, below the cleft of the off fore foot, over which the horn did not form, nor could I induce its formation. The sensitive parts underneath were very vascular, and, despite all my efforts, I failed to bring about the

desired action. In a few days small and numerous tumours, resembling farcy buds, presented themselves all over the body, and the general health and appearance of the animal also became highly unfavourable. I gave tonics, combined with diuretic agents; and on the following day, to my consternation and annoyance, I found *every one of the feet nearly as bad as they were at the first.* Feeling convinced that now I certainly should be beaten, I at once advised the owner to have the animal destroyed, she being aged and comparatively worthless; while the length of time necessary to effect a cure, if ever it should be accomplished, would prove long, and the expense attendant great. My advice was not taken; but, instead, I was earnestly solicited to do any thing and every thing I could so as to preserve the favorite animal. Being satisfied that, adopt whatever course I might, the cure would be a work of time, I thought it advisable to turn the mare out into a clay pasture contiguous to the sea, having had abundant proof that there was a constitutional tendency to phagedenic ulceration, which the nature of the herbage there might counteract, while pressure being given to the diseased feet by the soil would tend to bring about healthy action in the vascular parts. Nor was I disappointed; for, occasionally visiting my patient, I found she was progressing to my satisfaction, and in three months she returned home well. Nevertheless, the same constitutional tendency existed, evidenced by thrushes making their appearance in the fore feet from time to time, which, however, readily yielded to the solution of chlorinated lime, and the use of clay as stopping to the feet, instead of the usual compound of the stable.

The necessity of this lengthened prologue may, perhaps, be questioned. The object I have had in view in giving the previous history of the case so fully, is not so much to shew that any connexion or relationship existed between the disease on account of which the animal was destroyed, and that, or those under which she before had laboured, as to leave others to draw their own inferences. It may or may not have been that the malady with which for some months past she has been affected was a sequela of the others, or consequent thereon. This was evidently chronic diarrhœa.

On the 26th of December last I was consulted on account of profuse purging having suddenly made its appearance, accom-

panied with some constitutional disturbance. The alvine evacuations were copious and offensive, and the conjunctival lining of the eyelids tinged yellow. Thinking it probable that some offending agent was present in the intestinal tube, I endeavoured to dislodge it by a laxative; and when this had caused the desired action, I followed it up by astringents combined with febrifuges. This appeared for a time to tranquillize the bowels; but in two or three days the spontaneous diarrhœa returned, which, however, was again checked by means of chalk with opium, occasionally interposing a dose of calomel with the last-named agent, the liver being evidently functionally deranged. Again, on the withholding of medicine, the bowels became as deranged as at the onset, but without the febrile excitement manifested in the first instance. At my request, the animal was now sent to the Collegef or the opinion of Professor Spooner, who, having carefully observed the animal, stated his conviction to be that a chronic disease of the mucous membrane of the intestines was the immediate cause of the diarrhœa, and recommended a trial of the sulphate of iron in small doses, administered in ale. This only aggravated the symptoms, and an infusion of quassia was substituted, with a view to ascertain what would be the effect of the vegetable bitters on the debilitated tissues. If any thing, the use of this was even less favourable, and I was about to give a decoction of the oak-bark instead; but while waiting for it, I exhibited a dose of chalk and catechu, my usual astringent mixture, which, fortunately, was followed by the desired result. The fæces became consolidated, and were voided naturally, and the animal soon regained her wonted spirits and appetite.

In about a fortnight a relapse took place, and again the bowels were as deranged as at the commencement of the attack. Another member of the profession was now consulted with my concurrence, and he, too, recommended the sulphate of iron in combination with powdered camomile flowers, and gentian and ginger, given in the form of balls. This was exhibited for several days, but without the slightest benefit being experienced by the animal; and the chalk with catechu was again resorted to, but it was no longer of any avail. The animal quickly lost flesh and refused food, and being, as before said, very aged and useless, she was at my earnest solicitation destroyed.

On making a post-mortem examination, our prognosis was found to be correct. The liver was perceived to be soft in its texture, and easily broken down, and on its surface small spots of osseous matter were detectable. The stomach presented merely a blush of inflammation pervading its villous portion, and its coats were weakened. Throughout the course of the intestines patches of inflammation of a sub-acute kind existed; but the mucous lining of the small intestines shewed the most marked change, and especially the ilium at its termination in the cœcum. Here several glandular bodies were met with in a highly diseased state, probably the glands of Peyer, whose function is to secrete the mucus that lubricates the intestines. The mucous membrane of the large intestines was likewise thickened, and appeared as if lacerated or torn. Rarely had the animal been the subject of abdominal pains, or any affection of the bowels; still it is evident that, from the organic change which had taken place in the digestive organs, coupled with the age of the animal, no hope of an ultimate cure could be entertained.

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The remainder of the evening was occupied by the Patron, Professor Sewell, describing the various modes adopted for etherizing animals. He said he was convinced that the apparatus generally employed was far too complicated, and necessarily too expensive, for the veterinary surgeon. He had perfectly succeeded in rendering a horse insensible to pain by means of from two to three ounces of ether contained in a bladder surmounted with a piece of gum elastic; this was applied to one nostril, the other being kept closed by an assistant during inspiration, and allowed to act during expiration. For the smaller animals, the simplest vehicle may be had recourse to with almost certainty of action.

A rabbit was dissected *in situ*, which died while under the influence of ether. On opening the chest, the smell of ether was plainly perceptible; the lungs were highly congested, and the heart and the larger bloodvessels within the thorax filled with coagulated blood.

Tuesday, MARCH 2, 1847.

The TREASURER in the Chair.

*Mr. G. T. Brown* laid on the table the morbid parts taken from a mare that had been destroyed on account of an attack of acute glanders. The disease had manifested itself suddenly, and its progress had been extremely rapid. The tissues implicated had given way, and a strange mass of disorganization presented itself.

About six months since she had been kept in a locality with others affected with glanders, and symptoms of farcy soon after shewed themselves; these yielded, however, to the ordinary remedies, and the animal's general health apparently returned.

A very severe day's hunt, in January last, was the precursor of an attack of influenza, from which she never perfectly recovered. Four or five days since an increased secretion of mucus was perceived to take place from the nostrils, which on the following day had become mixed with pus, and the lymphatics under the jaw were tumefied. On the third day the secretion from the nostrils was mingled with blood, the respiration much impeded, the membrane of the nose ulcerated, and the general appearance of the animal highly unfavourable. On the fourth day all the symptoms were aggravated, and no hope whatever of cure, or even relief, being entertained, the animal was destroyed.

The peculiarities that marked the case were the rapid development of the disease, and the quickness with which parts but comparatively lowly organized took on diseased action. The ethmoidal cells assumed a black appearance, and the turbinated bones were nearly destroyed; the membrane covering the septem nasi was considerably thickened and almost ulcerated; the frontal and maxillary cavities contained pus; and the lungs, although it could not be said that tubercles existed in them, nevertheless presented such an appearance as would warrant the assertion that this abnormal state would soon have been induced.

## MISCELLANEA.

### Condition of the Bloodvessels in an Inflamed Part.

*By* Dr. C. Bruch.

From a pregnant bitch, Dr. Bruch removed the left Fallopian tube and ovary, and closed the wound in the linea alba with sutures. During the first day the animal did not appear to suffer much from the operation; it lay quietly, and took food: but on the second day it vomited several times, and about noon was found dead, having lived from forty to forty-five hours after the operation. On examining the body directly afterwards, the wound in the skin was found almost completely closed by recent exudation, only a small point being left still open, and this was filled with pus. In the cavity of the abdomen several ounces of chocolate-coloured blood were found. This, under the microscope, presented unchanged blood-corpuscles, and numerous colourless finely granular globules, some of which, on the addition of acetic acid, shewed a large round body (nucleus) in their interior; while in others the acid brought into view two, three, or more small granules: the former were probably colourless blood-corpuscles; the latter more nearly resembled pus-corpuscles. The omentum had a dark-red fleshy appearance, was rolled up in the left hypochondrium, matted together, and adherent to the neighbouring intestines by recent exudation. In the situation whence the left ovarium had been removed was a small collection of pus. The peritoneum lining the abdominal walls had, for some distance around the wound, an intense red colour, from the injection of its bloodvessels, which were visible to the naked eye, and presented a remarkably tortuous appearance. It was not adherent to any part, and presented no exudation on its surface, which was tolerably smooth, glistening, and transparent, resembling much the appearances usually presented in the first stage of inflammation. A small portion of this injected membrane was placed beneath the microscope, and examined with a magnifying power of one hundred diameters. It shewed a dense network of bloodvessels, every branch of which

was filled with blood, while the majority of them presented also a singularly varicose appearance. Each such varicose vessel, when viewed in the midst of others, presented not merely a sudden aneurismal dilatation here and there on its walls, but a general widening of the tube, which extended for some distance: the vessel also presented a remarkably tortuous spiral form, shewing that it was not merely dilated laterally, but also increased in length. From the dilated parts fine vessels of an ordinary and uniform diameter and straight course proceeded; the varicose vessels also terminated in one or more fine ordinary branches.

This singular appearance of the bloodvessels is in close resemblance with that recently described by Hasse and Kœlliker as occurring in the vessels of mucous membranes affected with chronic inflammation; it is, therefore, not characteristic of chronic inflammation, neither is it peculiar to inflammation of mucous surfaces alone, but it is probably an attribute of inflammation generally. The reason why this condition of the vessels has not hitherto been found in acute inflammation, is because it probably only occurs at the stage preceding the occurrence of exudation; and the fact of Hasse and Kœlliker having observed it in chronic inflammation, may be explained by believing that the continuance of the inflammatory process after the first outpouring of exudation is nothing else than the continuance of the dilated state of the vessels.

In regard to the size and the nature of the dilated bloodvessels, Dr. Bruch's observations do not coincide with those of Hasse and Kœlliker. The latter observers are of opinion that it is the capillaries which are enlarged; but Dr. Bruch, from repeated measurements and the general appearance of the vessels, states that in his case the finest vessels were quite unaltered, while the dilatation was confined exclusively to what appeared from the thickness and structure of their walls to be the smaller arteries, or the capillaries of the second order as classed by Henle. From the fact, therefore, of the capillaries not being the vessels exclusively, or even chiefly, the seat of dilatation, it would appear, in Dr. Bruch's opinion, that the dilatation of the smaller arteries should be regarded as the primary and essential change occurring in inflammation. This view harmonizes with the hypothesis advanced by Henle, that the dilatation of the vessels in inflammation is due to

the influence of the nerves by which these vessels are supplied; for it is well known that the smaller arteries are provided with nerves, while the capillaries are not. Henle also believed that the minute size of the vessels in some tissues, as nerves and muscles, may be the reason why these tissues are so little liable to become the seat of inflammation. A fact observed by Dr. Bruch is somewhat in favour of this view; for he found, that although some parts of the muscular walls of the intestines were reddened from the vessels being injected, and from colouring matter having transuded their coats, yet none of the vessels presented the varicose appearance found in the vessels of the inflamed portion of the peritoneum.

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### Evolution of Electricity by Contact of different Metals with Organic Substances.

At a lecture delivered at the Royal Institution on May 20, 1848, Mr. Faraday performed a somewhat singular experiment in reference to the evolution of electric currents from metals. He connected a silver fork and a common steel knife by means of wires with a delicate galvanometer. He then placed the two metals simultaneously on a raw beef-steak, and on one which was dressed and sprinkled with salt. In both cases there was a very sensible deflection of the needle at the moment of contact; thus proving that, during the employment of these metals in the eating of food, there is a constant evolution of electricity and magnetism.

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### Comparative nutritive Powers of Green and Dry Fodder for Cattle.

Hitherto it was the received opinion that natural or artificial grasses, on their being converted into hay, lost a portion of their virtues. To determine the point, M. Boussingault fed a heifer alternately, for ten days at a time, upon green or dry food, and weighed the animal after each ten days. He found no difference in the average weights; and therefore comes to the conclusion, that the hay made from any given quantity of natural or artificial grass has the same nutrition as the quantity of green food from which it is made.

THE

# VETERINARY RECORD, &c.

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## A LECTURE

## ON THE GENERAL ANATOMY, PHYSIOLOGY, AND PATHOLOGY, OF THE DIGESTIVE ORGANS OF THE OX AND SHEEP.

*Delivered by* J. B. SIMONDS *before the Royal Agricultural Society of England.*

My Lords and Gentlemen,

AT the request of the Council of your influential and patriotic Society, I have the honour to address you this evening on a subject which is closely identified with the prosperity of agriculture, namely, the diseases of cattle and sheep. In the observations which I shall make, it will be my endeavour to use plain and familiar language, and to avoid as much as possible technical terms. If, however, I fail to do this, and should need your indulgence, I venture to hope that it will not be withheld; for my daily avocations ill adapt me to employ popular expressions in describing either the structure of a part or the nature of a disease.

Cattle pathology, like every other division of medical science, is so extensive, that many lectures are necessary to explain its leading peculiarities; and it is almost impossible to condense into one that amount of information which shall prove practically useful to those by whom this branch of medicine has never been investigated. In fact, great perseverance and research are required to understand the workings of Nature's laws, when any single organ becomes impaired. Hence those only who have by previous study made themselves conversant with the various tissues composing an animal body, are fitted to undertake the treatment of disease; and

not only is this knowledge absolutely needful to secure success, but equally so is an acquaintance with the functions of the different organs. Anatomy supplies the one requisite, and physiology the other; while, by a union of these sciences, a basis is formed, upon which is raised the practice of pathology, or the skill of repairing any defects in either the structure or function of the frame.

It will, therefore, be easily understood that the selection of a subject best suited for carrying out the wishes of your Council has been difficult; for I had to avoid discursiveness on the one side, and minuteness of detail on the other, and yet to speak of that which should be both interesting and instructive. After due consideration I have decided on confining my observations to that system of organs termed the digestive, and principally as developed in ruminating animals. With a view, also, to render my description better understood, I propose to divide the lecture into two sections; and, first, to explain the leading peculiarities of these viscera; and, next, the nature of some of their diseases.

The supplying of animals with suitable food, the knowledge of the way in which it is appropriated to the wants of the system, and of the ill effects arising from impaired digestion, are of the first importance to those who devote their time and their money to the fattening and rearing of our domesticated breeds.

The process by which the aliment is converted into flesh and blood is similar in all animals of the highest order, but is modified by the habits of the creature and the character of the food on which he subsists. Digestion may be said to be the chief means employed by the great Creative Power for the preservation of all beings, and upon it and assimilation health likewise mainly depends. For in proportion to the energy of digestion, so will be the purity of the blood; that fluid which carries, by its circulation through the heart, arteries, and veins, the elements of vitality, nutrition, and renovation, to every part of the body. One organ, therefore, has a mutual dependence on another, and each is so adapted that it may perform its function in the best possible manner. We have evidence of this wisdom of design in the various arrangements of the bones of the head, and in the attachments of the jaws in different animals: and as digestion begins in the

mouth, I shall first direct your attention to the peculiarities here met with.

The circumstance of some creatures living on food which others reject has influenced naturalists in placing them in different classes. Our domestic animals offer a sufficient illustration of this, as among them we find both vegetable and flesh eaters, and also those which partake of both these kinds of diet. The horse, ox, and sheep, are graminivorous; the dog and cat carnivorous; but the pig is omnivorous. We may also state that, in general, the stomachs are complex in the herbivora, simple in the carnivora, and hold a middle position in the omnivora. Many other particulars, besides the above-named, govern the arrangement of animals in groups or families; but it is unnecessary to occupy your time with an account of them, as a reference to the Table will shew each subdi-

ZOOLOGICAL ARRANGEMENT.

| Division. | Class. | Variety. | Family. | Order. | Tribe. | Genus. | Sub-Genus. |
|---|---|---|---|---|---|---|---|
| Vertebrata | Mammalia | The Horse | Ungulata | Pachydermata | Solipeda | Equus | Equus Caballus. |
| | | The Ox | Ungulata | Ruminantia | Bovidæ | Bos | Bos Taurus. |
| | | The Dog | Unguiculata | Carnivora | Digitigrada | Canis | Canis familiaris. |
| | | The Sheep | Ungulata | Ruminantia | Capridæ | Ovis | Ovis Aries. |
| | | The Pig | Ungulata | Pachydermata | Pecora | Sus | Sus domesticus |

vision. It must, however, be observed, that a separation of animals into vertebrate and invertebrate is the first grand division made by zoologists. The former class includes all that possess a chain of bones (vertebræ) extending from the head and forming a cavity through which passes the spinal marrow, or a continuation of the brain: the invertebrata are without these bones. The second separation consists of those which are furnished with mammæ, or teats; and it will be evident that such animals bring forth their young alive—are viviparous, not oviparous: fishes and birds thus belong to another class. The mammalia are numerous, and may be said to inhabit the water, the earth, and the air, of which we have examples in the whale, the horse, and the bat. All of them are warm-blooded, breathe atmospheric air, and possess lungs for the purification of the blood.

To return to the chief subject of this discourse. It has already been stated that digestion commences in the mouth, where important changes are effected in the aliment; the way in which our different domesticated animals collect their food, and convey it into this receptacle, first therefore demands our attention. The lips, tongue, and incisor teeth, are the organs principally employed for that purpose, and consequently they are more or less prehensile in all. The horse, when feeding on natural herbage, grasps the blade with the lips, and by them it is conducted between the incisors, which he employs for the double purpose of holding and detaching the grass, the latter action being assisted by a twitch of the head. The sheep gathers his food in a similar manner, but is enabled to bring his cutting teeth much nearer to the roots of the plants, in consequence of the upper lip being partially cleft. Hence the adage, that "the sheep will fatten where the ox will starve;" for the upper lip of this animal is thin, and possesses considerable mobility; while that of the ox is thick and hairless, and has a very limited action. The ox uses the tongue to collect his food. The organ, being protruded from the mouth, is so directed as to encircle a small bundle of grass, which is carried by it between the incisor teeth and an elastic pad placed opposite to them in the upper jaw: between these the herbage is pressed and partly cut asunder, its complete severance being effected by tearing. Most ruminants possess a great freedom of action in the tongue, of which we have a good illustration in the giraffe, when browsing.

The aliment being received into the mouth, is next conducted between the molar teeth, where it is subjected to a grinding process (mastication), during which it is also mixed with the fluid called saliva—in other words, it is insalivated. The action of the jaws in mastication differs even among vegetable feeders, arising from the peculiar attachment of the lower maxillary bone to the skull. This difference is most striking between ruminating and non-ruminating animals. In the ox, the mouth being slightly opened, the lower jaw is carried to one side, next elevated so as to approximate the surfaces of the molars, and then moved in the opposite direction, bruising the food between the teeth. This action, having commenced, is generally continued either from right to left, or *vice versâ*, depending on the will of the animal. A sepa-

ration of the jaws does not take place to the same extent in the horse, but the provender is comminuted by an alternate motion of the jaw from side to side. In the dog and the carnivora the lips are simply retractile, and the molar teeth are used for crushing only, there being no lateral action of the lower maxillary bone. The incisor teeth in this class may likewise be viewed as organs of prehension.

In the mammalia the teeth are situated in grooves formed in the bones which compose the mouth; in fishes they often occupy the upper part of the gullet, and are attached to the lining membrane of the oral cavity; and in the crustacea they are placed in the stomach. The gizzard of the fowl performs an analogous office to mastication in animals, its function being assisted by earthy matter which is swallowed by the bird.

We will add a few remarks on some of the leading peculiarities of the teeth. The incisors in the horse are twelve in number, arranged in two sets, six in the upper and six in the lower jaw: their faces, which are flattened, have an indentation (the mark), which affords evidence of the age of the animal. This hollow is surrounded by the central enamel, between which and the outer border of the tooth the dentine, or ivory, is exposed to attrition. The development of enamel in this situation tends to keep up an irregularity on the surface of the organ, by which its cutting property is preserved; for this substance possesses a far greater density than the other structures composing the tooth. The ox and sheep have eight incisors; they are situated in the lower jaw, and differ altogether in their shape from those of the horse: viewed in front they present a sharp edge, from which they slope inwards and backwards, giving them a scoop-like form. The edge is formed by enamel, which covers the dentine; its greater hardness causes the tooth to retain its original shape for some time, but long-continued wear renders it more or less flat, a condition which is indicative of advanced age. The early-formed teeth are temporary and small; they give place to a permanent and larger set at the period of adultism, when all parts of the frame are matured. Many of the rodents are said to change their teeth several times: the hare and the rabbit belong to this class. Most ruminants are devoid of tushes; the camel and some of the deer tribe are, however, exceptions. The molars of the horse,

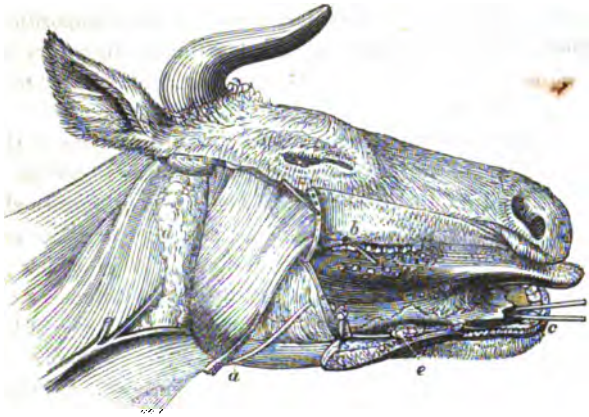
ox, and sheep, are twenty-four in number, arranged in sets of six on either side of each maxillary bone. Their composition and development are essentially the same, although they vary in size and form in each animal: it is, however, unnecessary to enter upon these details.

