THE

VETERINARY RECORD,

AND

TRANSACTIONS

OF THE

VETERINARY

MEDICAL ASSOCIATION.

VOL. IV.

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VETERINARY RECORD,

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TRANSACTIONS

OF THE

VETERINARY MEDICAL ASSOCIATION.

EDITED BY

PROFESSORS SPOONER, SIMONDS, AND MORTON.

ROYAL VETERINARY COLLEGE.

VOLUME IV.

ILLUSTRATED BY ENGRAVINGS AND WOODCUTS.

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

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THE

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ROYAL VETERINARY COLLEGE.

The 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. $3\frac{1}{2}$ 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. $10\frac{3}{4}$ 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 PER*oxide of iron*; but, as it yielded up its oxygen, it gradually became converted into the *carbonate of the* PROTO*xide*, 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."

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.

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.

R Woodman del

J De C Sowerby lith

R Woodman del

J De C Sowerby lith

Hullmandel & Walton Lithographers

On Chloroform.

By Mr. W. J. T. Morton.

The new anasthetic 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 65^0: its boiling-point about 140^0: 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."

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.

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.

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.

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.

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 ϑj, 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. ℥ss, 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].

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 that *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:

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.

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.

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.

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. . . . . ℥j
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.* ..... ℥vj
Potass. iodid. ..... ℥ij
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. ℥v, ol. origani ℥iv, liq. ammon. ℥iv, 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.

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.

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.

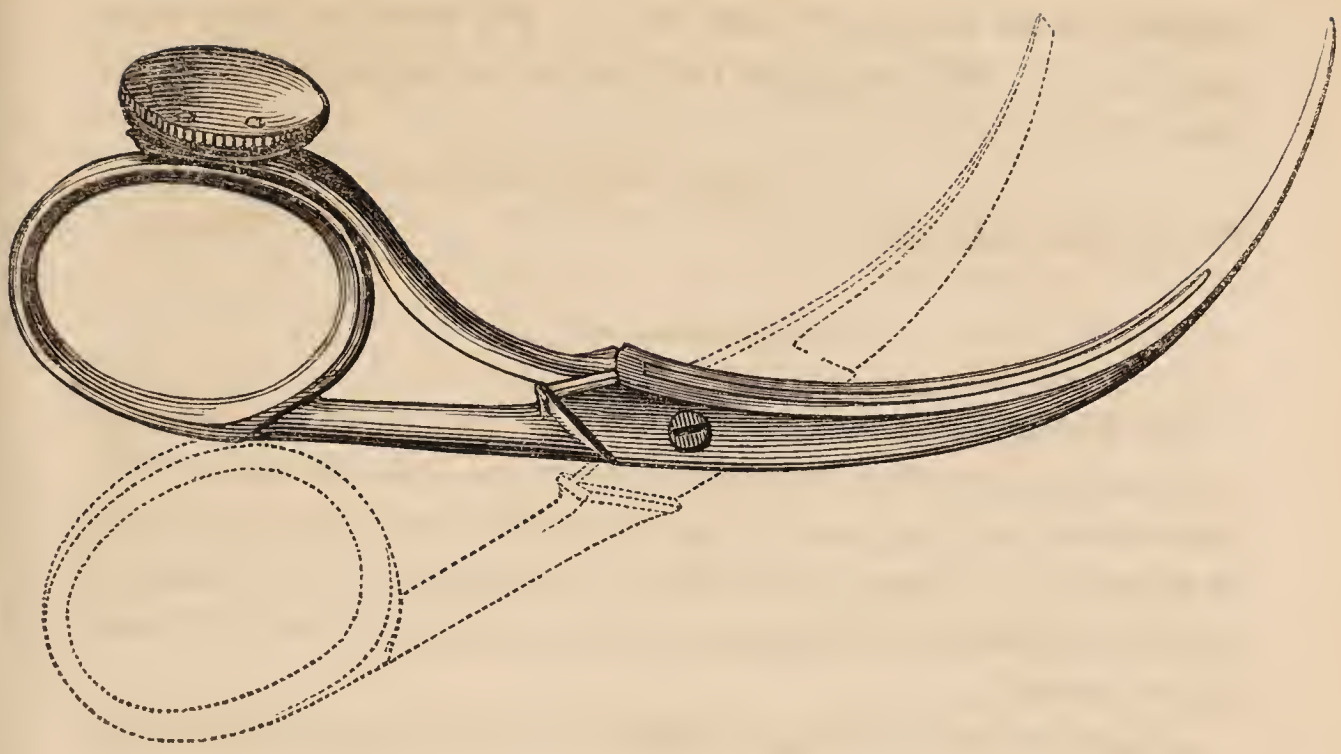
Several highly ingenious new instruments, and improvements in others, were exhibited by Mr. T. W. Gowing. They consisted of,—

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.