Mastication and insalivation are important processes in the digestive function, and any derangement of them is certain to be associated with impaired health. The saliva is furnished by a number of secreting organs (glands); the chief of these are the parotid, the submaxillary, and the sublingual, all of which are of large size in ruminants; besides which, in these animals we meet with a number of other glands, which receive the name of buccal, from being placed directly beneath the lining membrane of the mouth. Physiologists are divided in opinion with reference to them, some viewing them as salivary and others as mucous glands.

The quantity of saliva which is secreted is very considerable, and several pints may be obtained in the course of a few hours from even one of the parotids. The action of this fluid on the aliment is twofold—chemical and mechanical; by the first the food is rendered alkaline, and by the second soft and pulpy. The saliva is also viscid—a condition that depends on its being commingled with mucus, which is secreted by glandular structures that thickly stud the parietes of the oral cavity. We can only allude to the viscosity of the saliva, which serves, according to Liebig, an important use in the animal economy, by conveying oxygen, in the form of atmospheric air, into the stomach. *(The figure on the following page will explain the salivary apparatus.)*

In the ox and sheep the food undergoes but little preparation when first taken in, being quickly conveyed through the œsophagus (gullet) to the rumen, from whence it is subsequently returned for a second mastication. Deglutition or swallowing is a compound act, and may be divided into three distinct stages: the first of these is voluntary, the second but partly so, and the third altogether involuntary; the first conveys the food from the tip to the dorsum of the tongue, the second from thence to the pharynx placed at the upper part of the gullet, and the third from this to the stomach. The velum palati, or veil which guards the openings of the nostrils at the back part of the mouth, is large in the horse,

*Fig.* 1.




*a*, The Parotid Duct. *b*, Its Opening into the Mouth.
*c*, The Entrances of the Submaxillary Ducts. *d*, The Parotid Gland.
*e*, The Sublingual Glands.

and so situated as to direct the current of air, in ordinary respiration, through the nostrils. An equal development of this structure in the ox or sheep would interfere with the return of the ingesta from the pharynx in rumination, and consequently in them the veil is of smaller size, and takes a somewhat altered course; hence these animals are enabled to breathe both through the mouth and nostrils.

The entrance to the œsophagus is by the pharynx, which is defined by anatomists to be a funnel-shaped receptacle for the food, composed of several pairs of muscles, and lined by a continuation of the membrane of the mouth. The œsophagus may be viewed as a canal extending from the mouth to the stomach; being also constituted of muscular fibres, and lined with a mucous membrane. These fibres possess an action independent of the will, as is the case with all muscles belonging to organic life. Their arrangement varies in different classes of animals; but we shall speak principally of it as observed in ruminants. The œsophageal tube has a loose cellular connexion to the parts by which it is surrounded, so as to allow of its dilatation in the acts of deglutition and rumination. The muscular coat is composed of two orders of fibres, which partly decussate on each side of the canal, the internal layer thus becoming the external, and *vice versâ:*

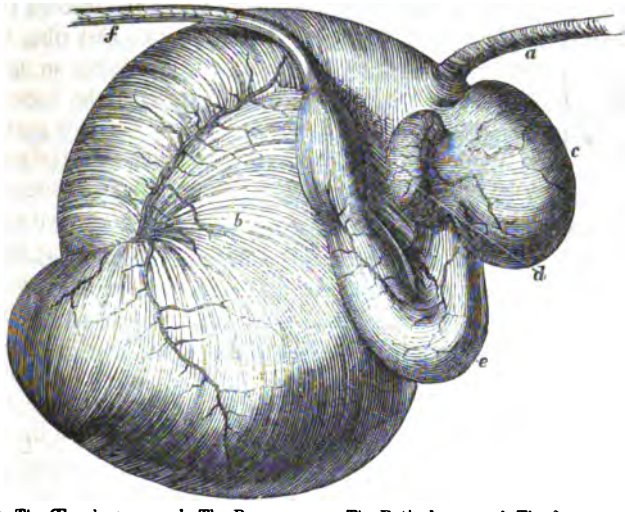
their leading arrangement may, however, be compared to two circular-shaped bands placed obliquely, the one within the other *(see diagram)*, by which an equal facility is given to their action when commencing at either extremity. In its course down the neck,

the œsophagus is situated more above the trachea than in the horse; it passes between the two first ribs, traverses the upper part of the chest, penetrates an opening in the diaphragm (midriff) termed the foramen sinistrum, and enters the anterior and superior portion of the rumen. At the lower end of the tube the outer order of muscular fibres is found to take a direction nearly parallel with its course, and to be reflected upon the rumen, blending with the external muscular layer of that viscus (see *a*, *Fig.* 4). The mucous lining membrane, to which we have before referred, lies in longitudinal plaits in a passive state of the œsophagus; an arrangement which allows of its being extended in the ascent or descent of the ingesta, for it is very loosely joined to the muscular coat. Between these two coats a considerable quantity of elastic tissue exists, which throws the membrane into the above-named folds after being upon the stretch, for of itself it is devoid of contractility and elasticity.

We proceed to a description of the stomachs. The size, shape, entrance into, and passage out of the stomach, are modified according to the nature of the food and the habits of the animal. As before observed, the organ possesses its simplest form in the carnivora, and its most complicated in the ruminantia. In vegetable feeders it is always more complex than in those animals that subsist on flesh, as a necessity exists for the aliment to be detained within it for a greater length of time. We have good evidence of this by comparing the stomach of the dog with that of the horse: in the former, the openings leading to and from the cavity are far removed, while in the latter they are situated close to each other; hence the ingesta has to travel nearly to the place where it entered before it can escape. This causes a longer retention and a more complete action of the gastric juice upon the ingesta, to prepare it for conversion into blood. In omnivorous animals, as the pig, the stomach is imperfectly divided into two or more compartments or pouches, an arrangement which allows certain qualities of food to be kept within it for a longer period. We

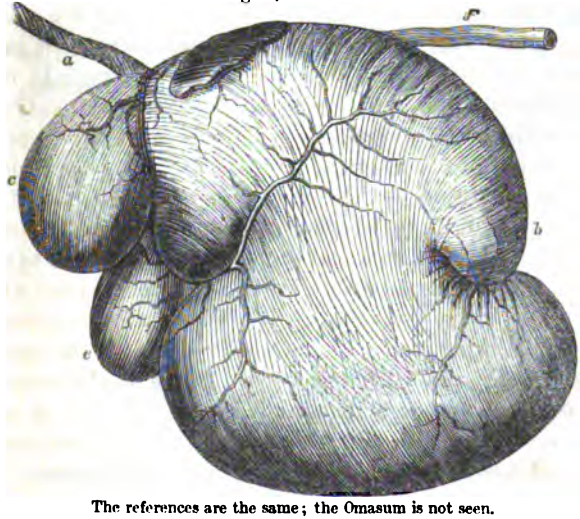
should also mention, that in the omnivora the mucous membrane of the œsophagus lines a small portion of the cardiac orifice of the organ; in the carnivora it ends immediately at the entrance

*Fig.* 2, Right View.




*a*, The Œsophagus. *b*, The Rumen. *c*, The Reticulum. *d*, The Omasum. *e*, The Abomasum. *f*, The Duodenum.

*Fig.* 3, Left View.

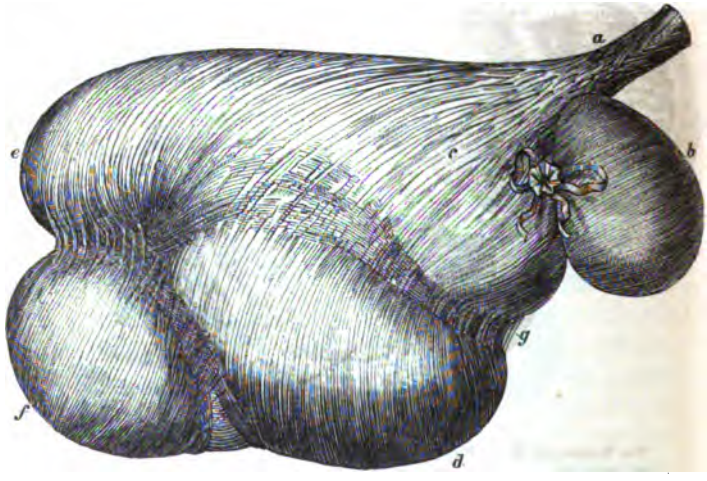



The references are the same; the Omasum is not seen.

of the tube; but *even in the simple-stomached* herbivora it extends over a large part of the cavity: the cause of this is evident when we look to the nature of the food on which these several animals subsist.

Our domestic ruminants offer a still more interesting field for investigation, as in them we find four distinct stomachs or receptacles for the aliment; of these one only is the true digestive organ. The names given to them are *the rumen* (paunch), *the reticulum* (honeycomb), *the omasum* (manyfolds), and *the abomasum* rennet); *Figs.* 2 and 3 represent the right and left view of the stomachs of the sheep, as seen *in situ*. The rumen is by far the largest of these viscera: it inclines to the left side, and occupies a considerable portion of the abdominal cavity, extending from the diaphragm in front to the pelvis behind. Like the other stomachs, it has three tunics or coats; the external being continuous with the ordinary serous lining of the abdomen: beneath this is placed the muscular coat, and on the inner surface the mucous, which is covered by a thick epithelium. The muscular coat is thicker in some parts than in others, and its fibres are crossed by strong fleshy bands, which divide the viscus into

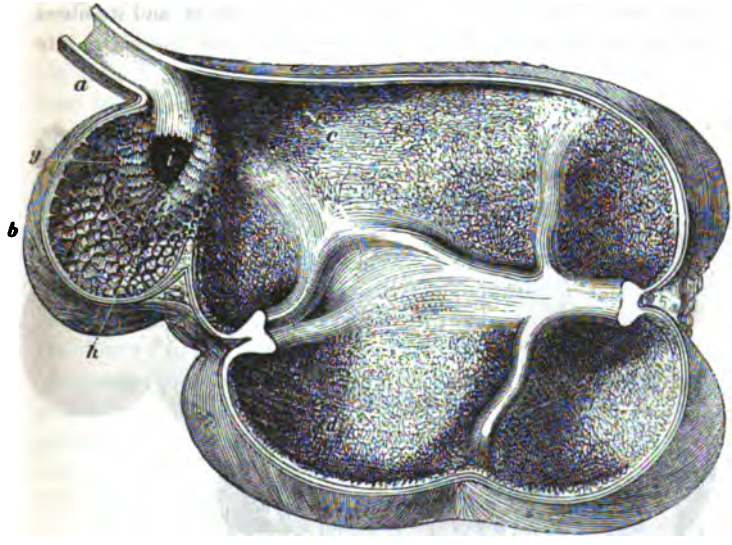
*Fig.* 4.




c, The Anterior Pouch. d, The Middle. e, The Postero-Superior.
f, The Postero-Inferior.

four pouches. The accompanying figure (4) of the external view of the rumen of the ox, as seen on the right side, where the bands are chiefly developed, shews the divisions; they are, however, better delineated in the subjoined sketch of the interior of the rumen and reticulum. The compartments serve for the retention of the food, which is thereby softened by exposure to the secretion of the organ; they also perform other important offices, which will be presently explained. The membrane which lines them is more or less papillated throughout, but particularly at the inferior part of each pouch; the bands, however, have comparatively a smooth surface, so that no additional mechanical impediment should interfere with the ready passage of the aliment from one pouch to the other. The function of the rumen will be better understood when the peculiarities of the reticulum have been pointed out. This viscus receives its name from the net-like structure of its mucous membrane. It is attached to the anterior

*Fig. 5.*




The Rumen and Reticulum laid open by removing the left side, while *in situ*.
*a*, The Œsophagus. *b*, The Reticulum. *c*, The Anterior Pouch of the Rumen.
*d*, The Middle. *e*, The Postero-Superior; *f*, The Postero-Inferior, Compartments.
*g* and *h*, The Pillars of the Œsophageal Canal. *i*, The Entrance to the Omasum.

part of the rumen, on the left side, and lies directly under the termination of the œsophagus. Its muscular coat is composed of two orders of fibres, the outer being arranged in a circular and the inner in a longitudinal direction, by which means the viscus is capable of being generally compressed. On exposing its interior, by cutting away the left side while *in situ*, two fleshy bands are seen leading from the termination of the œsophagus and winding through the cavity towards an opening which communicates with the omasum. These bands or pillars constitute the lateral boundaries of the œsophageal canal. (See *g* and *h*, *Fig.* 5.) The muscular fibres of which they are formed run parallel with their course, and, when in action, they must tend to approximate the entrance into the omasum to the termination of the œsophagus.

We proceed to make a few observations on the physiology of these two stomachs, it being generally admitted that they are chiefly employed in the act of rumination, although a difference of opinion prevails as to the manner in which this is effected. We have previously remarked, that the food when first gathered is but slightly masticated. This crude food in being swallowed proceeds from the gullet direct into the anterior division of the rumen, without entering the œsophageal canal, as has been described by most authors. Pellet after pellet is swallowed until repletion of the paunch is produced, when rumination usually commences. The act of rumination, although under the control of the will, is partly excited by the nature of the aliment and the amount of the distention of the paunch: it may be said to consist of the passage of a portion of the ingesta up the œsophagus, its re-mastication and insalivation, together with its re-deglutition. The prevailing opinion is, that the food passes from the rumen into the reticulum, where it is moulded into a small ball, and by an energetic contraction of that viscus is forced into the œsophagus; and that in its second descent, "either being of a softer consistence, or not being so violently driven down the gullet, or by some instinctive influence, it passes *over the floor of the canal without separating the pillars*, and enters the manyplus, or third stomach*." We do not agree with these statements, and are of opinion *that the food in its second descent goes into the rumen; and also that it is propelled directly by this viscus into the gullet to be re-masticated.*

* Youatt on Cattle, p. 432.

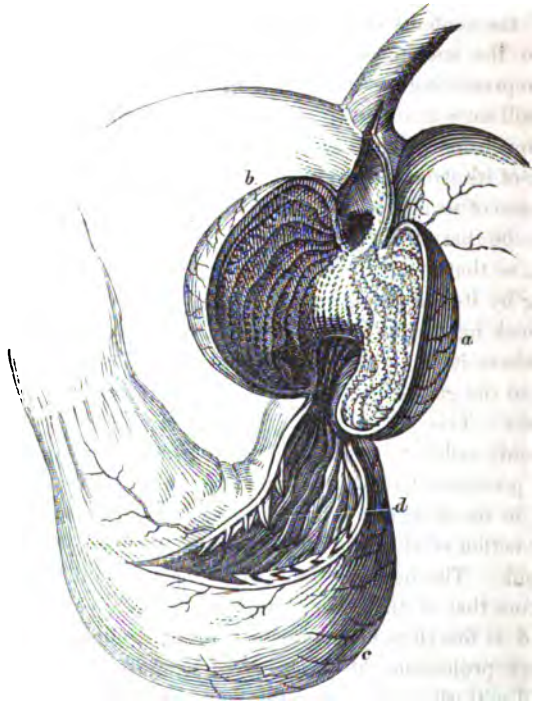
Thus we ascribe the same function to the rumen which is said to belong to the reticulum. The situation of the second stomach must interfere with its supposed property of propelling upwards the pellet, for it is placed nearly at a right angle with the course of that tube. This objection does not apply to the anterior division of the rumen, which we believe to be the part from whence the food is ejected. The muscular coat is thicker here than elsewhere, and its fibres are continuous, as before remarked, with those of the lower part of the œsophagus; besides which we find them implanted into a strong fleshy band, which crosses the viscus in such a direction that it serves as a fulcrum from which they can act. (See *g*, *Fig.* 4.) Thus we see that, even upon mechanical principles, the rumen is adapted for this *special* purpose. If the *re-masticated food* descended directly into the third stomach, we should expect to find that organ of a proportionate size to contain as much as would undergo the process during at least one rumination; for all authors agree that the food is detained for some time in the omasum, and it is well known that an ox will continue to ruminate for upwards of an hour. The omasum, however, in this animal, is far too small for such a purpose, and in the sheep it is relatively smaller. If also it be true that such aliment does not pass into the rumen, "because it is less irritating to the pillars of the canal," then *prepared* food, as soft mashes, &c., ought when *first* swallowed to enter the omasum, and fluids would also take the same course, whereas we have many proofs, afforded by experiments, that these find their way into the first and second stomachs. Besides which, the pillars do not form "the *floor* of the œsophageal canal*," as stated by Mr. Youatt and others, but *the sides* of the channel; and *if they are placed in contact, then there is no passage or duct behind them:* in short, the errors of description have arisen from studying these structures on the dissecting-table alone, and not in their natural situation. Our opinion of rumination receives further confirmation from the fact that many ruminants, of which the camel is an example, do not possess a reticulum; therefore in such animals the rumen must propel the ingesta upwards. We could advance many other facts to negative the general belief, but it is unnecessary to do so on this occasion. It may be asked, what function we ascribe

* Cattle, p. 427.

to the reticulum? We answer, that it supplies the third stomach with aliment suited for digestion: this it receives from the rumen by the ordinary peristaltic action that is continually going on in that viscus, and passes it at intervals through the aperture situated at the inferior part of the œsophageal canal. (See *i*, *Fig.* 5.) And we are further of opinion, that the before-mentioned pillars perform an office analogous to a sphincter, by drawing the opening which communicates with the omasum towards the œsophagus, and thus close it against any coarse or indigestible matter that is presented by the reticulum.

The omasum (see *a*, *Fig.* 6) is situated to the right of the paunch, and is the medium of communication between the second and the

*Fig.* 6.




*a*, The Omasum, cut open to shew its folds, &c.
*b*, The Opening communicating with the Reticulum. *c*, The Abomasum, or true Digestive Stomach. *d*, The Villous Membrane of the Abomasum, which is also plicated.

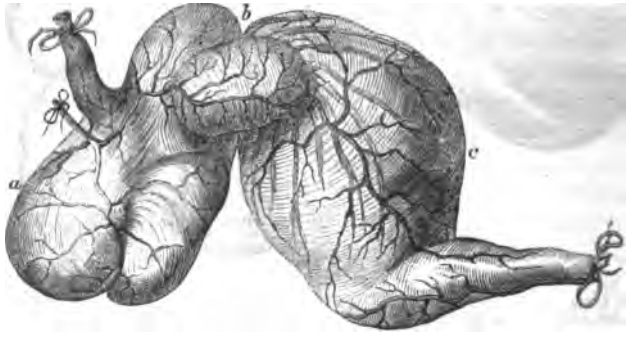
true digestive stomach. Its ordinary name, *manyfolds*, is given to it from the lining membrane being plicated. The plaits vary in length, and follow no definite arrangement with reference to the dimensions of those which are placed side by side: their number also differs in different animals; from 80 to 100 are usually found in the ox, but rarely more than 50 in the sheep. At the entrance next to the reticulum they spring from, or are condensed into, six or eight prominent ridges, which evidently divide the current of softened ingesta as it flows from that viscus, and thus disperse it between the multiplied folds.

The function of the omasum has been compared to the gizzard of the fowl, but improperly so in our opinion, for its muscular coat is so slightly developed that it is impossible for it to exert any triturating effect on the aliment; and the altered and varied condition of the contents of the stomach, as we believe, depends entirely on the amount of fluid secreted by it. A reference to *Fig.* 7, representing the stomachs of the calf with the vessels injected, will shew that the omasum, *b*, receives a large quantity of blood—much more than can possibly be required to maintain the integrity of its structure, and, consequently, this must be sent for the purpose of secretion. We therefore regard the function of the organ to be that of effecting the retention of the food by its mechanism, so that it may undergo a more complete maceration and softening by its secretion prior to entering the abomasum. The food, which has passed the first three stomachs, now enters the fourth, where it is subjected to the action of a particular solvent fluid called the gastric juice, by which it is converted into a chymous mass. This viscus, which is marked *c* in *Figs.* 6 and 7, is commonly called the rennet, probably from the circumstance that the preserved fourth stomach of the calf is used to coagulate the milk in the making of cheese: a fact which is referrible to a chemical action of the acid of the gastric juice upon the casein of the milk. The internal tunic of the abomasum differs altogether from that of the other stomachs: it has a velvety appearance, and is therefore designated a villous membrane. The villi or shaggy projections of which it is composed are intimately connected with the secretion of the fluid referred to. The membrane lies principally in folds, most of which run parallel with the length of the organ; at its entrance, two of them are so

adapted as to prevent a regurgitation of the contents, and at the extremity, which communicates with the intestinal canal, they take an irregular course across the short diameter of the stomach. The abomasum is largest at its commencement, and gradually diminishes towards its termination; it also turns upon itself, taking an upward direction (see *c*, *Fig.* 6), and thus are formed its greater and lesser curvature. The peculiar arrangement of the lining membrane, besides affording a large extent of surface for secretion, seems likewise to be well calculated to assist mechanically the passage of the chyme into the intestines; as the cross ruge at the pylorus tend to support the weight of the mass passing through it, while the longitudinal plaits present no obstacle to its progress.

Digestion is mainly, if not entirely, a chemical process, in which the hydrochloric and acetic acid of the gastric juice play the chief part. To enter fully into this subject would divert us from our project, and therefore we proceed to speak of the changes effected in the intestinal tube on the chymous matter. We will first, however, make a few observations on the development of the stomachs of the calf during the period of lactation. These viscera present a striking contrast with the fully formed stomach of the adult ruminant, for we find the abomasum to be the largest, and to be the only one actively employed at that time. This arises from the fact that the milk requires no preparation to suit it for digestion, and, consequently, it passes directly from the œsophagus into the fourth stomach. Its conveyance into this organ is effected by

*Fig.* 7.

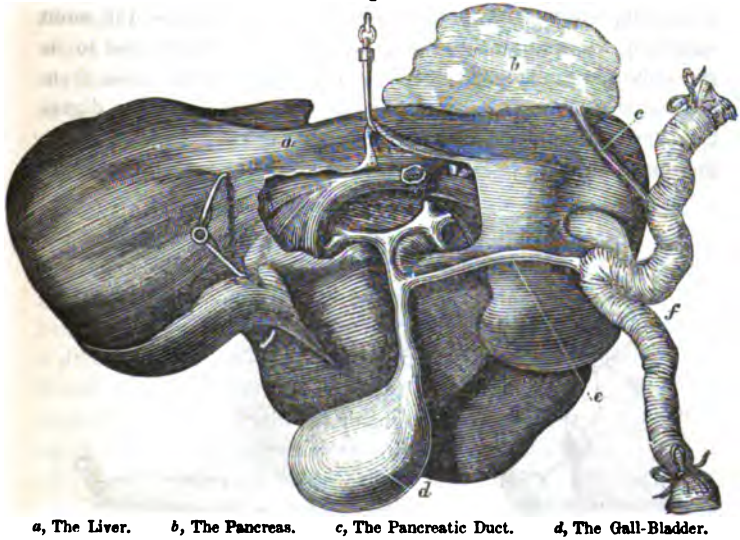



*a*, The Rumen. *b*, The Omasum. *c*, The Abomasum.

the muscular pillars of the œsophageal canal, which incontrovertibly proves that their function is to draw the opening of the third stomach towards the termination of the œsophagus, and in doing this they also approximate the entrance of the abomasum to the same part; as in the young animal the opening may be said to be common to both these stomachs. The annexed sketch (*Fig.* 7) will shew some of the peculiarities here pointed out.

The aliment, having been sufficiently acted on by the gastric juice, enters the first intestine, *the duodenum*, where it undergoes the process of chylification, by which its nutritious parts are separated, and further prepared for the support of the animal. Chylification is effected by the commingling of two particular fluids with the chymous mass, and, like digestion, is essentially a chemical action. The fluids producing this important change are the bile and the pancreatic juice, the former of which is secreted by the liver, and the latter by an organ called the pancreas. These secretions find their way into the duodenum by the excretory ducts of the two glands, but their course and termination differ in the several animals we are describing. In the ox, as seen in

*Fig.* 8.




*a*, The Liver. *b*, The Pancreas. *c*, The Pancreatic Duct. *d*, The Gall-Bladder. *e*, The Biliary Duct. *f*, The Duodenum.

the foregoing figure, the biliary duct, *e*, enters the intestine at some distance from the pancreatic duct, *c*. In the sheep the pancreatic joins the biliary tube before the latter penetrates the duodenum, and in the horse and the pig the two enter close to each other. These facts are difficult of explanation, but of great importance to the comparative physiologist. It is also worthy of note, that some animals possess a receptacle for the bile, called the gall-bladder, *d*, while it is wanting in others. As a rule, it is not met with in the pachydermata, of which fact the horse is an example, and the pig an exception. The carnivora possess it, and it is generally present in the ruminantia, but is wanting in the camel and the deer tribe.

As before stated, the secretions of the liver and pancreas produce a separation of the chyle from the ingesta; this is precipitated upon the villous membrane of the intestines, from whence it is removed by a particular set of absorbent tubes (the lacteals) into the general circulation. These vessels are represented as lines crossing the mesentery (*Fig.* 9 and 10): they receive their name from the milky appearance of the chyle. In their course many of them enter the mesenteric glands (see *g*, *Fig.* 9 and 10), where the chyle is further elaborated. The lacteals unite with each other, and ultimately form three or four ducts, which empty themselves into a cavity situated near to the spine, termed the *receptaculum chyli*. From this receptacle the fluid is conveyed by a canal, which, passing through the chest, receives the name of the thoracic duct, into the left jugular, or sometimes into the left axillary vein, where it is commingled with the blood.

We observed at the commencement of this lecture that the blood carries by its circulation the elements of reproduction and nutrition to every part of the body; it is, therefore, evident that it must suffer loss, and we have now seen how this is compensated by the food on which the animal subsists. To preserve health it is of the first importance that good and nutritious diet, such as will neither cloy the appetite nor impair the digestive process, should be given to all animals, for, without due attention to this, disease will be a certain result. The wants of the system are recognized by two sensations, hunger and thirst; the first gives evidence of the loss of nutrient matter, and the second of the requirement of fluid.

Hunger may be said to have its seat in the stomach, and thirst in the throat. Where health is the object, both should be satisfied, but neither indulged. Excess of nutriment accumulates in the form of fat, but fat animals are on the brink of disease. The inhalation of pure air is of equal importance to the taking of proper food, for the blood constantly requires purification as well as supply: this is effected by respiration, which, like digestion, is also a chemical process. We must not, however, enter upon this subject, but return to our description of the intestines.

The intestinal canal, although continuous, is divided into six sections: these are generally spoken of as distinct intestines, and named, *the duodenum*, a; *the jejunum*, b; *the ileum*, c; *the cæcum*, d; *the colon*, e; and *the rectum*, f. They admit, likewise, of a separation into large and small; the first three belong to the latter, and the last three to the former division. These viscera vary in length, even in animals belonging to the same class, and are relatively longer in the sheep than in the ox. They are longest in the herbivora, shortest in the carnivora, and hold a middle position in the omnivora. In the horse the disproportion between the large and small bowels is very great, but in the ox, sheep, and pig, this is not the case. Like the stomachs, they have three tunics or coats: an external or serous, which secretes a fluid to prevent attrition in their movements; a middle or muscular, which maintains the peristaltic action; and an internal or villous, which promotes the absorption of the nutrient matters passing within them. As chylification is effected in the duodenum, this leads to the chyle being chiefly absorbed from the small intestines; and hence we find them thrown into countless convolutions, of which the sketches on the following page furnish an illustration.

*Fig.* 9 gives a view of the intestines of the ox as seen on the right side; and *Fig.* 10 those of the sheep on the left side: the references are the same in both. *a*, The duodenum; *b*, the jejunum; *c*, the ileum; *d*, the cæcum; *e*, the colon; *f*, the rectum; *g*, the mesenteric glands, with the lacteals passing to and from them. The large intestines receive the ingesta, from which the nutriment has been extracted, and from them absorption of ordinary fluids takes place; the dryness of the fæculent matter will

*Fig.* 9.

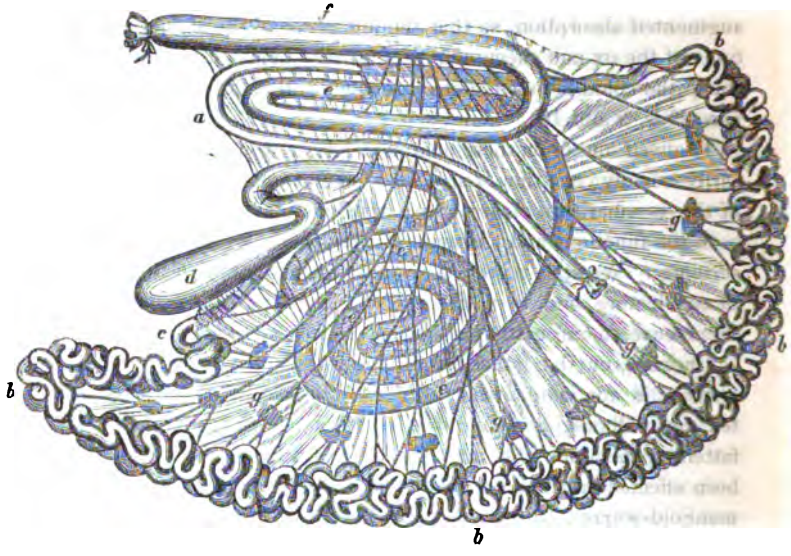
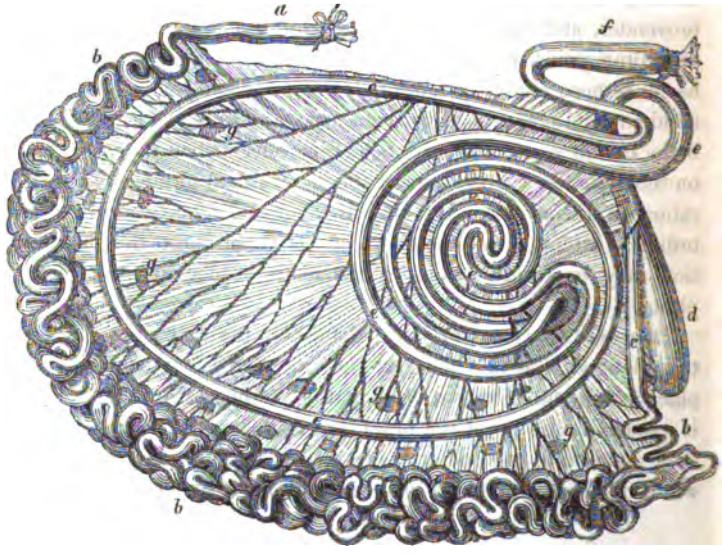



*Fig.* 10.



consequently depend on their length and the amount of fluid which is removed. Increase of length leads to retention, and this to augmented absorption, so that the difference of the alvine evacuations of the ox and sheep admits of an easy explanation, for in the sheep the colon is much more convoluted than in the ox (compare *Figs.* 9 and 10).

To dwell longer on these anatomical facts would be to unnecessarily occupy your time, our object being to give a mere outline of the peculiarities of structure, that you may better understand both the functions and diseases of the organs we have been describing. We will, therefore, proceed to the pathological division of our lecture, and first speak of an accident of very frequent occurrence among cattle and sheep, namely, Choking.

Choking, or the impaction of a foreign substance in the œsophagus, is common among oxen, more especially when they are fed on bulbous roots; a practice which is usually adopted in fattening them for the market. The improvements which have been effected in the construction of machines for cutting turnips, mangold-wurzel, &c., have materially diminished the number of these accidents; nevertheless from time to time they occur, and are attended with serious consequences. Although most cases of choking depend more on the preparation than on the kind of provender, still many arise from a habit that some oxen acquire of feeding greedily, and badly masticating their food. An ox that has once been choked is more liable to a second occurrence of the accident, and practical feeders of cattle are well aware that some bullocks will very frequently choke themselves when they are kept on tuberous roots. In cases of this description, although an operation is seldom necessary, still the animals require more than ordinary attention, for their own efforts to dislodge the obstruction may be fruitless, and, consequently, suffocation may take place.

There are two parts of the gullet where the root is most likely to be lodged, the one being at the origin of the tube from the pharynx, the other near its termination in the rumen. If the root is impacted high up, it is a proof that it is large, and great care is then required in our operations to remove it. Very large portions will rarely pass beyond the pharynx, and under such circumstances

no attempt should be made to force the root downwards, for the œsophagus would assuredly be lacerated. In these cases the hand should be passed into the mouth, and carried backwards sufficiently far to lay hold of the root and draw it out, using as a protection to the arm a gag similar in form to an ordinary balling iron. When this proceeding is impracticable, an instrument consisting of spring forceps concealed within a hollow bulb, from which they can be thrust at pleasure, may be employed. In these operations an assistant is especially required, who should grasp the throat a little below the impacted substance and press it towards the operator.

The distress exhibited by the animal, as well as the danger, is always in proportion to the size of the offending mass and its situation within the gullet. When high up, the symptoms usually are, frequent cough; quick and laboured breathing; painful expirations; extended head; frequent eructations; discharge of viscid saliva; efforts to regurgitate; tympany of abdomen on the left side, accompanied with great uneasiness; acceleration of the pulse, &c. The patient rarely lies down, or experiences any relief until the obstruction is displaced; but, on the contrary, the pain becomes increased, the abdomen more distended, and the respiration difficult; in which condition he staggers to and fro, falls, and dies from suffocation.

When the impacted substance is situated low down, there is less discharge of saliva, rarely any cough; the tympany is slight, and the breathing but little disturbed. The animal separates himself from the herd, is disinclined to move, stands poking the head, and making repeated attempts to regurgitate, which are associated with eructations.

The amount of danger may mostly be calculated by the abdominal distention, for death results from the lungs being unable to expand, in consequence of the pressure of the rumen against the diaphragm. In many cases, therefore, prior to unchoking the patient, the gaseous compounds which are disengaged from the ingesta and distend the rumen must be given an exit to, by puncturing that viscus, to prevent suffocation. The instruments employed for unchoking consist of a probang and a gag; the latter of these is to be placed in the mouth, as shewn in the following

sketch (*Fig.* 11). The probang, being also held as represented, is to be passed through the opening in the gag, and carried carefully over the dorsum of the tongue into the pharynx, and from thence pushed onwards until it reaches the root. Sufficient and well-regulated pressure is now to be made, until the obstruction yields, when it is to be driven by the instrument into the rumen. Care should always be taken *to propel the root into the first stomach*, and we should never rely on the power of the œsophagus to do this after we have succeeded in removing it from its original situation. Want of attention to this simple rule has often caused protracted suffering to the animal, and not unfrequently his death. The probangs in ordinary use are seldom of sufficient length, nor are the bulbs with which they are tipped of a proper shape: the instrument should not be less, for a moderate sized ox, than six feet and a half long, and the bulbs should be large and slightly cup-shaped. In selecting probangs, avoid those which have conical formed bulbs, for they are likely to pass by the side of the root, and force it through the coats of the œsophagus.

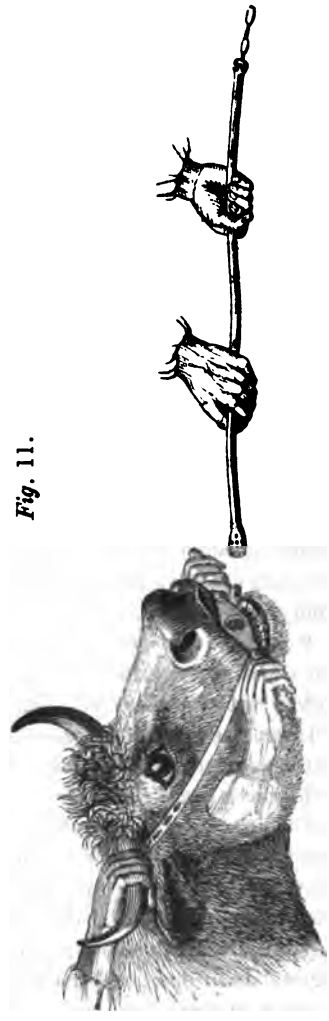


*Fig.* 11.

The operator should always proceed steadily, and not go hastily or roughly to work; for with the greatest care the gullet will some-

times be injured, and the animal be rendered nearly valueless. The relief which immediately follows the removal of the root affords the best evidence that no injury has been done, for, should the patient experience but little mitigation of the symptoms, or should the instrument when withdrawn be found to be tinged with blood, we have sure proofs that the œsophagus is lacerated. Under such circumstances it is better to destroy the animal, for, although slight lesions of the gullet will heal, still even these are generally followed by stricture.

Two assistants, at least, will be required in all cases of choking: one of these should be placed on either side of the animal, holding the handle of the gag, which protrudes from the side of the mouth, with one hand and the opposite horn with the other. They must also keep the head elevated, so as to bring it as near as possible in a straight line with the neck (see *Fig.* 11). Some practitioners drench the patient with oil prior to using the probang; we, however, object to this as being not only unnecessary, but likely to cause mischief by the fluid passing into the windpipe, and for the same reason we condemn the common practice of dosing a choked beast with salt and water, and other irritating agents. Cases offering more than an ordinary amount of resistance should be committed to the care of the veterinary surgeon, who will adopt many expedients which we cannot speak of in a lecture of this description, our chief object being to lay down simple and broad rules for your guidance.

We will now offer some remarks on Acute Tympanitis, or, as it is generally called, Hove. This disease may occur at any perod of the year, if cattle are subjected to a sudden alteration of diet; it however takes place more often in the spring and autumn. Oxen after confinement to the straw-yard during the winter months will be found, if at once they are turned into luxuriant grass, to greedily devour the herbage; over-distention of the rumen is thus produced, which is quickly followed by tympanitis. A similar derangement of the digestive function will likewise happen when cattle are first put to turnips in the autumn. One or other of these circumstances is the more frequent origin of the affection, and therefore greater care should be exercised in the management of the animals at these particular times.

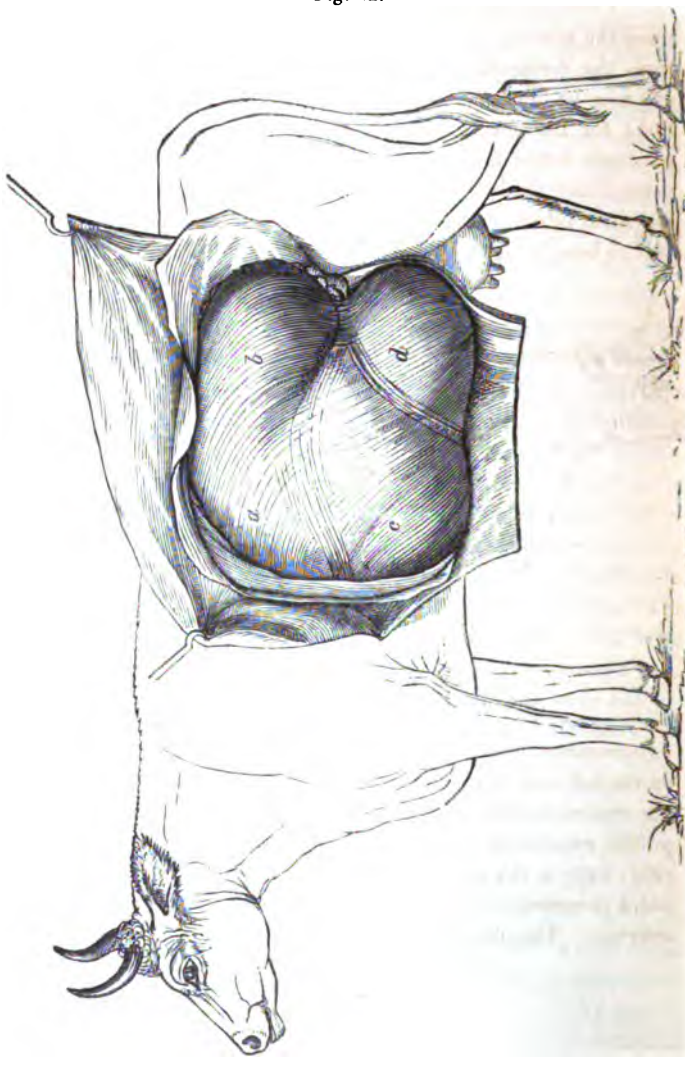
Rapid gathering of the food is necessarily associated with both imperfect mastication and insalivation, and, besides these causes of impaired digestion, the sudden repletion of the rumen weakens or suspends its ordinary peristaltic action; hence the aliment goes into a state of fermentation. Or we may explain the phenomenon by saying, that, the laws of vitality being interfered with, those of chemistry come into operation, when gaseous compounds are eliminated from the ingesta which is contained in the first stomach, instead of its being therein prepared for digestion. The increased susceptibility of cattle to "hove," if turned out while the dew is on the herbage, has led to the affection being called "dew-blown," "fog-sickness," &c. Benefit not unfrequently results from the application of these popular names, for agriculturists learn thereby the necessity of keeping their oxen from the pastures until the sun's rays have dissipated the dewy mist of the previous night.

Investigation into the nature of this disease unfolds the plan of successfully treating it; and perhaps in no other instance have we a more convincing proof of the advantages which spring from the application of the science of chemistry to pathology. Hove is sudden in its attack, and speedy relief must be afforded, or the patient will be lost. The fermentation which the food undergoes is facilitated by the heat and moisture to which it is exposed while in the rumen, as well as by the causes previously alluded to. The gaseous compounds produced by the fermentative process vary according to its duration; at first carbonic acid gas is evolved, but in a short time this product gives place to carburetted and sulphuretted hydrogen gases. We learn from this fact, that the neutralizing agents must be selected with reference to the time which has elapsed since the attack. The preparations of ammonia, of which the aromatic spirit is the best, will effect the desired object at the commencement; but these should never be given in a protracted case, as they would then aggravate the evil. The compounds of hydrogen are effectually neutralized by chlorine, which agent can be easily and safely exhibited in the form of chlorinated lime.