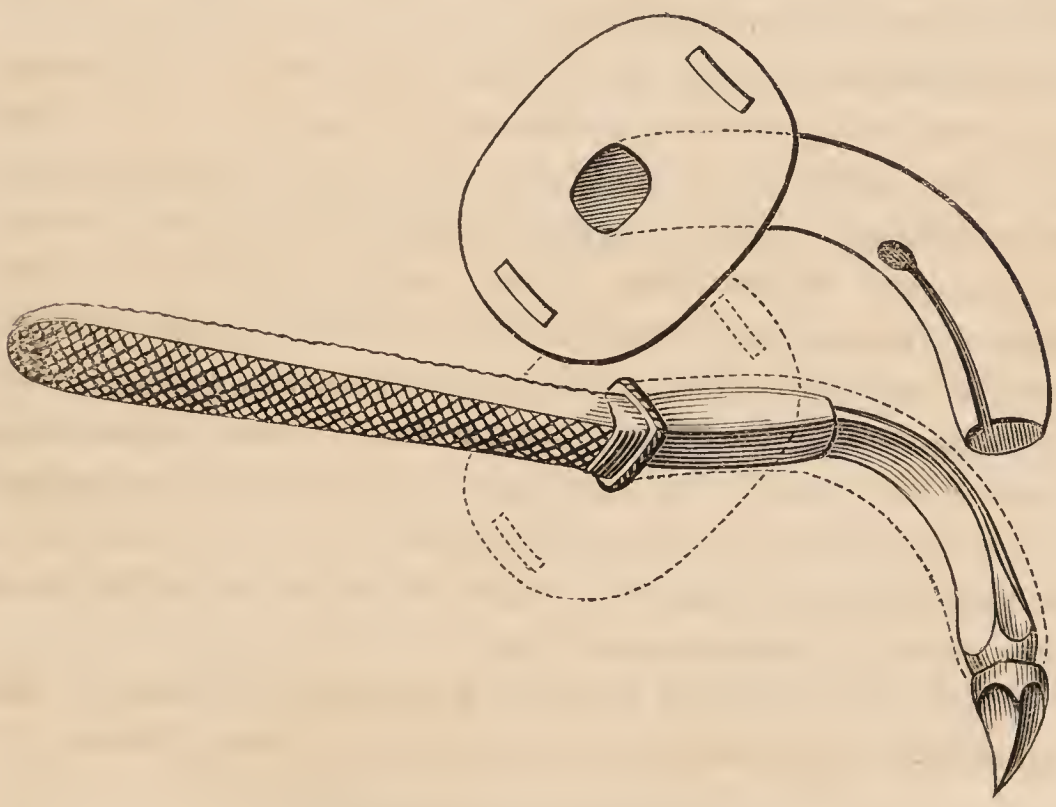
4. A pair of neurotomy scissars, superseding the use of the curved needle and thread, with the scalpel, or cutting bistoury.



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-

guous, 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.

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.

9*th*.—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.

10*th*.—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.

30*th*.—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.

31*st*.—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. 1*st*.—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.

2*d*.—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.

3*d*.—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.

4*th*.—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.

5*th*.—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.

6*th*.—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.

7*th*.—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.