The dose of the ammoniacal compound will range from one to three ounces, and of the chlorinated lime from two to four drachms; a small quantity of water should be added to these medicaments, prior to either of them being administered. No

delay should take place in adopting the necessary treatment, or the patient may be lost, for death in this disease, as in choking, is caused by suffocation. The inertia of the coats of the rumen, which has been previously described, will sometimes yield to such stimulants as the tincture of ginger, &c., but these remedies ought not to be alone depended upon, for they possess no specific pro-

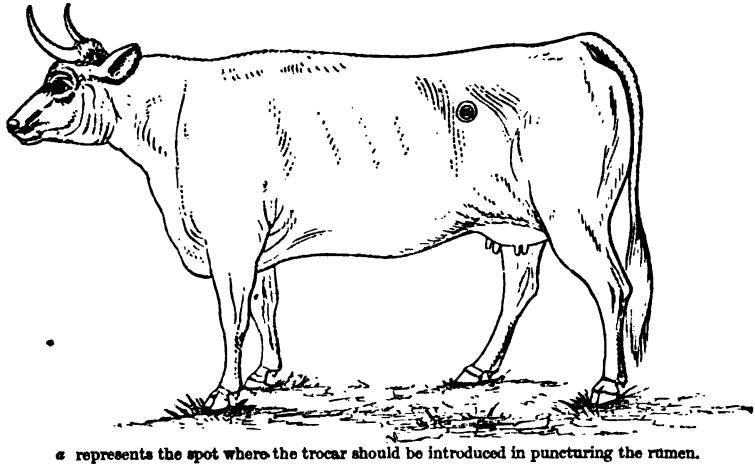
*Fig.* 12.



perties to stop the fermentative process. In conjunction with chemical agents they may be employed with great advantage, as they assist in dispelling the gas by rousing into action the muscular coat of the rumen.

To give immediate relief in tympanitis, the operation of paracentesis (puncturing the rumen) is had recourse to, and often with great benefit. Occasionally, however, but very little gaseous matter escapes through the opening, a circumstance that depends upon the non-separation of the gas in a large and distinct volume from the fermenting ingesta. Notwithstanding but very little gas may be liberated, still an advantage is gained by the operation; for the sheath of the instrument employed in making the puncture forms a ready and convenient passage through which neutralizing fluids may be injected into the stomach; thus bringing them into immediate contact with the ingesta. It is important to bear in mind that the operation should always be performed

*Fig.* 13.



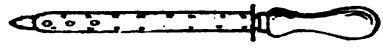
*a* represents the spot where the trocar should be introduced in puncturing the rumen.

on the left side of the animal, in consequence of the inclination of the rumen to that part of the abdominal cavity. The sketch in p. 326 exposes to view the first stomach in its natural situation (*Fig.* 12): *a*, the anterior pouch; *b*, the postero-superior, *the one which is opened in these cases*; *c*, the middle; and *d*, the postero-inferior. The place of puncture is represented in *Fig.* 13: it is

situated midway between the last rib and the hip, or the anterior spinous process of the ileum, and rather more than a hand's breadth below the transverse processes of the bones of the loins.

The instrument employed is called a trocar (see *Fig.* 14); it consists of a stilet, having a lancet-shaped point, and a canula or sheath. The stilet should be about six inches in length, and when placed within the canula it should protrude about three-fourths of an inch; its diameter may vary from three-eighths to half an inch. In performing the operation, it is best to first puncture the skin with a lancet; which having done, insert the point of the instrument in the wound, *and thrust the stilet covered by the sheath inwards and slightly downwards*, using sufficient force to penetrate the coats of the rumen; afterwards withdraw the stilet, leaving the canula in the situation. The canula is to remain until the gas has escaped, when it is to be removed, and the edges of the wound in the skin brought together by a stitch of strong silk. The subsequent treatment of the patient must be regulated according to the amount of the constitutional disturbance: in the majority of cases a strict attention to the quality of the food, and taking also especial care that the quantity is restricted, will be all that is necessary to restore the animal to health. In other instances aperient medicine, followed up by febrifuges, will be required, or a blood-letting may be necessary if the symptoms denote the existence of inflammation. But such cases ought to be confided to the care of a veterinary surgeon.

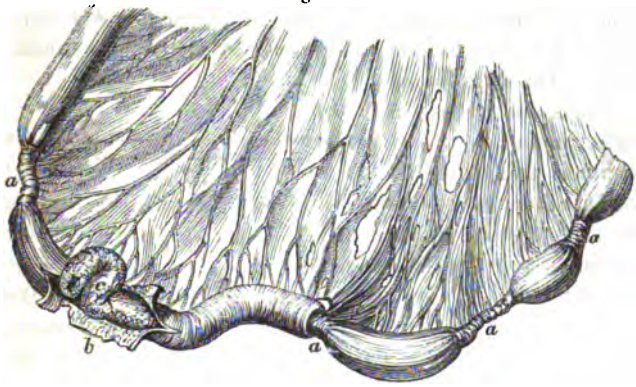
*Fig.* 14.



Having already exceeded the limits of an ordinary lecture, and trespassed far too long on your valuable time, I will, in conclusion, make a few observations on Spasmodic Colic, a disease that is ordinarily called Gripes; and it is the more necessary to do this, for this affection is frequently mistaken for some others of a very different character. Spasm in the horse is chiefly confined to the small intestines, and it may be said to essentially consist of an abnormal or inordinate contraction of the muscular coat of these viscera. In the ox and sheep, in addition to the liability of the intestinal canal to be affected, the muscular fibres of the stomachs,

more particularly the first, are occasionally the seat of the disease. The annexed sketch (*Fig.* 15) will illustrate the condition of the

*Fig.* 15.




*a*, Contracted or diseased portions of the bowels. *b*, a portion slit open to show, *c*, the part which is intussuscepted.

bowels when attacked with spasm; and also shew a common result of the disorder, namely, intussusception, or the passage of one portion of the bowel within another.

We have before alluded to the peristaltic action which continually goes on in the intestines to effect the removal of the effete matter. In spasm this motion, although interrupted, is not suspended, and the abnormal contraction of the canal diminishing its caliber, the part is thus pressed within the dilated portion, and strangulation ensues. Intussusception would be an almost invariable consequence of this disorder were it not that the mesentery, which attaches the intestines to the spine, also limits their motion. Nevertheless, when once invagination takes place, it gradually increases; the mesentery tears, and several feet of the bowel will then become impacted—a circumstance that is always attended with an aggravation of the patient's sufferings, ending in death. Oxen and sheep are less prone to intussusception than the horse, for in them the mesentery is shorter, and so arranged that the intestines can scarcely be strangulated in this manner.

The causes of spasm are various, and among the principal may be named the drinking of a large quantity of cold water when the body is heated; the partaking of coarse indigestible provender; over exertion, more especially when the stomach is loaded

with food; and checked perspiration by exposure to a low temperature or storms. The attack is generally sudden, and there are seldom any premonitory symptoms. In the horse the indications of the existence of the disease are crouching; throwing the body on the ground; rolling when down, quick rising; curling the tail; stamping and pawing with the fore feet; striking at the belly with the hind ones; turning the head to the flank, &c. Neither the breathing nor the pulse is, however, much disturbed, except during the paroxysms; and it is also a peculiarity of the disorder that it is marked by intermissions of the sufferings. Besides intussusception, spasm is very likely to terminate in inflammation of the bowels, when all the symptoms are increased in severity; the pulse rises and becomes thready, the artery feeling like a vibrating cord beneath the fingers; the breathing is increased; perspirations bedew the body; the intermissions cease; and the vital powers are gradually but speedily exhausted. Want of attention to a change in the symptoms has led to many a valuable animal being sacrificed, because the medicinal agents which are best calculated to remove spasm will be productive of great mischief if given when inflammation is present, by adding to the morbid action which is going on. It is, therefore, apparent that cases of gripes, if not quickly yielding to the ordinary remedies, should immediately be placed under the care of a skilful practitioner, who alone is capable of deciding on the plan of treatment which is necessary to be adopted. I would wish to impress this forcibly on your minds, for, were I to attempt to give you instructions with reference to the treatment of inflammation of the bowels, I feel that I should be doing that which would be positively injurious to your interests. No one excepting those who have made the diseases of the lower animals the subject of their study, should ever undertake the management of such cases. With regard to spasmodic colic, it is to be remembered that it is not an inflammatory disease; even bleeding, therefore, although it is a powerful relaxer of spasm, is not absolutely required under such circumstances; but when inflammation exists, this must be our chief remedy. Stimulants are admissible in the one disease, but highly prejudicial in the other. One of the best formulas to be administered in spasmodic colic is composed of ol. tereb. ℥ij, spts. æther. nitric. ℥j, et tinct. opii ℥j. This should be given

early, and repeated in about an hour if relief is not obtained; after which a continuance of the pain would point out the necessity of calling in the aid of a veterinary surgeon. As an adjuvant, friction to the abdomen should be employed; and the animal's comforts attended to as much as possible, by placing him in a roomy and well-littered stable or shed, where he can sustain no injury in his struggles during the exacerbations of the malady.

And now, having endeavoured to communicate to this Meeting some information on the structure, functions, and diseases of very important organs of the body, I would, while I offer to you my best thanks for your kind attention to my imperfect observations, venture to hope that a spirit of inquiry will be awakened on this subject; for by it each will gain something, and the grand object which this noble Society labours to accomplish, namely, to blend "practice with science," will be likewise promoted.

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## On the Action of Purgative Agents.

*By* W. J. T. Morton.

As there are but few medicinal substances from the use of which, in the hands of the educated and professional man, greater good has resulted than purgatives, so there are but few which have been more abused by the ignorant pretender.

It is true the veterinary surgeon does not multiply his remedies for the sake of numbers merely. He has but little to do with the "fashion of physic," since his patients are not the subjects of caprice and fancy; the satire, consequently, falls pointless against him, that "physic is the art of amusing the patient while Nature cures the disease." Yet does Nature, even among his patients, at times effect this desired end altogether without his aid, and sometimes, too, despite the checks he unwittingly gives her.

His duty being carefully to watch her efforts, and timely to aid and assist her, the necessity is thus shewn of his being conversant with the action of therapeutic substances, which, as well chosen missiles, he can resort to the employment of when the citadel is invaded by the many-headed hydra Disease.

There may, however, be an evil in the use of too few agents,

since it is well known that no two medicines produce the same kind of action by precisely the same means; hence the advantages that result from the judicious combination of medicines, and a knowledge of the laws that obtain here.

These observations have been elicited by the perusal of a paper read before the Academy of Sciences, Paris, by M. Mialhe, titled "THEORETIC AND PRACTICAL RESEARCHES ON PURGATIVES," and recently published in the "PHARMACEUTICAL TIMES." Of it the following condensation and adaptation has been attempted, believing that its leading principles will be found to bear on this division of veterinary therapeutics, as it will be evident from what has been already stated that the memoir itself was written for the practitioner of human medicine, and it embraces a comprehensive view of all the agents of this class employed by him.

The object the author has in view appears to be the establishing of the fact, that the operation of the greater number of purgatives depends on their effecting unequivocal combinations or decompositions—that they act by reason of their solubility, or by their insolubility, when they become local irritants only—by their coagulating or non-coagulating properties—by endosmose, sapidity, and the secondary re-actions that take place in the animal economy, arising from the presence of alkalies or acids. This classification also assists in explaining why such and such medicines are preferable for certain diseases, and the special use which should be made of them according as it is desired that they act on the stomach or intestines. He likewise divides all purgative agents into two classes—special and general. The one operating on some particular part or organ making up the digestive apparatus, the action of the other being felt throughout the whole of the digestive organs, but especially the alimentary canal.

Having thus given an epitome, or outline of the author's views, we will now allow him to speak for himself, only abridging and selecting, for reasons already assigned.

### *General Remarks.*

I. Under the name Purgative all the substances of the materia medica which have the faculty of originating or procuring diarrhœa might be arranged. But, according to this definition, as Schwielgue has observed, all substances administered in sufficient doses

would become entitled to the appellation. In examining, however, the mode of action of different substances introduced into the digestive tube, we are soon satisfied that the name should be restricted to those only which, by their chemical or physical effects, necessarily determine a supersecretion of the mucous surface of the intestines.

II. All matters, however, introduced into the cavity of the stomach may be considered as soluble or insoluble. The insoluble divide themselves into two groups. The first comprehend the substances insoluble and incapable of being re-acted on by the animal liquids. These bodies only act on the digestive passages by irritation and contact. It is thus we explain the purgative effect of charcoal when administered in sufficient doses, because the charcoal being entirely insoluble cannot be in any wise absorbed into the system, and can only, therefore, re-act physiologically on the economy. The other insoluble compounds, such as silica, have only a feeble action, and some none at all. To these bodies we may give the name of *purgatives by mechanical irritation or simple contact*.

In the second group are ranked those bodies which, naturally insoluble, are susceptible of being dissolved in the economy in consequence of the re-actions effected by principles contained in the vital humours. These principles are acids, alkalies, or salts. They act, each, according to its own peculiar laws, and not indifferently the one for the other, nor all together on the same purgative. Thus the acids neutralize magnesia, the alkalies saponify the resins, the chloride salts transform insoluble calomel into bichloride of mercury. And, as some of these re-agents are localized in certain parts of the digestive apparatus, it follows that those purgatives which require the intervention of such principles to effect the solution will act in a local manner.

III. Soluble matters should also be divided into two groups, according as they possess or are destitute of coagulant properties.

### 1. *Soluble Matters Non-coagulant.*

*A. Saline Matters.*—These are sulphates of soda, potassa, and magnesia, and they present a twofold effect, according to the manner of administration. If the salt be administered very much diluted

with water, and at distant intervals, it will be totally absorbed; if, on the contrary, it be administered in a large dose in a sufficiently concentrated solution, and at one time, it will act as a purgative. In this case the purgative effect should be referred to two causes, to absorption by endosmose, as we shall presently explain, and to the great sapidity of the compound.

The excessive sapidity of medicines in strongly stimulating the mucous membranes determines a copious secretion as well in the buccal cavity as in the whole extent of the digestive canal; it is thus that we understand the purgative action of aloes, of sulphate of quinine in large doses, &c.

*B. Alimentary Matters.*—These can only accidentally be the cause of evacuations. In fact, after their introduction into the digestive passages, they are not slow to be dissolved by the aid of special ferments and the liquids which have been taken, and these form with them a liquid suitable for absorption, which, being less dense than the serum of the blood, passes through the membranous walls as through a filter, and is immediately carried up by the absorbent vessels into the circulatory current. In this instance, then, we have an example of simple absorption without endosmotic phenomena, without any appeal to exterior secretion, and, consequently, without purgative effects. If there is at any time expulsion, whether by vomiting or evacuation, it is only a consequence of the non-digestion of matters, or of their too great quantity, which then acts by irritation or simple contact.

### 2. *Soluble Coagulant Matters.*

These have always a local effect, a topical action, which arises from their immediate absorption, and the combination which they may effect with the tissues of the membranes. In consequence of the coagulation and of the irritation which is determined they give rise to an afflux of the liquid towards the part acted upon, and procure an exudation and a secretion more or less abundant. Such is the kind of purgation produced by corrosive sublimate, the drastics of the family euphorbiaceæ, &c.

IV. We see by the examination of these four groups that purgative effects are not always due to the same cause, and that they may be produced by—

1. Bodies soluble and coagulant, which combine with the tissues and irritate them strongly, as corrosive sublimate and croton oil.

2. Bodies soluble and non-coagulant, which act by endosmosis as well as by sapidity, as the sulphate of magnesia, sulphate and phosphate of soda, &c.

3. Bodies soluble and non-coagulant, which act by sapidity alone, and strongly stimulate the mucous membrane, making it secrete sympathetically, as colchicum, hellebore, &c.

4. Bodies naturally insoluble, which, not susceptible of being modified or absorbed by the vital humours only, act on the mucous intestine by mechanical irritation :—

- Purgatives
  - Soluble
    - Coagulants ..... Oil of croton.
    - Non-coagulants, purging .....
      - By endosmose and sapidity ..
        - Phosphate of soda
        - Sulphate of soda
        - Sulphate of magnesia.
      - By sapidity .....
        - Colchicum
        - Aloes.
  - Insoluble
    - Becoming soluble in the economy by the
      - Alkalies.....
        - Aloes
        - Jalap
        - Castor oil.
      - Alkaline chlorides
        - Calomel
      - Acids .....
        - Magnesia.
    - Remaining insoluble in the economy
      - Silica
      - Charcoal.

We now proceed to consider the mode of action of the purgative principles displayed in the preceding table.

### SOLUBLE COAGULATING PURGATIVES.

#### *Oil of Croton.*

This oil constitutes a very energetic drastic. It is the purgative *par excellence* for acting by itself, and bearing its action on all parts of the intestinal tube. Its effect is very certain. By the coagulation which it produces with the living tissues it irritates the intestines strongly, and even sometimes gives rise to numerous pustules, and also determines an intense inflammation, which the prescriber should bear in mind, in order to avoid. By its general action it affects the stomach at once, and often provokes nausea, followed by vomiting. It should, then, be administered in pills or in potions, by which means a certain quantity of liquid may pass the pylorus freely and speedily, and exert its influence on the mucous lining of the intestine alone.

## SOLUBLE NON-COAGULANT PURGATIVES ACTING BY ENDOSMOSE AND SAPIDITY.

The purgative virtues of a great number of saline matters, such as sulphate of soda, of magnesia, and of potassa, phosphate of soda, &c., have been long known. As all matters may be traced by their chemical nature through the different tissues, and identified, either in whole or in part, on leaving the economy, many experiments have been made to ascertain their mode of action. Notwithstanding the facility of experiments, the opinions that have resulted have been of a very opposite character.

When a small quantity of a purgative salt is injected in a state of great dilution, absorption of the saline solution is completely effected; it passes into the urine, in which the whole of the saline compound may be found; it then acts as a diuretic without determining any purgative effect.

But, when we introduce into the alimentary canal a concentrated saline solution, immediately there results a double phenomenon of endosmose and exosmose, for here all concurs to realize the vito-physical action; in fact, the two liquids which the animal membrane separates are of different density,—one, the saline solution, more dense; the other, the liquid and non-organized part of the blood less so. There are, then, two currents of liquid traversing this membrane, and, according to the facts discovered by Dutrochet, the liquid of less density is borne towards the denser in greater or less quantity; that is to say, the mucous membrane permits a greater quantity of the liquid of the blood than of the saline solution to pass through it. Consequently there is an afflux of liquid into the digestive canal, and, therefore, purgation. But, at the same time, a certain quantity of the saline solution passes by the other side of the membrane, and, carried by the absorbent vessels, it is mingled with the current of the circulation.

All the purgative virtue of non-coagulant mineral salts cannot, however, be in this way accounted for; they should, as already mentioned, act also as strongly sapid bodies; they should actively stimulate the mucous membrane and solicit it to secretion. This sympathetic action should even be very energetic and prolonged after the endosmotic effect. The union of these two causes pro-

duces an appeal to secretion from the intestines, which by its abundance, determines peristaltic movements, and necessitates expulsion.

Notwithstanding what has been argued to the contrary, we maintain that there is absorption of the saline compounds. This absorption cannot easily be shewn in the salts which exist normally in the economy, but they become very evident in the case of others.

### PURGATIVES ACTING BY SAPIDITY ALONE.

#### *Colchicum.*

The colchicum autumnale, like other plants of the same family, furnishes *veratrine*, a principle similar to the organic alkaloids, and having a very strong flavour, by which, in fact, it produces purgation. But of these purgatives a very moderate use should be made, because in a slightly excessive dose they become immediately poisonous. They establish a connexion between the purgatives by sapidity and the energetic vegetable poisons.

[The white hellebore, possessing the same alkaloid as its active principle, also acts as a purgative to the horse and other animals, accompanied with nausea and also vomiting in some of them. It, however, is a dangerous purge, and its dynamic action should always be taken into consideration.]

The curative results obtained in some maladies by this medicine, as gout, rheumatism, &c., are not to be attributed to its purgative qualities. Besides these it possesses a topical action, and is always followed by dynamic results, which reinforce its purgative effect. We should always, then, take this remote consecutive phenomenon into account, and just as sulphate of quinine, purging at a large dose, develops afterwards very well-marked phenomena, much more important than purgation, so colchicum possesses energetic properties which are manifested after its absorption, and follow purgation.

#### *Aloes.*

Of this vegetable substance the chemical nature has not hitherto been well ascertained, but its medical properties are well and clearly known.