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

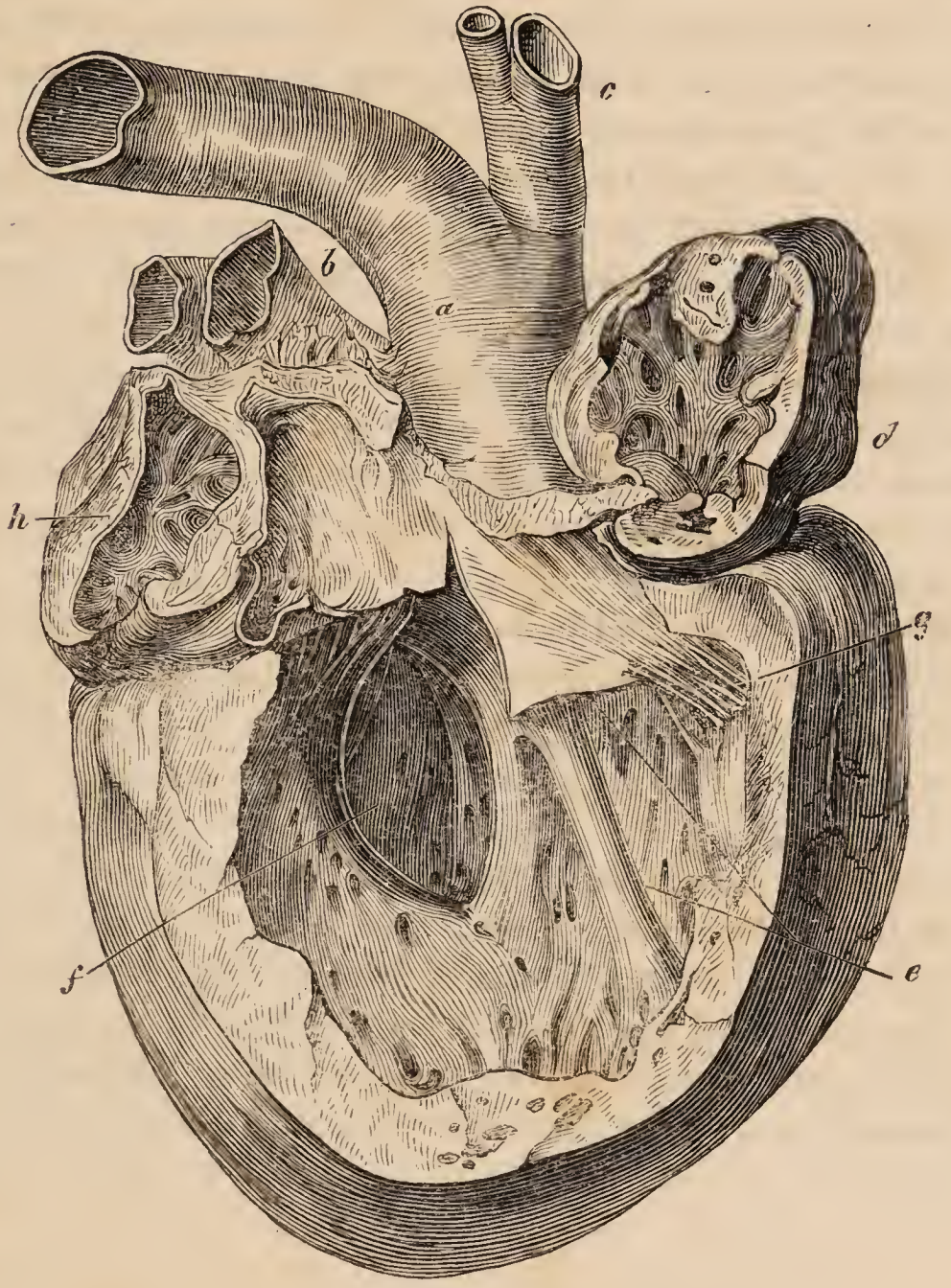
larynx, and from twelve to fourteen in a minute; the eyes were sunken, and on striking the thorax a very hollow sound was emitted. The appetite, however, was pretty good; but when fluids were given the animal swallowed them slowly, and with some difficulty. Bowels acted naturally. Thinking that a chronic 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."]

MISCELLANEA.

Lassaigne found a cerebral concretion in a horse to consist of—

Cholesterine	58·0
Coagulated albumen, 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 1st 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 e 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 arm 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.

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 $\frac{3}{7}$.

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 $37\frac{2}{5}$.

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.

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. 28*th.*—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. 29*th.*—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. 30*th.*—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. 1*st.*—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. 2*d.*—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. 3*d.*—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.

4*th.*—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.

14*th.*—The cough is relieved, and the animal now feeds well: gradually return to ordinary diet.

28*th.*—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.

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.]

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.]

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.]

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.

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.

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.

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.

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.

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.

[*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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.*]

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.

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.

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.

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.

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.

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.

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.

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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.

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.

[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.]

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 fe[illegible] the conjunctival membrane has assumed a yellow tinge, [illegible] beating at the flanks is less distinct, but the extremiti[illegible] very cold. Let them be stimulated, and afterwards [illegible] bandages; also repeat the laxative medicine, and c[illegible]ase of the clysters.

At 2 P.M. I found the patient much worse: [illegible]ad risen to 55, its character hard and full, and th[illegible] the flanks was louder. I again abstracted blood [illegible]ise began to falter, which took place as before, af[illegible]drawal 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, [illegible] I entertain no hopes of an ultimate recovery; neverthe[illegible] pain is not severe. As the bowels have not respon[illegible], the laxatives with opium, and continue in use of th[illegible], to the legs.