Offering an insupportable bitterness to the taste, it purges at first by stimulating the mucous surface under the influence of sapidity very markedly, and afterwards by its combinations with the intestinal juice. This last effect is much more striking than the former, and determines by this entirely local action the flux of blood which follows the purgative effect of aloes when administered in large and continuous doses. But those effects are not peculiar to aloes; generally speaking, it is common to all the resins, and even to the ol. ricini, although with less intensity. This proves that the evacuations mingled with blood are not due to a special purgative, but to all matters the action of which is carried particularly to the large intestines.

We affirm that aloes purges by absorption by means of its solution by the alkalies of the intestines, just like the resins, of which we shall next speak; in fact, aloes, partly soluble in water, leaves a residue named apotheme, which is destitute of savour, and cannot be dissolved in water. We have found that this residue becomes dissolved by the alkalies of the intestines, and its flavour is then very pronounced.

This fact leads us to the conclusion that aloes should be dissolved in the intestines by the alkalies, comporting itself then as a resinous matter. Thus we have remarked that it only purges after the lapse of a certain time, while all the entirely soluble compounds always lead very promptly to purgation. We are supported in our opinion by the fact that Barbadoes aloes, containing much less apotheme than the other kinds, is much less purgative.

[This last position does not accord with the experience of practitioners of veterinary medicine, by whom, generally speaking, the Barbadoes extract is preferred on account of its greater activity. And the Veterinary College, after having for many years advocated the use of the other kinds of aloes, as the Cape and the Mocha, has reverted to the employment of the Barbadoes, from its being found both more certain and more safe in its operation.

Objections have been raised against the admixture of alkaline substances with aloes, on the grounds that they tend to determine blood to the kidneys, and thus lessen the effect of the purgative agent. Nevertheless, from the statements made by M. Mialhe, it would appear that the advantages more than counterbalance the disadvantages, since aloes when thus combined ceases

to act specifically on the large intestines, but operates on the whole of the alimentary canal. Otherwise action commences only where the agent first meets with an alkaline secretion, namely in the duodenum. Will this view of the subject throw any light on the *modus operandi* of aloes as a purgative to ruminants when given in the form of ball, the secretion from the first and second stomachs of this class of animals being of an alkaline nature ?]

INSOLUBLE PURGATIVES.—(1. BECOMING SOLUBLE BY THE ALKALIES OF THE SYSTEM.)

*Resins in general.*

Most of the purgative resins have been employed in medicine almost from time immemorial, while their physiological action is far from being properly appreciated, as is proved by the uncertainty of the rank which has been assigned to them among purgatives by writers on materia medica in a methodical classification of the purgatives; for we know that, if the greater number of therapeutists place the evacuant resins among the number of most energetic drastics, some practitioners, on the contrary, consider them as inoffensive medicinal agents. The truth, as we shall see, lies between these extremes.

These medicines travel along the anterior part of the digestive tube without producing any result, and only begin to act when they arrive beyond the pylorus. There they find alkaline matters, elements necessary to their solution, which develope purgative action and promote their absorption.

A crowd of observations come in support of the correctness of this view. Thus the most decidedly electro-magnetic, those which act the part of acids in relation to bases, as jalap, gamboge, &c., are those which act most powerfully. Resins rarely determine nausea and vomiting, because they are not found in solution in the cavity of the stomach, which is ordinarily acid, whilst, arriving in the intestines, they are dissolved wholly or in part, and produce colics and gripings, often very violent: until they encounter the alkaline juice they remain insoluble and immiscible in water.

Their acrimonous and pungent flavour has been denied, because

it can only become sensible after prolonged contact with the saliva, which supplies the alkalies necessary to their solution; but let this solution be facilitated by a little alkaline matter, and contact with the mucous surface of the mouth immediately will develop an insupportable sensation of acridity.

According to this theory of the purgative actions of resins, it is essential, in order to obtain their maximum therapeutic effect, to follow the precepts which we have already indicated elsewhere, and which we enumerate here:—

I. Resins must never be connected with acids, nor even with organic substances easily acidifiable.

II. We should endeavour to effect their passage through the pyloric orifice as speedily as possible, and ingest immediately after their administration some tepid water, or a little bland fluid of some kind.

III. After this no kind of drink should be given for some hours.

We are satisfied that the purgative resins administered alone determine nausea, only in so far as they encounter alkaline liquids in the stomach, and that otherwise they only develop their action in the inferior part of the intestine, so that, in the absence or diminution of the alkalies in the animal humours, as in gout and diabetes, their purgative action is scarcely perceptible,—a fact which clinical observation confirms.

Some experiments relative to the application of different purgatives on the abraded skin have conducted M. Bretonneau to an erroneous explanation. Seeing that the resinous drastics determined no local irritant action, this eminent physician was led to conclude that these drastics acted, not like the euphorbiaceæ, by direct local inflammation, but by sympathy with the nervous system, and by re-action on the mucous membrane. These purgatives, like the others, possess topical irritant properties, but which only develop themselves in the part of the intestinal tube supplying alkaline juices proper to the solution; and if M. Bretonneau, in his experiments, had employed resins mingled with alkalies, he would have found upon the exposed surface a most manifest irritation.

From this discussion it results—(1) that the action of the resinous purgatives is borne specially on the large intestines;

that they localize themselves thus in consequence of the juices necessary to dissolve them residing only in the lower part of the digestive tube; (2) that the alkalies cannot, their quantity being limited, saturate more than a certain quantity of resin, and that, consequently, these purgatives have a limit of action, and that this circumstance explains the fact that a larger dose adds nothing to the intensity of the effect; (3) that the association of acids with resinous bodies, if not injurious, is, at least, useless; (4) that the addition of a certain quantity of alkali renders their action, on the contrary, more energetic and more prompt in permitting them to be absorbed in greater quantity; (5) that it is not always convenient thus to alkalize the resins, on account of the nausea and vomiting which then result from their action, which are not observed when they are administered alone. We see, then, that the resins, unlike the other drastics, do not exert an injurious influence on the digestive functions. They traverse the greater part of the intestinal tube without dissolving, and only commence their action when they have arrived in that part of the digestive canal where the absorption of alimentary matter is insignificant. They constitute thus a distinct group, of which the action is much milder, and certainly more limited, than that of croton oil for example, which exerts its topical evacuant action throughout the whole length of the intestinal tube.

### *Castor Oil.*

The intimate composition of this oil is not sufficiently known to enable us to determine its action on the system. In this respect we are reduced to conjectures based upon this and that analogy. The purgative action may be attributed—(1) to a volatile acid analogous to the crotonic acid of the oil of croton; (2) to a resinous matter of great acridity, characteristic of all the euphorbiaceæ; (3) to a property peculiar to it.

As to the acid analogous to crotonic acid, it is so volatile, as M. Gibourt has shewn, that it will not remain in the oil. Soubeiran thinks that it is in the resinous matter that its purgative properties reside; he having obtained from this oil a very acrid resin, in every respect similar to the resin common to the euphorbiaceæ.

Does this oil purge by any principle or property peculiar to it?

Such is the opinion of many therapeutists, and there are some reasons in support of it.

Like the resins, this oil should be combined with alkalies to be absorbed and act as a purgative, and these alkalies are only found at the lower part of the intestinal tube. It also acts as well in a small as a large dose, for the same reason. If, as M. Paul Dubois has stated, a large dose acts a little more strongly than a smaller one, it is to be explained by a mechanical action in permitting stercoraceous matter to glide more easily along the mucous intestine. In these cases a great quantity of oil is found in the evacuations. Of course, there can be no objection to these large doses, except that the patient is subjected to a more disagreeable process, and oil is wasted.

We recommend the choice of a recently prepared oil; as, exposed to the air, it very quickly becomes rancid, and acquires a disgusting taste.

The seeds of the ricinus communis act with more energy than even the oil itself. Such an effect is evidently due to a principle altogether distinct; doubtless to the acrid resin, which only passes into the oil in a very small quantity.

[For the purposes of the veterinary surgeon the oil of linseed has been found preferable to castor oil, the activity of which may be increased by the addition of a few drops of croton oil: an expedient often desirable. Under this division will come jalap, which to the dog is a useful purgative, though possessing little action on the horse; ounces having been given to him without any marked effect.]

[To be continued.]

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## Case of Fracture of the Navicular Bone.

*By Mr.* R. Bowles, *M.R.C.V.S.*

Dear Sir, *Abergavenny, July* 5, 1848.

In accordance with the promise made by me when last in London, I forward to you the fractured navicular bone.

I believe such an accident to be of rare occurrence, and I regret the history of the case is so meagre. It is now more than two years

since the horse was placed under my care for lameness of the foot, which had then existed some little time. Finding there was still much heat present, indicative of active inflammation, I withdrew blood at the toe, applied cold poultices, and ordered rest. This course of treatment was attended with the best results. Subsequently a blister was applied, and the animal turned out for two or three months.

Although the lameness never entirely disappeared, and a slight enlargement about the coronet was perceptible, nevertheless the horse was enabled to perform his accustomed work to the satisfaction of his owner for the period of two years after. He died a short time since of inflammation of the bowels.

I am,

Very truly yours.

*To Professor Spooner,*

[The bone forwarded by Mr. Bowles has been fractured transversely near its centre. Perfect re-union of the parts has taken place. The surface on which the os coronæ rests retains its normal smoothness, but the other, under which the flexor pedis passes, is much roughened by ossific depositions, and from the superior and inferior margin of the bone project numerous elongated bony spiculæ.]

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## Cases of Tetanus in the Horse.

*By Mr.* Thos. Hurford, *V.S., 15th Hussars.*

In the Veterinary Record, for April, p. 108, we inserted a case of tetanus, received from Mr. Hurford; since which we have been favoured with another communication from him, dated Bangalore, July 4th, 1848, containing the history of two similar cases. The therapeutic on which reliance appears to have been placed by him, as a narcotic, is the Extract of Indian Hemp (*Cannabis Indica*), an agent, in this country at least, of very variable action, and, consequently, of doubtful efficacy. By the *Gazette Medicale de Paris*, it appears that M. Courtive has

been engaged in some experiments on the Indian Hemp, from which he has drawn the following conclusions:—"1. The active principle of the Cannabis Indica collected at Algiers is a resin, which, in the dose of one grain, produces the same effect as half a drachm of the ordinary extract. 2. The Cannabis Indica collected in France furnishes a resin less active, and in less quantity than the same plant from Algiers. 3. The Cannabis Sativa of France gives an analogous resin, but much less active. 4. The same plant grown in France from seeds obtained in Italy furnishes a resin of greater activity than the former. 5. The active principle of the Cannabis resides chiefly in the leaves. 6. The botanical characters of the Cannabis Indica and Sativa are not sufficiently distinct to form two species."

The outline of the cases given by Mr. Hurford differs so little from that already recorded, that we are compelled, with our present arrear of matter, to dismiss it with this summary notice. In one case all the tetanic symptoms had disappeared, and the animal was reported convalescent; when Mr. H. was suddenly and unexpectedly summoned by the gora-walla, who informed him that the horse was in a fearful state of agitation; and on visiting him, he found that he had experienced a recurrence of the attack in its most violent form, and from which he never recovered. Mr. Hurford thinks this second attack was caused by rats, "which infest the sick lines in such numbers as to gnaw the legs of the horses;" and we well know that in an easily excitable animal the slightest noises will oftentimes cause an exacerbation of the disease, and then the hope of ultimate cure becomes very remote.

The second case is designated by Mr. H. *Idiopathic Tetanus*, which got well in about three weeks after the affection had manifested itself, and which, he adds, "makes the fourth successful case out of six attacked with this terrible disease." It will be remembered, that active purgatives are conjoined, and also the extract of the deadly nightshade, with opium and camphor, so that anodyne agents are largely employed by him.

## Effects of a new Kind of Clover *(Trifolium Hybridum)* on Horses.

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

Dear Sirs, *Litcham, Sept. 5th,* 1848.

Several horses having been singularly affected by eating of a variety of clover newly introduced into this county, I am induced to send you a brief account thereof, believing that it cannot fail of proving interesting to your readers. Moreover, it may be the means of eliciting from some of them further information, since they may have witnessed similar results. I regret my report will be so short and so imperfect; but my time is now fully occupied with the disease so prevalent among sheep in this locality—the small-pox.

The clover is here called "Alsike." The gentleman whose horses were affected by it sowed the seeds two years since, it having been strongly recommended to him; but he informs me that on turning his sheep into the field when the clover was fully up, they would not eat it. The land it is grown on is light and sandy. Five horses were attacked, and a description of the first I saw may be taken as a fair type of the whole. The animal exhibited symptoms of abdominal pain, resembling ordinary colic; the pulse was but little accelerated, but the bowels were very constipated, and the mucous lining membrane of the mouth and eyelids was injected and of a bright yellow colour. It was this which most particularly attracted my attention; and on further examination I found the mouth to be blistered in patches, the lips to be swollen, as if stung by insects, and subsequently the skin peeled from off them, and likewise the margin of the nostrils, which would indicate that some acrid substance had been partaken of. The eyes were partially closed, the countenance dejected, the head depressed, and the prostration of the vital powers considerable. I feel convinced the cause of the illness was the food they had been eating; for from what I had heard respecting it I was induced to chew a little of it, when I found it to possess most irritating properties, for my mouth smarted for some time afterwards.

I bled all the horses at the onset, and gave them repeated small

doses of aloes and calomel, so as to produce a laxative effect on the bowels, which I found it somewhat difficult to do from their extreme torpid condition. However, when they responded, all the unfavourable symptoms gradually disappeared. Fortunately, after about a week or ten days, the animals all recovered. They had been eating the clover about five days before they were affected by it.

In a day or two I will send you a portion of the grass for your inspection. I have said it is newly introduced into this part of Norfolk, and I know of no agriculturist who grows it except the person whose horses I attended.

I am, dear Sirs,

Your's respectfully.

*To the Editors of "The Veterinary Record."*

[We thank Mr. Carter for the specimen of clover forwarded. We have submitted it to a botanical friend, and instituted some inquiries respecting it; but the information we can glean is very inconsiderable. Our botanical friend says, "I can give you very little information about the clover. It is quite distinct from the common Dutch clover; has a much stronger flavour, and a scent that would lead me to think it unwholesome, and very likely to prevent sheep eating it. I do not find it described as an agricultural clover in any work I possess. It is probably of late introduction." In this he is right, as it appears it was first brought before the agricultural community two years since, and but few have cultivated it. It is an hybrid between the white and red clover.

It is not uncommon, when horses are turned into "clover-lays," to find their lips inflamed, and the skin cracked. Gastric irritation, also, is by no means unfrequently met with; but such effects as those described by Mr. Carter we have not before heard of. Is it that any specific principle exists in this variety of clover? Or that the plant is not yet acclimated? Or has its hybridous nature any thing to do with it? These are questions that immediately suggest themselves to our mind, since Mr. Carter appears perfectly satisfied that the clover was the sole cause of the disease.]

## Case of Functional Derangement of the Rumen in a Cow—Cardialgia?

*By Mr.* T. W. Gowing, *M.R.C.V.S.*

*April 12th*, 1848.—I was requested to visit a little half-bred black cow, the property of Mr. Brown, Alderney Dairy, Camden Town. The owner informed me that there were some very unusual symptoms manifested by the animal, and such as he had not witnessed before. He stated that she had been throwing up large quantities of fluid, which passed through the mouth; and on my arrival I found from two to three pailfuls of discoloured fluid in the manger, and which evidently had been ejected from the rumen, it having that peculiar paunch-like smell which is given off from a healthy viscus. There was no solid ingesta whatever mixed with it. Having carefully examined my patient, I found the following symptoms present: pulse 60, and rather weak; flanks drawn in; the teats cold; slight shivering, and a general chilliness of the surface of the body; ears and horns hot; distention of the jugular veins; cessation of rumination, and a scanty discharge of fæces. Occasionally she made a sucking noise with her mouth, whence a constant drivelling of the same discoloured fluid took place. She would eat hay when given to her, and drink water, deglutating freely; licked and cleaned her nose out with her tongue, and stretched herself and looked at intervals cheerful as in health. Finding the pulse not much accelerated, and no symptoms to indicate any organic disease, I concluded we had a case of functional derangement of the rumen, but the cause I was altogether at a loss to assign: I, therefore, contented myself by giving the animal a saline aperient, combined with an aromatic. I saw her again in the afternoon. The symptoms were then much the same as in the morning, except that the flanks were more drawn up. I gave ammoniæ sesqui-carbonas ʒij, with a view to stimulate the rumen to healthy action, and also to bring about a return of warmth to the skin; and as an adjunct, ordered her to be well clothed, directing that attention should be paid to her diet.

I saw her again on the following morning (April 13th). The pulse was about the same in number as the previous day, but stronger,

and the skin of nearly the same temperature: she stretches herself as before; moves out of her stall without difficulty, and eats and drinks freely. During the night she has thrown up a great quantity of the same kind of fluid as that at first observed, and there is still a constant drivelling of it from the mouth. Ordered her to have spiritus ammoniæ aromat. f℥iij in gruel, and still to be kept clothed. Visited her two hours after this medicine was administered, and perceived her chewing her cud for the first time, which she continued to do for some seconds. The skin, too, had become warm, an effect I was anxious to produce, hoping that by determining blood to the surface, thus bringing about an equable state of the circulation, to reduce the excess of secretion going on in the rumen. There was still an escape of the fluid from the mouth.

*April 14th.*—On seeing my patient at half past seven A.M. I was informed she had ruminated for some time after I left her; the pulse was now 50, and fuller in tone; the extremities and skin warm, but she had regurgitated some solid ingesta. I now gave her a little tinct. opii in gruel, to allay the gastric irritation, ordered the clothing to be still continued, as the skin was warm, the pulse natural, and the animal not at all distressed. I likewise directed a small quantity of hay and water to be allowed her.

The next morning at eight o'clock I found the skin, extremities, and pulse the same as the day before; in fact, if it was not for the fluid ejected from the rumen, I should pronounce the animal in health. I ordered her more hay, and a pailful of water was also given to her. During the night a considerable quantity of fluid has been again thrown up. The bowels having become constipated, the saline purgative was repeated, with a full dose of the aromatic conjoined, and at intervals during the day mild stimulants were administered. I now reported the case to Professor Simonds, and he concurred with me in opinion that it was one of functional derangement of the rumen, arising most probably from an obstruction to the passage of the food from the second to the third stomach, through the opening formed by the pillars of the œsophageal canal; but he thought the animal would ultimately recover.

*April 15th.*—The bowels have responded; the appetite is good; the regurgitations are not so frequent nor so abundant, and she

chews the cud at intervals. I now gave half-drachm doses of the iodide of potassium daily for the purpose of lessening the secretion. I visited her occasionally after this, and the report I generally received was, that at times she threw up small quantities of fluid, but in every other respect she was perfectly well. She continued to do this for three weeks afterwards, and then the act entirely ceased.

I am, your's faithfully.

1, *Stucley Terrace.*

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## ACTS OF PARLIAMENT, AND COPIES OF DESPATCHES RECEIVED FROM THE LORDS OF THE COMMITTEE OF PRIVY COUNCIL FOR TRADE, RELATIVE TO VARIOLA OVINA.

CAP. CV.

*An Act to prohibit the Importation of Sheep, Cattle, or other Animals, for the Purpose of preventing the Introduction of contagious or infectious Disorders.* [4th September 1848.]

WHEREAS it is expedient, in order to prevent the introduction of contagious or infectious disorders among sheep, cattle, horses, and other animals, that power should be given to Her Majesty in Council to take such measures as may appear to be necessary for preventing or regulating the importation of animals from parts beyond the seas where such infectious or contagious disorders prevail; Be it therefore enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, That it shall be lawful for Her Majesty, from time to time, by order in Council, to prohibit the importation or introduction into the United Kingdom, or into any particular port or ports thereof, of cattle, sheep, horses, or other animals, either generally or from any place or places that may be named in such order, for such period or periods as She may deem to be necessary, for the purpose of preventing the introduction of any infectious or contagious disorder among the sheep, cattle, horses, or other animals in this country.

II. And be it enacted, That it shall be lawful for Her Majesty

from time to time, by order in Council, to make such regulations for subjecting sheep, cattle, horses, or other animals to quarantine, or for causing the same to be destroyed upon their arrival in this country, or for destroying any hay, straw, fodder, or other article whereby it appears to Her that infection or contagion may be conveyed, and generally to make such regulations with respect to the importation of sheep, cattle, horses, or other animals, as She may consider to be necessary in order to prevent the introduction of any contagious or infectious disorder.

III. And be it enacted, That if any cattle, sheep, horses, or other animals be imported or introduced, or attempted to be imported or introduced, contrary to the provisions of any order or orders in Council made in pursuance of this Act, the same shall be forfeited in like manner as goods prohibited to be imported by any Act relating to the Customs; and all persons importing or introducing or attempting to import or introduce the same shall be liable to such penalties as are imposed on persons importing or attempting to import goods prohibited by Acts relating to the Customs.

IV. And be it enacted, That it shall be lawful for Her Majesty, by any further order or orders in Council, from time to time to revoke the whole or any part of any order or orders issued by her Majesty in Council under the authority of this Act; and that, from and after a day to be named in such order or orders of revocation, such order or orders issued under the authority of this Act, or such part thereof as shall be specified in such order or orders of revocation, shall cease and determine.

V. And be it enacted, That every order or orders in Council issued under the authority of this Act shall, within fourteen days after the issuing thereof, be twice published in the *London Gazette;* and that a copy of every order or orders in Council issued under the authority of this Act shall be laid before both Houses of Parliament within six weeks after issuing the same, if Parliament be then sitting, and if not, then within six weeks after the commencement of the then next Session of Parliament.

VI. And be it enacted, That this Act may be amended or repealed by any Act to be passed in the present Session of Parliament.

CAP. CVII.

*An Act to prevent, until the First Day of* September *One Thousand Eight Hundred and Fifty, and to the end of the then Session of Parliament, the spreading of contagious or infectious Disorders among Sheep, Cattle, and other Animals.* [4th September 1848.]

WHEREAS a contagious or infectious disorder, known or described as the Sheep Pox, or Variola Ovina, now prevails among the sheep in some parts of the United Kingdom, and it is necessary to take measures to prevent such disorder from spreading: Be it therefore enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons in this present Parliament assembled, and by the authority of the same, That in case any sheep or lambs infected with or labouring under the said disorder, or any disorder of the like nature, be exposed or offered for sale, or be brought or attempted to be brought for the purpose of being so exposed or offered for sale, in any market, fair, or other open or public place where other animals are commonly exposed for sale, then and in any such case it shall be lawful for any clerk or inspector or other officer of such fair or market, or for any constable or policeman, or for any other person authorized by the mayor, or by any two justices of the peace having jurisdiction in the place, or for any person authorized or appointed by Her Majesty in Council, to seize the same, and to report such seizure to the mayor or any justice of the peace having jurisdiction in the place; and it shall be lawful for such mayor or justice either to restore the same, or to cause the same, together with any pens, hurdles, troughs, litter, hay, straw, or other articles which he may judge likely to have been infected thereby, to be forthwith destroyed, or otherwise disposed of in such manner as he shall deem proper, or as may be directed in manner herein-after provided; and any person bringing or attempting to bring any sheep, lambs, oxen, bulls, cows, calves, or other horned cattle, into any such market, fair, or open or public place as aforesaid, knowing such sheep, lambs, or cattle to be infected with or labouring under either of such disorders as aforesaid, shall, upon conviction thereof, forfeit and pay for each and every such offence a sum not exceeding twenty pounds.

II. And be it enacted, That if any person turn out, keep, or

depasture any sheep or lambs infected with or labouring under the said disorder in or upon any forest, chase, wood, moor, marsh, heath, common, waste land, open field, road side, or other undivided or uninclosed land, such person shall, on conviction thereof, forfeit and pay any sum not exceeding twenty pounds.

III. And whereas it is expedient for the preservation of the public health to make more effectual provision for preventing the exposure for sale of any meat unfit for human food: Be it enacted, That if any meat unfit for human food be exposed or offered for sale in any market, fair, or other open or public place, it shall be lawful for such clerks, inspectors, constables, policemen, or other persons authorized as aforesaid, to seize the same, and to report such seizure to such mayor or justice as aforesaid; and such mayor or justice may either order the same to be restored, or to be destroyed or otherwise disposed of as aforesaid; and any person publicly exposing or offering such meat for sale shall, upon conviction, forfeit and pay for each and every such offence a sum not exceeding twenty pounds.

IV. And for the more effectually preventing the spreading of contagious or infectious disease, be it enacted, That it shall be lawful for the Lords and others of Her Majesty's Privy Council, or any two or more of them, from time to time to make such orders and regulations as to them may seem necessary for the purpose of prohibiting or regulating the removal to or from such parts or places as they may designate in such order or orders, of sheep, cattle, horses, swine, or other animals, or of meat, skins, hides, horns, hoofs, or other parts of any animals, or of hay, straw, fodder, or other articles likely to propagate infection; and also for the purpose of purifying any yard, stable, outhouse, or other place, or any wagons, carts, carriages, or other vehicles; and also for the purpose of directing how any animals dying in a diseased state, or any animals, parts of animals, or other things seized under the provisions of this Act, are to be disposed of; and also for the purpose of causing notices to be given of the appearance of any disorder among sheep, cattle, or other animals, and to make any other orders or regulations for the purpose of giving effect to the provisions of this Act, and again to revoke, alter, or vary any such orders or regulations; and all provisions for any of the purposes aforesaid in any such order or orders contained shall

have the like force and effect as if the same had been inserted in this Act; and all persons offending against the same shall for each and every offence forfeit and pay any sum not exceeding twenty pounds, or such smaller sum as the said Lords or others of Her Majesty's Privy Council may in any case by such order direct.

V. And be it enacted, That all orders and regulations made under the authority of this Act shall, within fourteen days after the issuing thereof, be twice published in the *London Gazette;* and in case such orders or regulations apply to any particular places or districts, then the same shall also be twice published, within fourteen days as aforesaid, in some newspaper or newspapers circulating in the county or counties within which each of such places or districts, or any part or parts thereof respectively, is or are situated.

VI. And be it enacted, That a copy of every such order or orders shall be laid before both Houses of Parliament within six weeks after issuing the same, if Parliament be then sitting; and if Parliament be not then sitting, then within six weeks after the commencement of the then next session of Parliament.

VII. And be it enacted, That in case any person wilfully obstruct or impede any person acting under the authority of this Act, or of any order or regulation made in pursuance of this Act, every person so offending, and all others aiding and assisting therein, shall and may be seized and detained by such person so acting under the authority of this Act as aforesaid, or any person or persons he may call to his assistance, until such offender or offenders can be conveniently taken before some justice of the peace having jurisdiction in the county or place wherein such offence shall be committed; and when convicted before such justice as aforesaid (who is hereby authorized and required, upon complaint to him upon oath, to take cognizance thereof, and to act summarily in the premises), shall, in the discretion of such justice, forfeit any sum not exceeding five pounds, and in default of payment thereof shall and may be imprisoned for any term not exceeding two calendar months, unless the amount of the penalty shall have been sooner discharged.

VIII. And be it enacted, That every penalty or forfeiture imposed by this Act may be recovered by summary proceeding before two justices; and upon the exhibition of any information in writing

before any justice, such justice shall issue a summons requiring the party complained against to appear before two justices having jurisdiction at a time and place to be named in such summons; and every such summons shall be served on the party offending, either in person or by leaving the same with some inmate, at his last or usual place of abode; and upon the appearance of the party complained against, or in his absence, after proof of the service of such summons, it shall be lawful for any two justices having jurisdiction to proceed to the hearing of the complaint; and upon proof of the offence, either by the confession of the party complained against or upon the oath of one credible witness or more, it shall be lawful for such justices to convict the offender, and upon such conviction to adjudge the offender to pay such penalty as they may seem fit, and not greater than the penalty or forfeiture specified in this Act, as well as such costs attending the conviction as such justices shall think fit.

IX. And be it enacted, That if forthwith upon any such adjudication as aforesaid the amount of the penalty or forfeiture, and of such costs as aforesaid, be not paid, the amount of such penalty and costs shall be levied by distress, and such justices, or either of them, or any other justice having jurisdiction as aforesaid, shall issue their or his warrant of distress accordingly.

X. And be it enacted, That it shall be lawful for any such justice to order any offender so convicted as aforesaid to be detained and kept in safe custody until return can be conveniently made to the warrant of distress to be issued for levying such penalty or forfeiture and costs, unless the offender give sufficient security, by way of recognizance or otherwise, to the satisfaction of the justice, for his appearance before him on the day appointed for such return, such day being not more than eight days from the time of taking such security; but if before issuing such warrant of distress it shall appear to the justice, by the admission of the offender or otherwise, that no sufficient distress can be had within the jurisdiction of such justice whereon to levy such penalty or forfeiture and costs, he may, if he think fit, refrain from issuing such warrant of distress; and in such case, or if such warrant shall have been issued, and upon the return thereof, such insufficiency as aforesaid shall be made to appear to the justice, then such justice shall by warrant cause such offender to be committed

to gaol, there to remain without bail for any term not exceeding three months, unless such penalty or forfeiture and costs be sooner paid and satisfied.

XI. And be it enacted, That where in this Act any sum of money, whether in the nature of penalty or otherwise, is directed to be levied by distress, such sum of money shall be levied by distress and sale of the goods and chattels of the party liable to pay the same; and the overplus arising from the sale of such goods and chattels, after satisfying such sum of money, and the expenses of the distress and sale, shall be returned, on demand, to the party whose goods shall have been distrained.

XII. And be it enacted, That no distress levied by virtue of this Act shall be deemed unlawful, nor shall any party making the same be deemed a trespasser, on account of any defect or want of form in the summons, conviction, warrant of distress, or other proceedings relating thereto; nor shall such party be deemed a trespasser *ab initio* on account of any irregularity afterwards committed by him, but all persons aggrieved by such defect or irregularity may recover full satisfaction for the special damage in an action upon the case.

XIII. And be it enacted, That all penalties and forfeitures recovered under this Act shall be applied as follows; one half thereof shall be paid to the person who shall sue or proceed for the same, and the other half to Her Majesty's use, and shall be paid to the sheriffs of the county, city, or town where the same shall have been imposed, and shall have been duly accounted for by him; and that all convictions before justices, and all fines, forfeitures, or penalties imposed in consequence of such convictions, shall be returned to the court of quarter sessions, under the provisions of an act passed in the third year of his late majesty King George the Fourth, intituled *An Act for the more speedy Return and Levying of Fines, Penalties, and Forfeitures, and Recognizances Estreated.*

XIV. And be it enacted, That no person shall be liable to the payment of any penalty or forfeiture imposed by virtue of this Act for any offence made cognizable before a justice, unless the complaint respecting such offence shall have been made before such justice within two months next after the commission of such offence.

XV. And be it enacted, That it shall be lawful for any justice to summon any person to appear before him as a witness in any matter in which such justice shall have jurisdiction under the provisions of this Act, at a time and place mentioned in such summons, and to administer to him an oath to testify the truth in such matter; and if any person so summoned shall without reasonable excuse refuse or neglect to appear at the time and place appointed for that purpose, having been paid or tendered a reasonable sum for his expenses, or if any person appearing shall refuse to be examined on oath, or to give evidence before such justice, every such person shall forfeit a sum not exceeding five pounds for every such offence.

XVI. And be it enacted, That no warrant of commitment consequent upon any summary conviction under this Act shall be held void by reason of any defect in such warrant, provided it be therein alleged that the party has been convicted, and there be a good and valid conviction to sustain the same; nor shall any conviction, order, or other proceeding in pursuance of this Act be quashed or vacated for want of form, nor shall the same be removed by certiorari or otherwise into any of the superior courts.

XVII. And be it enacted, That if any person shall think himself aggrieved by any determination or adjudication of any justice with respect to any penalty or forfeiture under the provisions of this Act, he may appeal to the general quarter sessions for the county or place in which the cause of appeal shall have arisen; but no such appeal shall be entertained unless it be made within four months next after the making of such determination or adjudication, nor unless ten days' notice in writing of such appeal, stating the nature and grounds thereof, be given to the party against whom the appeal shall be brought, nor unless the appellant forthwith after such notice enter into recognizances, with two sufficient sureties, before a justice, conditioned duly to prosecute such appeal, and to abide the order of the court thereon.

XVIII. And be it enacted, That at the quarter sessions for which such notice shall be given the court shall proceed to hear and determine the appeal in a summary way, or they may, if they think fit, adjourn it to the following sessions; and upon the hearing of such appeal the court may, if they think fit, mitigate any penalty or forfeiture, or they may confirm or quash the adjudica-

tion, and order any money paid by the appellant, or levied by distress upon his goods, to be returned to him, and may also order such further satisfaction to be made to the party injured as they may judge reasonable; and they may make such order concerning the costs, both of the adjudication and of the appeal, as they may think reasonable.

XIX. And be it enacted, That in case the mayor or justice to whom the seizure of any sheep, lambs, or cattle, supposed to be infected as aforesaid, or of any meat supposed to be unfit for human food, may have been reported, shall upon inquiry order the same to be restored, and in case it appear to such mayor or justice that there was a probable cause of seizure, then and in such case such mayor or justice shall grant a certificate to the party making the seizure that there was such probable cause, and in such case the person or persons who made such seizure, being a person or persons acting under the authority of this Act, or of any order made in pursuance hereof, shall not be liable to any action, indictment, or other suit or prosecution, on account of such seizure; and in case any action, indictment, or other suit or prosecution, shall be commenced and brought to trial against any person or persons, being a person or persons acting under such authority as aforesaid, on account of the seizure of any animals, parts of animals, hay, straw, fodder, or other articles seized as forfeited under the provisions of this Act, or of any order or orders made under the authority of the same, wherein a verdict shall be given against the defendant or defendants, if the court or judge before whom such information or suit shall have been tried shall have certified on the said record that there was a probable cause for such seizure, then the plaintiff, besides the things seized or the value thereof, shall not be entitled to above two pence damages, nor to any costs of suit, nor shall the defendant or defendants in such prosecution be fined above one shilling.

XX. And be it enacted, That this Act shall continue in force until the first day of September in the year of our Lord one thousand eight hundred and fifty, and, if Parliament be then sitting, then further until the end of the then session.

XXI. And be it enacted, That nothing in this Act contained shall prejudice or derogate from the estates, rights, interests, privileges, franchises, jurisdiction, or authority of the mayor and

commonalty and citizens of the city of London or their successors, or the lord mayor of the said city for the time being, nor prohibit, defeat, alter, or diminish any power, authority, or jurisdiction which at the time of passing this Act the said mayor and commonalty and citizens, or the said lord mayor for the time being, possess, by custom, charter, or otherwise, for the regulation, management, and control of markets, or the sale of infected meat, hides, skins, horns, hoofs, or other part of any infected animal, or infected hay, straw, fodder, or other article, or the lord mayor and court of aldermen, or the lord mayor, aldermen, and commons of the City of London, in Common Council assembled, under or by virtue of any act of parliament, did or might lawfully claim, use, or exercise.

XXII. And be it enacted, That this Act may be amended or repealed by any act to be passed in this session of Parliament.

## CORRESPONDENCE.

Office of Committee of Privy Council for Trade,
Whitehall, 15th September, 1848.

Sir,

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 copies of despatches from Her Majesty's Consuls at Lisbon and Bordeaux relative to the Variola Ovina.

I am, Sir,

Your obedient servant,

STAFFORD H. NORTHCOTE.

*J. B. Simonds, Esq., Royal Veterinary College,*
*Great College-street, Camden Town.*

(Copy.)

REMARKS ON THE VARIOLA OVIS.

THE variola ovis is a disease that was known in France as far back as the year 1578, and exists at the present time in the neighbourhood of Bordeaux. Owing to its pernicious and destructive

nature, it has occupied the attention of the Government on various occasions, as well as that of several writers.

It is known under the name of "claveau," or "clavelée," and various others, according to different localities. It is eminently contagious, and attacks sheep of every breed, age, and constitution. Its effects have been felt in every part of France, and at all seasons, though the variations of the atmosphere may increase or diminish its terrible effects. Hitherto the determining cause of this complaint has not been accurately ascertained.

It is positive, however, that it is often engendered spontaneously; and when once it has declared itself, the principal cause of it is contagion.

Contagion operates by two violent elements, the one fixed and the other volatile. The fixed virus is that which exists in the pustules, being a sero-albuminous fluid, clean and without smell, and slightly alkaline. The appearance of this fluid takes place as soon as the pustule is formed; its secretion dries up as soon as the suppuration appears. This virus, by simple inoculation, or mixed with blood under the skin, or taken even in the smallest quantity with food, or dissolved in water, produces the disease. But this is not the most powerful agent in propagating the contagion. It is the volatile virus, whose means of contagion are the moist vapours emanating from the drying up of the pustules, from cutaneous and pulmonary perspiration, or which escape from the nasal, lachrymal, or intestinal secretions. These vapours form round the affected animal a contagious atmosphere, which, dispersed in the surrounding air inhaled by other animals, or deposited in their food, communicates the contagion.

The healthy animals placed under the influence of this atmosphere, and whose fleece is impregnated with it, carry it with them wherever they go, and impart the contagion as they pass.

The shepherds, and even the dogs belonging to these infected sheep, convey and impart the subtle contagion; and every object that has remained in the infected fold is likewise its vehicle.

The atmosphere charged with these volatile principles, carried by the wind beyond the fold or pasturage where the infected animals are placed, is the principal agent and propagator of the disease, and all sheep that breathe this atmosphere may contract it.

The season and the temperature have more or less influence on this malady. During the heat of the summer and autumn the variola ovis bears a most malignant character, and its contagion is more subtle and active. Cold, on the contrary, diminishes its effects. Damp warm weather, especially in ill-ventilated sheep-pens, is favourable to its development.

Although the generality of sheep exposed to the contagion contract the disease, there are occasional exceptions, and instances are on record of several animals out of an infected flock having entirely escaped it.

The disease often remains latent, and ten days or a fortnight often elapse between the period of its contraction and its outward appearance.

The duration of the disease on each animal varies from a week to ten days; but with regard to its contagious nature it may be dated from the eruption to the desiccation, though it by no means follows that no danger is to be feared after that period; for, as it has been before observed, the emanations from the fleece impregnated with the miasma derived from the secretions of the body are as dangerous as immediate contact.

The duration of this disease in a flock may be estimated at three months, divided as follows:—The disease declares itself at first on a third of the flock, in a mild form, known in this country under the denomination of "Boaffee," or "Lunée," of a mild nature, and but slightly contagious: it goes through the various stages of the disease in twenty to thirty days. This first attack is soon followed by a second one of a much more active and violent nature, being malignant, confluent, and fearfully contagious. The duration of this second attack is about one month; by this time two-thirds of the flock have been attacked. Finally, a third fit appears, shewing all the symptoms of the first one, which attacks the last third of the flock. By this it will be seen that the second or intermediate stage is the most dangerous, and against which the greatest precautions must be taken. With respect to the duration of the infection, there is an instance of a flock imparting it to another at the end of a year, on the two being united.

In this department, especially in that portion known under the name of "Sandes," where flocks are principally reared, the science

of agriculture is in such a primitive state, that hitherto no efforts have been made to check or mitigate the disease; and the only precaution taken, when it makes its appearance, is to separate the diseased sheep from the rest of the flock, and in some rare instances to inoculate the latter.

The remedies applied as curatives, by those who have devoted some attention to the care of their flocks, are but few and simple. But inoculation as a palliative is getting fast into use, and it is universally agreed that it is a most wise and efficacious precaution, as it diminishes the duration of the disease to one-third of the time, and causes it to be only rarely fatal.

The following are the chief remedies:—to mark and separate the infected animals from the rest; to place them in a dry and well ventilated place; to feed them with fresh fodder, stimulating their appetites by sprinkling salt with it, and likewise with oat or pea-meal mixed with water slightly salted.

In some instances bleeding has been found very beneficial, as also setons. But the best precaution, as above stated, is to proceed immediately to the inoculation of that part of the flock that has not been affected, in order to diminish the duration and intensity of the disease.

It has been observed that ground tainted by the passage of a diseased flock loses all trace of infection after rain.

There are no special laws in France to regulate the sanitary police of domestic animals: a few articles of the penal code and ordinances emanating from the superior local authorities, based on some few old laws and decrees, alone regulate these matters. The preceding are the *principal* regulations most generally in use, which may be modified or increased according to the exigencies of the case.

The authors who have treated on the subject of the variola ovis with the greatest research are, Delafond, "Traité sur la Police Sanitaire des Animaux Domestiques, Paris 1838;" Tessier, "Instruction sur les Bêtes à Laine," Paris 1811. D'Arboval, "Traité de la Clavelée."

Lisbon, 28th August, 1848.

My Lord,

On the receipt of your Lordship's dispatch of the 4th instant, relative to the disease among sheep known by the name of Variola Ovis, I lost no time in taking the necessary steps to obtain the required information, and I have now the honour to communicate to your Lordship the result of my inquiries.

The inclosed translation of a report which I have received from an eminent veterinary surgeon of this city will be found to contain some valuable information on the subject; and, by application to various other sources, I have been enabled to collect the following additional particulars.

The Variola Ovis, though not at present raging as an epidemic in any part of the country, is well known in Portugal, where it annually carries off a considerable number of sheep.

It is a cutaneous eruption, the first symptom of which is the appearance of spots of a purplish colour: from the centre of each of these rises a pimple, terminating in a white point, which soon becomes a pustule containing a yellow reddish serous liquid, at first transparent, but afterwards opaque, and finally assuming the character of purulent matter.

It generally appears on the bare parts of the animal, but sometimes extends over the whole body. It prevails most in spring and autumn, and chiefly attacks the young sheep. Like the smallpox in the human frame, it goes through the successive stages of incubation, eruption, suppuration, and desiccation. It is contagious or infectious, especially after suppuration has taken place, and soon spreads throughout the whole flock, unless care is taken to separate the sound from the infected sheep. It is sometimes mild, and at other times malignant, in which latter case it is generally mortal. When the pustules are few and scattered, it is mild; when many and close, it is malignant. Nothing is ever done by public authority for the cure or prevention of this or any other disease to which sheep or cattle are subject.