3*d*.—The patient is much worse to-day. T[illegible] has risen to 70, and the respiration is untranqu[illegible] still walks round her box, continuing the gyration[illegible] time; then stops and paws the litter—lies down [illegible]s 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.

4*th*.—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.

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 [illegible]er pensioned him off for life, allowing him to spend his days [illegible]ss in the summer months, and to be in a straw-yard in [illegible]r. It was whilst at the latter place, near Kensal Green, [illegible] observed to be ill, whence he was removed to his ow[illegible], and attended for some three or four days by a farrie[illegible]toms, however, becoming more aggravated, the farrier w[illegible] that he would not be required to attend the case any lo[illegible] 26th, at 9 o'clock A.M., Mr. Woodger was called in, whe[illegible]ving 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 choroides, not a portion of which was to be seen. The third 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 in 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.

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."]

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. ℈j. 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.

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.

△

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.

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.

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.

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.

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 cribbiter.

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 correponding 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. Heraud 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.

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."

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.

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.

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.

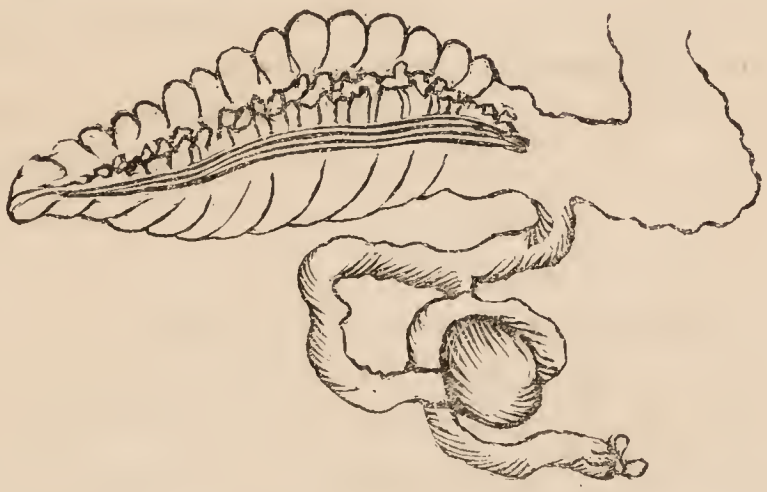
I have sent per rail a scirrhous tumour, taken from the abdomen of an old dun-coloured horse, and it being altogether a singular production, I have thought it not unworthy of the consideration of the members of the Veterinary Medical Association.

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.

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 caplliary 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.

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.

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 ℥j ℥vj 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.

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 pyro-punctuation, subcutaneous periosteotomy, &c.

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.

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.

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.

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.

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.

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.

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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*:

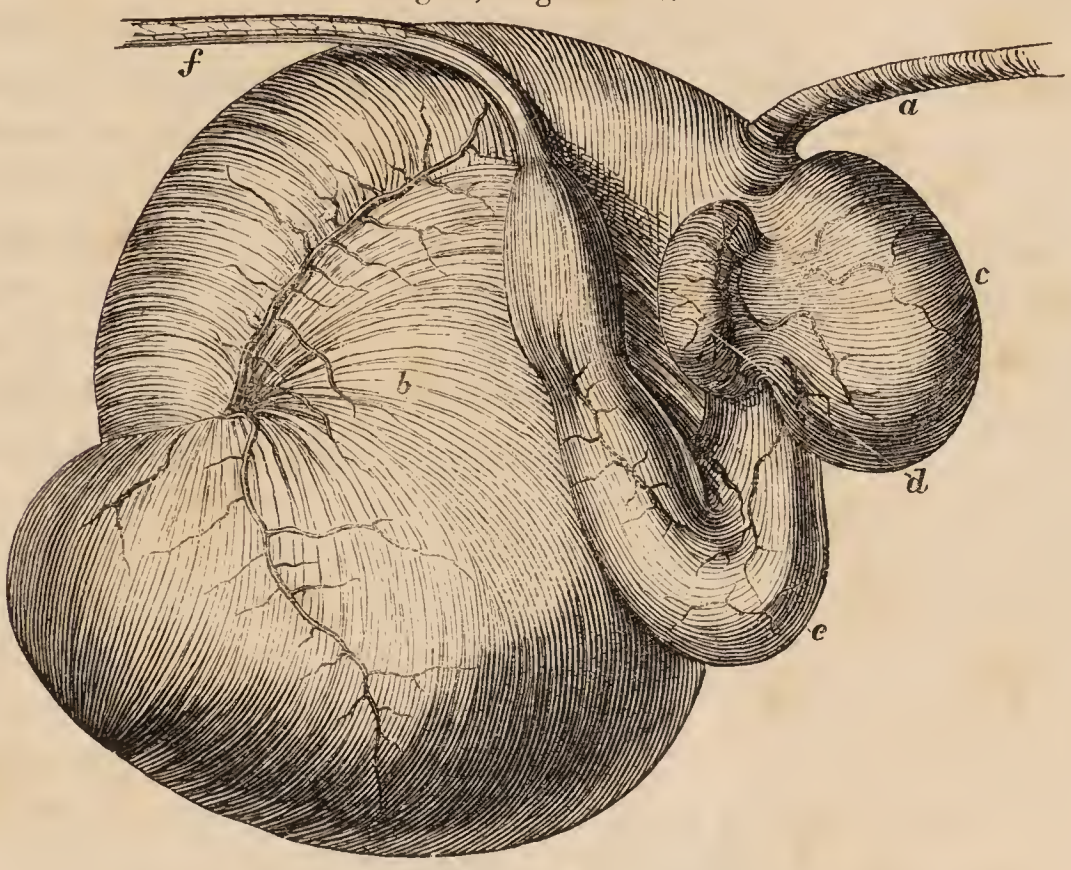
their leading arrangement may, however, be compared to two circular-shaped bands placed obliquely, the one within the other *(see diagram)*, by which an equal facility is given to their action when commencing at either extremity. In its course down the neck,