No remedy for the disease has yet been discovered in this country. When mild, Nature mostly works a cure; when malignant, the animal generally dies. Inoculation might, perhaps, have a good effect, but it has never yet been tried here.

I have received reports from the several Vice-Consuls within this district, from which it appears that the disease, though not raging any where at present, is well known in all parts of the country.

In conclusion, I beg to state that the term "Bexigas," which the Portuguese apply to the "Variola Ovis," is precisely that by which they designate the small-pox in the human body.

I have, &c.

(Signed) WILLIAM SMITH.

*The Viscount Palmerston, G.C.B.*

*&c. &c. &c.*

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(Copy.)

***Translation of a Report from the Chief Surgeon of the Veterinary Board at Lisbon, on the Subject of the Disease in Sheep called "Bexigas."***

THE "bexigas" (sheep-pox), according to the French veterinary surgeons, Bengrot, Moleon, Thillage, and Bazle, exists in all European countries except England.

In France, among no less than twenty-two different names by which it is known, it is called the "Liard," from the resemblance of the spots to the corn of that name. It goes through four different stages, like the human small-pox, and is, of all diseases to which sheep are subject, the most contagious and the most deadly.

No effectual preventive has yet been discovered; but I think that by giving the animal every day, at about noon, a feed of hay moistened with a solution of common salt, in the proportion of half a pound of salt to one *alumde* (about four imperial gallons) of water, much good might be done.

The treatment of the disease varies according to circumstances. If mild, the removal of the sheep to a dry pasturage, a proper ventilation of the fold, the exposure of the animals to the night air (at least in a warm climate like this), and some diminution of the time during which they are allowed to graze, will generally be found sufficient. When the disease is more virulent, the following is the treatment usually adopted:—A little salt or vinegar, or even a few drops of sulphuric acid, is mixed with the water given to the animal, which, moreover, should be frequently changed. Some persons practise bleeding, but I disapprove of it, as it produces weakness and prevents the development of the pustules, thereby

causing death. When the eruption delays, Urard (fils) recommends half-a-pint (Portuguese) of "aromatized" wine, half of it in the morning and the other half in the evening, to which, he says, may be added about an eighth of brandy. When the nostrils are obstructed or inflamed, a decoction of barley or marsh-mallow root may be injected into them. When the abdomen is hard, a little honey may be mixed with the water; when flaccid or loose, a quarter of a pint of an infusion of sage or mint must be administered daily. Urard recommends lancing the pustules, and washing them afterwards with camphorated oil, adding a few drops of ammonia; but however well this may answer in France, I think that in Spain or Portugal it would surely cause death; because, as the disease generally appears about the latter end of spring, the consequence would be that maggots would breed in the sores, and gangrene follow.

*Lisbon, August* 23, 1848.

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Since the publication of the last number of our Journal VARIOLA OVINA has made fearful ravages among the flocks, more particularly in the eastern division of the kingdom. The southern and western counties have, however, not escaped; and as it still prevails in all these districts, we doubt whether it will not gradually extend throughout the British Isles. In some few instances the malady has assumed a mild character; but in the majority it has proved very fatal, and occasionally it has swept away nearly the whole of the animals attacked. Neither age nor breed, system of management nor locality, seems to have stayed its progress or given immunity to the sheep. These facts have prompted us to lay before our readers the Acts which have been passed by Parliament to prevent the extension of the disease; and through the kindness of the Lords of the Committee of Privy Council for Trade, we are also enabled to add the latest information which the Government has received from the continent on this subject. These papers will repay a careful perusal, for it behoves every one, but especially agriculturists and veterinary surgeons, to be fully conversant with the present state of the law in regard to its sanitary influence over this destructive scourge.

Having made repeated visits to the infected districts, and had under our care many hundreds of variolous sheep, we have

availed ourselves of these opportunities to carry out ovination on an extended scale, with a view to test its safety and power as a prophylactic. The result is most satisfactory, as the returns do not shew the average deaths to exceed three per cent. Much of the success, however, depends on a variety of causes; namely, care in the selection of the lymph; its introduction by the *slightest* puncture; ovinating in one or at most in but two places; carefully protecting the sheep from all changes of the weather when the eruption appears, which it usually does about the eighth day; and continuing to give them every necessary attention during the further progress of the disease. With lymph recently taken from either the inoculated or eruptive vesicle we have found one puncture sufficient; two, however, should be made if the lymph has been kept a fortnight or more. The following experiment sufficiently illustrates the necessity of thus acting. Forty-four sheep were ovinated in one place only; the ichor had been procured from a natural case twenty days previously, and was of good quality. On the sixth day but *fourteen* had taken, and as the punctures in all the other sheep gave no indication of the introduction of the variolous poison, they were immediately re-ovinated, and with complete success. Not a single death occurred among these animals, and only three of them created any anxiety for their safety. In our "Practical Treatise on Variola Ovina," it has been stated that lymph could seldom be procured before the *thirteenth* day of ovination, and frequently not until the *sixteenth*. This remark is fully confirmed by extended experience; and we here allude to it to caution persons against the use of purulent products, which are easily obtained on the third and fourth day, when *deep* punctures have been made, and which we have seen again and again employed for inoculation. Farmers should bear in mind that such inoculations afford no kind of protection, and that in numberless cases have the lives of sheep been speedily cut short by this injudicious practice; and it, therefore, cannot be too strongly condemned. Inoculation of sheep requires the same amount of care and nicety of performance, to be successful, as does vaccination of the human subject; and when properly carried out, it is our best, and probably our only, means of lessening the fatality of this new scourge among our flocks. Want of space prevents our adding to these observations.

## DIPLOMAS.

SINCE our last report the following have obtained their Diplomas from the Royal College of Veterinary Surgeons, London.

[The single asterisk placed before the name indicates *Membership* of the VETERINARY MEDICAL ASSOCIATION; and two asterisks denote *Fellowship*, for Essays introduced and defended.]

*August* 23, 1848.

Mr. James Davy, Aylsham
Mr. Thomas Edwards, London
**Mr. Robert Gray, Princes Risborough
*Mr. Richard Smith, Acton
Mr. James R. Atcherley, Bridgenorth.

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## EXTRACTS FROM JOURNALS.

[From "Journal de Médecine Vétérinaire a l'Ecole de Lyon."]

### FOREIGN BODIES LODGED IN THE NOSTRILS.

A FARMER of the commune Limonest brought to the school a cow about seven years old. He stated, that on the previous day he had extracted from its left nostril a piece of wood half a décimetre in length, and wished the remainder of it, which was still in the nostril, to be removed. On examination it was perceived that a cylindrical piece of wood, about an inch in thickness, was still lodged in the nasal cavity. It was impossible to seize it with the finger and thumb, as at every such attempt being made it was forced farther up. With the aid of a strong pair of forceps, however, it was secured, and a piece two décimetres in length was removed; but on re-examining the nostril another fragment about one décimetre in length was seen still lodged within: this was likewise extracted, and, on uniting the two pieces at the fracture, their joint length was found to be three décimetres (ten to eleven inches). These pieces of wood were part of the branch of a chestnut tree. They were softened, brittle, of an offensive smell, and covered

with purulent mucus. On questioning the owner of the animal, he informed us that the accidental introduction of the wood occurred four months ago, being caused by the animal falling over some fences; and that she had been neglected, although there was a considerable discharge from the nostril, on account of her not losing condition and retaining her wonted liveliness.

It was easy to give credence to this statement, as the soft and brittle, and otherwise altered, state of the fragments themselves was a convincing proof of the length of time they had been lodged in the parts. On comparing the length of the pieces of wood with the length of the bones of the face, there remained no doubt but that it must have penetrated into the substance of the ethmoidal bone, and that without any serious consequences having resulted. After the extraction of the foreign body, the catarrhal effusion consequent on its presence soon subsided, and the cow does not now exhibit the least sign indicative of the injury. By the introduction of foreign substances into the nostrils of animals the consequences are more or less serious, according to the idiosyncrasy and nature of the animal to whom the accident occurs. In the horse it would not only produce a state of irritation in the mucous membrane, but this would be followed by ulceration, and frequently by glanders; and even soft bodies would be productive of nearly the same results, if their decomposition did not take place, arising from the humidity of the parts.

Among ruminants the consequences are not, generally speaking, dangerous; all that follows is a catarrh, more or less intense, and which ceases after the extraction of the offending body.

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### A singular Instance of Paraphymosis in a Horse, consequent on Castration.

September 19, a brown horse, five years old, was brought to the school. The owner informed us that he had been castrated ten days before by one of those operators who travel the country; and that after the removal of the clams a fleshy tumour, resembling a large mushroom, protruded from the incisions made. The horse lost his appetite, appeared unwell, and gradually became worse. The animal was placed in the hospital, and confided to the care of one of the students.

A large swelling was observed on both sides of the sheath, and corresponding to the scrotum were two wounds, the effects of recent castration. Through the one on the right side protruded a body which was soon ascertained to be the end of the penis, the whole of which was nearly covered by the scrotal membranes, and which were in a state of gangrene. The urine was evacuated by jerks in a backward direction; the animal moved with great difficulty; the hind legs were placed wide apart, the spine was insensible to pressure, and there was also febrile action present. To examine the parts more minutely, it was necessary to cast and to fix the animal the same as for an operation. This being done, the sheath and surrounding parts, which were covered with pus, were cleansed. That part of the penis which protruded through one of the incisions of the scrotum was two centimetres in length, in size that of a man's fist, and of a purple colour. On touching it the animal struggled violently, evincing great pain. There was a depression observed on one side of the penis, caused by the friction of the clam. The prognosis, considering the strong constitution of the horse and the state of the organs, was not unfavourable.

The first thing done was to enlarge the opening, in order to free the penis from the membranes which compressed its apex; after which scarifications were freely made on the tumefied parts of the penis, which was followed by a copious flow of blood, and shortly after, by a little pressure being communicated, the penis was forced into its normal position. During the day fomentations were made use of, consisting of an infusion of aromatic herbs, and the diet limited for some time; when the suppuration became less, and the patient soon recovered.

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## On the Use of the Hook and Ropes in the Operation of extracting a Fœtus, when secured by the Head.

*By* M. Schaak.

In parturient operations on the large domestic females, it is frequently requisite that the head of the fœtus be secured, in order to effect its delivery. For this purpose several means have been proposed, such as hooks, groove or hinge forceps, and finally

ropes. The latter are doubtlessly preferable, and are apparently simple and convenient in their general mode of application to the inferior interdental space or occiput region; but practice enables us to point out some remarkable objections in reference to those two processes.

In the solidungulata the cords are attached with greater facility in the inferior interdental space than in calves, owing to the greater ease with which the elongated head of the former enters the vaginal track.

In calves, on the contrary, cases of difficult parturition are more frequent. The head, which is invariably of a rather quadrangular shape, requires more powerful traction for its disengagement, and their interdental space is by no means favourably situated for this purpose: its weak and conical form, added to the prominence of the chin, favour the slipping of the running noose, which is usually applied in that situation. The fragile basis on which the said noose acts is by no means adapted to support powerful traction; but very frequently it yields to the force of one or two men at utmost, leading to the untoward result of fracture, and a separation of the extremity of the bone.

The danger and inadequacy of a similar method, in a great number of cases, are amply proved by the frequent occurrence of accidents analogous to those adverted to.

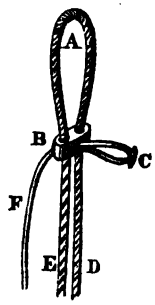
The occiput offers more certain guarantees of stability, and to secure it with a rope noose conveniently prepared is not a task of greater difficulty than the ordinary method; but it is an undeniable fact, that the rope nooses, as usually arranged for the purpose, are a fertile source of untoward accidents. The fluids which escape during parturition render the cords tense, and prevent the easy gliding of the slip knots which sometimes approach too near the throat. The nooses are rarely of the required dimension: if too small, their application is an arduous task; if too large, their escape over the chin is a probable event. In the extraction of the fœtus another obstacle occasionally presents itself, and is in a great measure the result of the defective mode of operating. The cords, when simply placed in the occipital region, do not draw the head in so direct a course as when situated in the interdental space. The extremity of the noose only enters the vaginal track by its natural tendency, it not being compelled to follow the

direct course of the vagina; and, the force being applied more on the neck than on the free extremity of the head, the noose is occasionally forced upwards against the sacrum, or in a transverse direction. Hence arise accidents requiring appropriate remedies.

To obviate all these it would be necessary to suggest a plan, easy in its execution, applicable under all circumstances, and adapted to hold the free extremity of the head invariably in a favourable position. A rope apparatus similar in its construction to a head-collar might fulfil these various objects.

Bearing these facts in mind, we have attempted so to arrange a head-collar as to admit freely of variation in size, by means of a ring through which the two rope nooses may play; one of these, destined for the occiput, forms the head-piece, and the other acts as a nose-band. The former is made with twelve feet of rope, from seven to eight millimetres in diameter (little more than a quarter of an inch), bent about the middle of its length. The nose-band is made of two pieces of strong tape, sewed together, so that one acts as a lining to the other. The single ribbon thus formed is to be converted into a noose by bending its length midway. The two free ends are to be sewn together into one, and in the middle part of the noose is to be stitched a thin leather pad as an impediment to its slipping through the slide, which is the key or central link of the apparatus. It consists of a piece of tin (or wood) of the form of a double cube, twenty-eight millimetres long (little more than an inch), twenty-five wide (an inch), and fifteen (little more than half-an-inch) in depth. All the corners or angles of the solid are rounded off, and it is pierced by three openings; two in a parallel direction traverse its diameter lengthways, while the third pierces centrally the diameter of its depth. This latter serves for the nose-band, while the two former are occupied by the ends of the head-piece noose. On one of these the slide is fixed at the distance of a span from the curve of the noose by means of two circular pads, one being fixed above, the other below, the solid piece of wood or tin; the other end, on the contrary, slides freely in its opening. By this means the head-piece noose may be enlarged or diminished at pleasure, either while it is being applied, or subsequently; and when once put on it suffices to hold the two extremities with an equal power of tension, and to render its area invariable. The nose-band noose

is also very moveable: in drawing it by the pad it may be enlarged at pleasure, and it may be lessened by applying traction to its free end. The annexed figure will render all the details easier of explanation.




A, the head-piece noose.
B, the slide.
C, nose-band and its pad.
D, end of rope on which the slide is fixed.
E, gliding extremity of the rope.
F, free end of the nose-band.

In order to arrange this apparatus, and ensure its success when employed, certain conditions are required. First, that the ropes be rendered as pliable as possible, to prevent their being stiffened by the waters; secondly, so to determine a distinctive mark as to be enabled to discern by tact which of the two ends is the moveable one; this may be attained by twisting round the gliding rope some packthread interspersed with knots. Suppleness may be given by soaking the ropes in oil for several days. This head-collar, or more particularly the head-piece, is to be placed on the head of the fœtus in a similar manner to the ordinary rope nooses. Practice rather than precept will render the accomplishment of this object more expeditious; but, meanwhile, we purpose recommending an *ars facendi*, as speedy in its execution as it is easy of comprehension:—

The head-piece, hand, and arm being well oiled, the middle part of the noose (destined to surmount the occiput) is to be placed on the extreme phalanges of the thumb and middle finger of the right hand, with especial care that the end of the free rope ascend in contact with the extremity of the index-finger, and that the end which is fixed to the slide descend on the opposite side in contact with the tip of the little finger. The noose thus placed on the extremity of the hand is ready for use. We are to dilate as much as possible the nose-band noose, the projecting end of which, viz. the leathern pad, is to be turned towards the hand and placed like

the slide, on the level of the wrist. The one rope belonging to the nose-band, and the two free ends of the head-piece, are to be held in the left hand with sufficient tightness to maintain the position of the noose on the extremity of the right had, which is to be passed edgeways in the genital viæ, as far as the fœtus, the head of which is to be secured by passing the hand along the right side of the face so as to pass the noose from the chin towards the occiput. By manipulation of the gliding rope the head-piece may be enlarged at pleasure, so as to embrace the wider parts in the ascent; the rope is to be pressed behind the right ear and then behind the left, and the hand finally descends on the opposite side of the head, until it reaches the slide, which is to be placed in a suitable position under the lower jaw. The left hand affords aid in this process, and by it the free end of the rope is to be drawn, if it be requisite that the slide approach nearer the gullet; *vice versâ*, traction may be applied to the opposite end, which is fixed on the slide, if it be necessary to lower it towards the chin; and whilst these two ends of rope—but more especially the moveable one—are being held in the left hand, or by an assistant, the nose-band is to be suspended on the index finger, which draws it from its slide. In this state of things it will be found an easy to task to encircle the muzzle with the nose-band noose, the single and free extremity of which is to be drawn by the hand in its descent, from placing the head-piece round the occiput, and joined with the two others by some kind of knot. In this state all is definitively fixed, and the head of the fœtus has been secured, at its superior and inferior part, in the most convenient manner possible. Force may be applied to any required degree; no obstacle will be offered by the projecting nose of the foal, nor by the muzzle of the calf; neither will any part of the head-collar miss its hold, or produce any injury. Without exaggeration, the accoucheur's forceps cannot be better suited for the human fœtus; and, in our opinion, this head-piece fulfils the required purpose sufficiently well, and much better than iron instruments, which, in reality, are little adapted for fœtal extraction in quadruped females. Notwithstanding, in certain cases, the simple hook possesses its share of usefulness, and we have occasionally preferred it to the head-collar when a dead fœtus, or one not likely to live, is retained a considerable depth in the pelvic cavity. Under similar circumstances, when speedy deli-

very is the desired object rather than the preservation of the fœtus, its head is drawn forward by passing a hook into the mouth and securing it in the palatine arch, through the guttural openings of the nasal chambers. This mode of operating has been attended with success; its execution is easy, and its action safer than when the hook is secured in the orbit.

With the exception of these rare occurrences we generally apply at the onset the sliding head-collar to all fœtuses with anterior presentation. No matter if the difficulty in parturition appears great or slight, the fœtal head is at once secured, and the preparation for delivery is soon completed by seizing the fore extremities. A means adapted to overcome the greater difficulties may with more probability succeed in surmounting inferior obstacles. Moreover, the degrees of resistance likely to be experienced in parturition cannot always be judged of by outward appearances: unforeseen obstacles occasionally arise, and testify the prudence of always being on the alert. Another reason for the early application of the head-collar is, that it can be more easily applied in the first instance than after futile attempts have been made to effect delivery; it being a well-known fact, that the greater the frequency of the throes, so much the more difficult and dangerous does delivery become.

## REVIEW.

*Researches on the Motion of the Juices of the Animal Body. By* Justus Liebig, *M.D., Professor of Chemistry in the University of Giessen.* Edited from the Manuscript of the Author, by William Gregory, *M.D.*, &c. London: Printed for Taylor and Walton, pp. 109.

Whatever emanates from the pen of Baron Liebig is sure to excite the liveliest interest in the philosophic world, although a few sciolists may possibly affect to contemn his theories. It is fortunate for this country that in Dr. Gregory he has met with a translator and editor of a kindred spirit with his own; and thus the novel and at times startling positions laid down by him, al-

most compelling us, as they do, to wipe from off the table of our memory

> "All trivial fond records,
> All saws of books, all forms, all pressures past
> That youth and observation copied there,"

are immediately made known to the scientific inquirer, and receive the attention they so justly merit.

Perhaps it is to be regretted that the views thus promulgated are not always such as will bear the severe and searching scrutiny of other philosophers; nevertheless good results from their dissemination, their utility being proved by the inquiries they awaken, which result in either their modification or the eliciting of the truth, the end and object of all scientific investigations; but which is not always easily attained, since deep shadows oftentimes invest it, and much obscurity frequently renders its perfect development extremely difficult.

Moreover, science, while it is accumulative, is also progressive; and theories at one time considered not only as perfectly tenable but strictly in consonance with Nature's laws, are often obliged to give way to others, and these too, in their turn, may be called upon to yield the precedence and take the lower place. It is quite possible, mortifying though it be to the boastful wisdom of the present age, that much of what we now so fondly cling to may hereafter be proved to be altogether fallacious. As proof of this, we have only to allude to the fact that, in the earlier ages of science, the "motion of the juices" in an organic body was made dependent on capillary attraction. Soon this was found to be insufficient to account for the phenomenon; and Endosmose, or "the transmission of gaseous bodies, or vapours, or liquids, through membranes or porous substances from without inwards," was substituted. The converse of this force or power is designated Exosmose. These terms originated with Dutrochet, the former being applied to increase of volume, the latter to its diminution. Liebig, however, contends that other forces, and far more powerful ones, are in operation to bring about the motion of the fluids in the organism. During some experiments instituted by him, the object of which was "to ascertain the law according to which the mixture of two liquids, separated by a membrane, takes place;" in other words, while studying the phenomena of Endos-

mosis, he became impressed with the conviction that, in the organism of many classes of animals, causes of the motion of the juices were in operation far more powerful than that to which the name of Endosmosis had been given.

"The passage of the digested food through the membranes of the intestinal canal, and its entrance into the blood; the passage of the nutrient fluid outwards from the bloodvessels, and its motion towards the parts where its constituents acquire vital properties—these two fundamental phenomena of organic life cannot be explained by a simple law of mixture."—*Preface.*

The force in operation, he considers, depends on atmospheric pressure, called into action by transpiration going on from the skin and lungs, and hence the hygrometric state of the air has much to do with the amount or degree of force exerted. Added to which must be taken into account the chemical attraction the fluids have for each other; but the movement thus induced is "exclusive of the mechanical cause of the contraction of the heart, by which the circulation of the blood is effected," and is brought about by means of water, of which all parts of the system, in its normal state, contain a certain or definite amount.

"Animal membranes, tendons, muscular fibres, cartilaginous ligaments, the yellow ligaments of the vertebral column, the cornea, transparent and opaque, &c., all contain, in the fresh state, more than half their weight of water, which they lose, more or less completely, in dry air.

"On the presence of this water depend several of their physical properties. The fresh, opaque, milk-white cartilages of the ear become, when dried, translucent, and acquire a reddish yellow colour. Tendons, when fresh, are in a high degree flexible and elastic, and possess a silky lustre, which they lose when dried. By the further loss of water they become hard, horny, and translucent, and, when bent, split into whitish bundles of fibres. The sclerotic coat is milk-white when fresh, and becomes transparent by desiccation."

The properties thus lost, however, are regained by being placed in contact with water, the tissues absorbing their original amount of this fluid; and the same thing obtains in liquids allied to water or miscible with it, by which the permeability of the membranes is shewn, arising from their porosity. Two causes are here seen to be in operation: 1. The attraction the walls or pores of the

tubes have for the particles of the fluid, called *capillary attraction*. 2. The attraction one particle of the fluid has for another, termed *cohesion*. Pressure unquestionably has much to do with the passage of fluids through both membranes and tubes, and, when the union of two liquids dissimilar in their nature takes place, *chemical attraction* or *affinity* is the cause that brings it about.

These statements sound to us as familiar as household words; they appear mere truisms, facts well known in physics—there is nothing new in them: hitherto, however, these laws have been applied to inorganic matter rather than to organic bodies, and it was necessary that proofs should be adduced of their existing in both kingdoms. This Liebig has endeavoured to supply in the work before us, and, each position being confirmed by experiment, he shews how they all bear on the organism. And, surely, nothing is more conducive to the ready comprehension of an argument than that the simplest premises should be laid down at the first, and, being proved, to these the mind reverts as the demonstration proceeds, until the highest conclusions are satisfactorily arrived at and the deductions become self-evident. So, in the acquirement of a knowledge of the anatomical constitution of the higher order of animals, an acquaintance with the structures existing in the lower facilitates the investigation, since in them we find the embryo or type of that which becomes fully developed as we ascend the scale: here we have the rudiments that eventuate in the perfect organ; there the simple structures which by aggregation form the complex ones, and thus the relationship parts bear to each other is at once clearly seen.

Whether there be not in this an attempt to explain that which is inexplicable—to account for vital actions by a reference to the mere physical forces—is a question we do not at the present feel ourselves called upon to inquire into. While the latter may and unquestionably do obtain in the organism, they are, nevertheless, under control: there is something superior that governs them, and keeps the complicated machine in order; and this is proved as soon as life is withdrawn, for then the multiplied levers and pullies no longer play their parts, the mass becomes disintegrated, and, by the exertion of the chemical forces, new combinations take place among the elements, which are far more simple than those that previously existed.

Dr. Gregory truly says, "But it is equally obvious that the

abovementioned mechanical and chemical causes are not alone sufficient to explain the phenomena of animal life, since they are present equally in a dead and in a living body; so that while every advance in physiology enables us to explain more facts on chemical and mechanical principles, something always remains, which, for the present, is beyond our reach, and which may for ever remain so."

And now having given an outline of the views entertained by the Baron as to the forces by which the fluids are operated upon in the organism, we will allow him more fully to explain them.

"*Influence of the cutaneous Evaporation on the Motion of the Fluids of the Animal Body.*

"That the skin of animals, and the cutaneous transpiration, as well as the evaporation from the internal surface of the lungs, exert an important influence on the vital processes, and thereby on the state of health, has been admitted by physicians ever since medicine has existed; but no one has hitherto ascertained precisely in what way this happens.

"From what has gone before, it can hardly be doubted that one of the most important functions of the skin consists in the share which it takes in the motion and distribution of the fluids of the body.

"The surface of the body of a number of animals consists of a covering or skin permeable for liquids, from which, when, as in the case of the lung, it is in contact with the atmosphere, an evaporation of water, according to the hygrometric state and temperature of the air, constantly goes on.

"If we now keep in mind that every part of the body has to sustain the pressure of the atmosphere, and that the gaseous fluids and liquids contained in the body oppose to this pressure a perfectly equal resistance, it is clear, that, by the evaporation of the skin and lungs, and in consequence of the absorbent power of the skin for the liquid in contact with it, a difference in the pressure below the surface of the evaporating skin occurs. The external pressure increases, and in an equal degree the pressure from within towards the skin. If now the structure of the cutaneous surface

does not permit a diminution of its volume, a compression (in consequence of the loss of liquid by evaporation), it is obvious that an equalization of this difference in pressure can only take place from within outwards; first from within, and especially from those parts which are in closest contact with the atmosphere, and which offer the least resistance to the action of the external pressure.

"Hence it follows, that the fluids of the body, in consequence of the cutaneous and pulmonary transpiration, acquire a motion towards the skin and lungs, which must be accelerated by the circulation of the blood.

"By this evaporation, the laws of the mixture of dissimilar liquids, separated by a membrane, must be essentially modified. The passage of the food dissolved in the digestive canal, and of the lymph into the bloodvessels, the expulsion of the nutritive fluid out of the minuter bloodvessels, the uniform distribution of these fluids in the body, the absorbent power of the membranes and skin, which under the actual pressure are permeable for the liquids in contact with them, are under the influence of the difference in the atmospherical pressure, which is caused by the evaporation of the fluids of the skin and lungs.

"The juices and fluids of the body distribute themselves according to the thickness of the walls of the vessels, and their permeability for these fluids, uniformly through the whole body; and the influence which a residence in dry or in moist air, at great elevations or at the level of the sea, may exert on the health, in so far as the evaporation may thus be accelerated or retarded, requires no special explanation; while, on the other hand, the suppression of the cutaneous transpiration must be followed by a disturbance of this motion, in consequence of which the normal process is changed where this occurs.

"The pressure, which, in consequence of the evaporation, urges the fluids within the body to move towards the skin, is, as may readily be understood, equal to the difference of pressure acting on the surface of the skin."

The work closes with a consideration of the influence of evaporation on the life of plants, first recognised by HALES.

"According to him, the development and growth of the plant depend on the supply of nourishment and moisture from the soil, which is determined by a certain temperature and dryness of the

atmosphere. The absorbent power of plants, the motion of their sap, depends on evaporation; the amount of food necessary for their nutrition, which is absorbed, is proportional to the amount of moisture given out (evaporated) in a given time. When the plant has taken up a maximum of moisture, and the evaporation is suppressed by a low temperature or by continued wet weather, the supply of food, the nutrition of the plant, ceases; the juices stagnate, and are altered: they now pass into a state in which they become a fertile soil for microscopic plants. When rain falls after hot weather, and is followed by great heat without wind, so that every part of the plant is surrounded by an atmosphere saturated with moisture, the cooling due to further evaporation ceases, and the plants are destroyed by fire-blast or scorching (*Sonnenbrand*, German, literally sun-burn or sun-blight)."

To the same origin Liebig traces both the potato-blight and the influenza. Speaking of the former, he says, "after the experience and observation of so long a period in reference to the influence of evaporation on the condition of plants, I hardly think that any unprejudiced observer can entertain the smallest doubt concerning the cause of the great mischief which has befallen agriculture during the last few years. If HALES, that unequalled observer and inquirer, had known the potato disease, I hardly believe that he would have ascribed it to an internal cause belonging to the plant, any more than he thought of ascribing the blight of the hop-plants, formerly mentioned, to a special hop disease, or the rotting of the apples to an apple disease. Even PARMENTIER, to whom France is indebted for the introduction of the potato, knew this disease, and has very accurately described it. The term 'potato-rot' has been known to the oldest peasants and agriculturists since their youth; it has, doubtless, only acquired of late years the frightful significance which seems to threaten the well-being of nations, since the causes which formerly brought it locally into existence have spread over whole districts and countries. The writings of HALES bring to our century from a preceding one the consoling certainty (and this is especially important), that the cause of this decay is not to be looked for in a degeneration of the plant, but depends on the combination of certain conditions accidentally coincident; and that these, when they are well ascertained

and kept in view, enable the agriculturist, if not to annihilate, at least to diminish, their hurtful influence.

"The potato-plant obviously belongs to the same class of plants as the hop-plant; namely, to that class which is most seriously injured by the stagnation of their juices in consequence of suppressed transpiration."

Adverting to the latter, he states, "the cause of the disease is the same which, in spring and autumn, excites influenza; that is, the disease is the effect of the temperature and hygrometric state of the atmosphere, by which, in consequence of the disturbance of the normal transpiration, a check is suddenly, or for a considerable time, given to the motion of the fluids, which is one chief condition of life, and which thus becomes insufficient for the purposes of health, or even hurtful to the individual.

"When the vessels of the plant are filled to overflowing with water, and the motion of the sap is suppressed, the nutrition, in most plants, is arrested, and death takes place. Every one knows the effect of a sudden or of a gradual overfilling of certain parts or organs when the corresponding evaporation is suppressed. By the endosmotic pressure of the water flowing towards those cells, which contain sugar, mucilage, gum, albumen, and soluble matters in general, the juicy fruits and seeds approaching maturity burst; and the juice of grapes, cherries, plums, &c., passes, on contact with the air, into a state of progressive change. The fungi which have been observed on the potato-plants, and the putrefaction of the tubers, are not the signs of a disease, but the consequences of the death of the plant."

Sufficient has been adduced to shew that pathology receives elucidation from physiology, while chemistry lends its aid to both.

In an appendix we have communicated a method proposed by Dr. Klotzsch for the protection of the potato-plant against disease; for which we must refer our reader to the work itself, having devoted a larger space than is customary to a review of this kind. It is, however, very simple, and consists in giving strength to the potato-plant, so as to enable it to resist the influences which determine its diseases.

## MISCELLANEA.

### Remarkable Constituents found in the Intestine of a Sheep, and in a Portion of the Contents taken from several others suspected of being poisoned.

*By Mr.* H. Osborn, *Southampton.*

[From "The Pharmaceutical Times."]

Last January, Mr. Pinckney, of Berwick St. James, lost 195 sheep within fourteen days, which induced him to suspect they had been poisoned.

Mr. Spooner, veterinary surgeon, of this town, who was consulted by the owner, suspecting the presence of some peculiar irritant poison, requested me to analyze a portion of the intestines and contents.

I first examined some of the intestine in the usual way for arsenic, but none could be discovered. Another portion was boiled in distilled water, and sulphuretted hydrogen passed through the filtered liquid, which produced no change of colour on precipitation; but, on adding ammonia, a copious precipitate of a whitish black colour took place. A second portion of the filtered liquid gave a blue precipitate with the ferrocyanide of potassium. The precipitate by sulphuretted hydrogen and ammonia was collected on a filter, well washed with water, dried, and treated with nitric acid, diluted with distilled water, and again filtered. On adding ammonia a copious precipitate was obtained, which resembled phosphate of lime coloured with a little iron. The precipitate was well washed with water and dissolved in acetic acid, which, upon further examination, proved to be phosphate of lime*, and a small portion of phosphate of iron remained undissolved by the acetic acid. The filtered liquid which held the phosphate of lime and iron in solution was found to contain a small quantity of sulphuric acid, but a much larger portion of phosphoric acid.

The intestine which had been boiled in distilled water was then boiled with nitric acid until nearly dissolved; the excess of acid being expelled by evaporation was diluted with distilled water, and filtered. The solution contained sulphuric acid, lime, and a small portion of iron.

From this examination I was led to conclude the presence of

* Seven ounces of intestine boiled for twenty minutes in distilled water gave 7.5 grains.

superphosphate of lime, sulphate of lime, sulphate of iron, which constitutes the well-known valuable compound of bones and sulphuric acid, so extensively used for manure, but containing rather a larger quantity of iron than I should have expected to find, unless the acid was very impure; pieces of iron, however, might have been accidentally dissolved with the bones by the acid, or any other metal might exist in such a compound, but none could be discovered in the part which I examined.

The contents of the intestines contained a considerable quantity of the same constituents, but none was found in the sweepings of the troughs which the sheep were fed from; nor had any of the compost been used on the premises for six months previous, which renders the case the more mysterious.

Mr. Spooner was of opinion, from a careful *post-mortem* examination which he made of the bodies of many of the sheep, that the appearances of the intestines were such as would very probably be produced by such an agent as the sulphated bones, which would be rendered still more irritant in proportion to the amount of sulphuric acid left in a free state.

I believe no case of poisoning has occurred with such a compound as the above; but I feel myself justified in publishing the facts as I found them, in order that some caution may be used by farmers and others not to leave any of the compost in any situation where the cattle could possibly gain access, or where it could by any means be mixed with their food or water. The case in question, as above stated, was not traceable to any accidental cause.

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*To the Editor of "The Pharmaceutical Times."*

Sir,—The case related in your last number, by Mr. H. Osborn, would, indeed, be a wonderful one if it had occurred as imagined by him. That 190 sheep should voluntarily eat sulphate of bones enough to poison them, when their troughs were full of chopped hay ready for them, would have been strange; but that they should do so when no such material as sulphate of bones had been on the premises for six months, would have made the act still more so; and to imagine that 400 sheep (for the whole flock were affected) should be caught and drenched secretly with such a material in one night, would have been still farther beyond belief. To remove the fears which will be created by Mr. Osborn's letter, allow me to strip the case of the wonderful, and bring it back

within the range of probability at least*. On Feb. 7 last, I received from Mr. Pinckney the entire carcass of a sheep, with a statement that he had a flock of 650 recently driven home from "wintering;" that they had been then separated into two foldyards closely adjacent; had drank from the same river, and fed on nothing but chopped hay, cut from the same mow, by the same man, and in every other respect in the same way. They were in equal health on folding, and 250 in one yard continued so; but on the shepherds visiting the 400 on Thursday morning, Jan. 27, they found five dead, and all the others suffering greatly; that half their hay was left uneaten in the troughs; that the sick sheep continued to die off till the day spoken of, by which time 190 were gone, 120 dying in the two first days, the others slowly recovered; that, in order to try whether it was owing to the situation, or from an infectious disorder, he had removed ten healthy sheep from the other fold, and introduced them amongst the diseased ones; but they remained sound.

The symptoms given me were that the sheep were restless; moaned considerably, as if in great pain, and did not ruminate; the poison was, therefore, most probably an acrid one. The appearances on dissection were:—The mucous surface of the stomachs was not inflamed, but came off easily; the intestinal canal was inflamed in patches; the bronchial tubes were lined with a brown deposit like false membrane; the lungs congested; but the wool came off with the slightest pull. I tried for arsenic by Reinsch's test, with the necessary precautions, and also by my own; but found not the slightest trace. There were no remains of a poisonous plant amongst the food in the stomach: I therefore tried a general process for fixed poisonous metals, and found slight traces of copper in the food, much more in the liver, and some in the solid matter of the intestines themselves. The processes used were as follow:—About an ounce of the liver was heated with nitric acid in a platinum dish until it was converted into xanthroproteic acid; it was then evaporated to dryness and heated red hot; the carbon, &c., remaining was burnt off by dropping nitric acid upon it in a heated state; the residual ash was dissolved in nitric acid and supersaturated with ammonia, when copper was indicated by its colour, by ferrocyanide of potassium, and by a stream of hydrosulphuric acid gas. The sulphuret

* I must first mention that superphosphate of lime is always, and traces of sulphate and iron are almost always, found in the intestines of man and animals.

was reduced by the blowpipe with carbonate of soda and borax into a bead of metallic copper: this button of copper, from 1 oz. of liver, was forwarded to Mr. Coleman, the veterinary surgeon in the case, and was produced at the trial. Mr. Pinckney afterwards exhumed the bodies of two more of the sheep, and forwarded me the intestinal canals, when I found copper in both, and more extensive inflammatory appearances, each patch of which furnished me more copper than equal portions of the other parts. I think, therefore, there can be no doubt but that this was the poison, and the question was, "In what state and how was it administered?" It could not have been by accident, as no copper was used in preparing or storing the food; nor from the sulphate of copper used in "pickling" wheat, as none had been on the premises since October last; besides which, they drank from a running river: it was most probably added as sulphate of copper to the food of the 400 on Wednesday night, when the animals refused to eat part of it (no doubt from its nauseous taste). I found none in the food turned out of the troughs, which was not to be wondered at, as it had been exposed during very rainy weather ten or twelve days*.

A man who lived near the fold was some time after imprisoned and tried for the offence. He had been previously committed for want of sureties for threatening Mr. Pinckney with death because he would not find him work; and at the trial was proved to have told a fellow-prisoner and four others that "he would do Mr. Pinckney a mischief," that "he would make him as poor as himself," that "they would hear of a flock of sheep being poisoned," that "he knew how to do it with three or four things, so that no man living should be able to find it out," that "it might be easily put in their food at night," and "he had that in his house would do it;" he was also proved to have walked six miles to Salisbury four days before the sheep were taken ill, and to have tried to buy arsenic there; but from the want of one link in the *legal* evidence (the possession of a salt of copper) he was very properly not convicted, though I believe that the general feeling in the court was that the *moral* proof was complete.

WILLIAM HERAPATH.

* One fact is worth noticing. We have several reported cases where copper has caused great itching in parts of the body covered with hair, and in some cases vesiculation has occurred in such places; but here the wool was easily removed from the skin.

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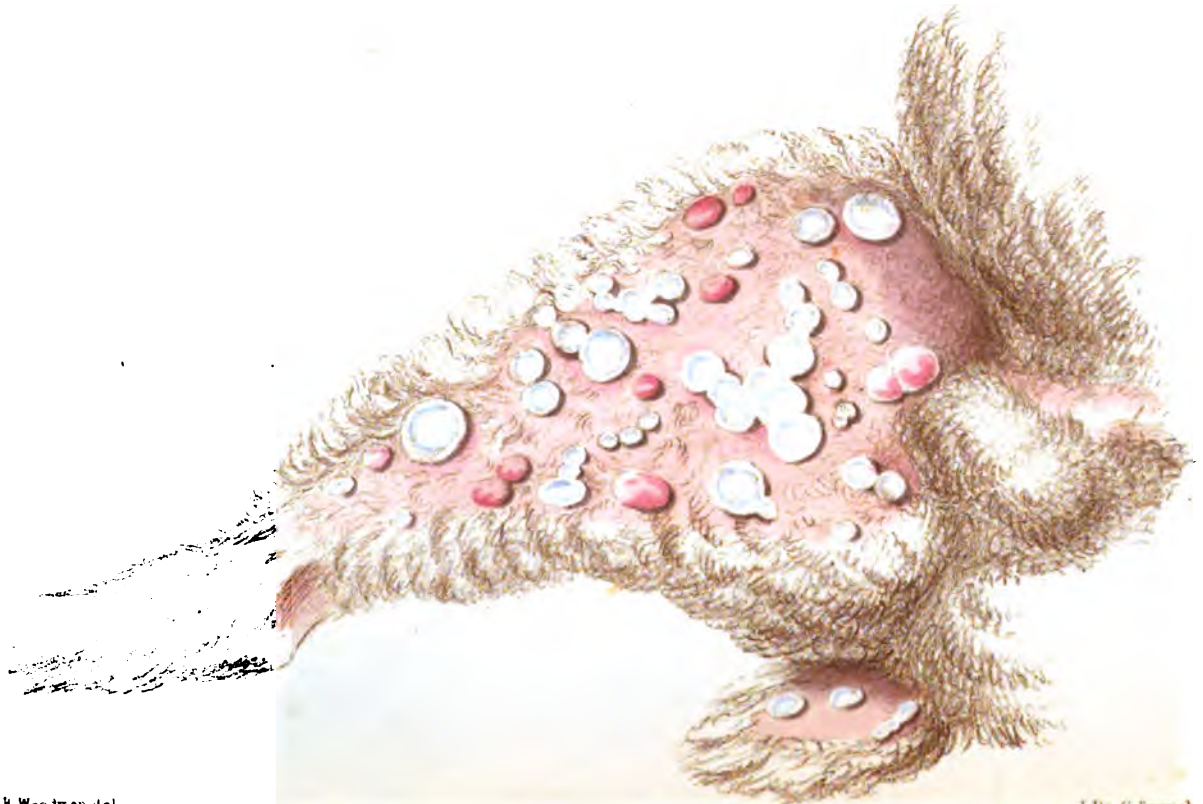

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