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

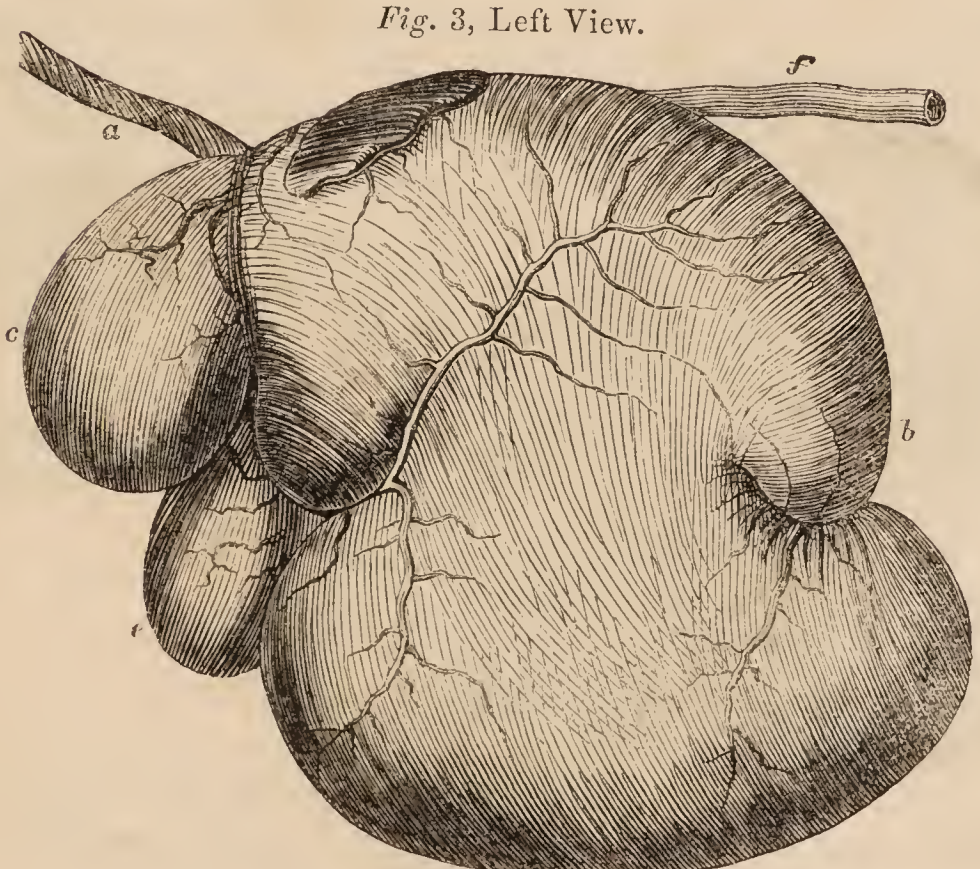
should also mention, that in the omnivora the mucous membrane of the œsophagus lines a small portion of the cardiac orifice of the organ; in the carnivora it ends immediately at the entrance

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.

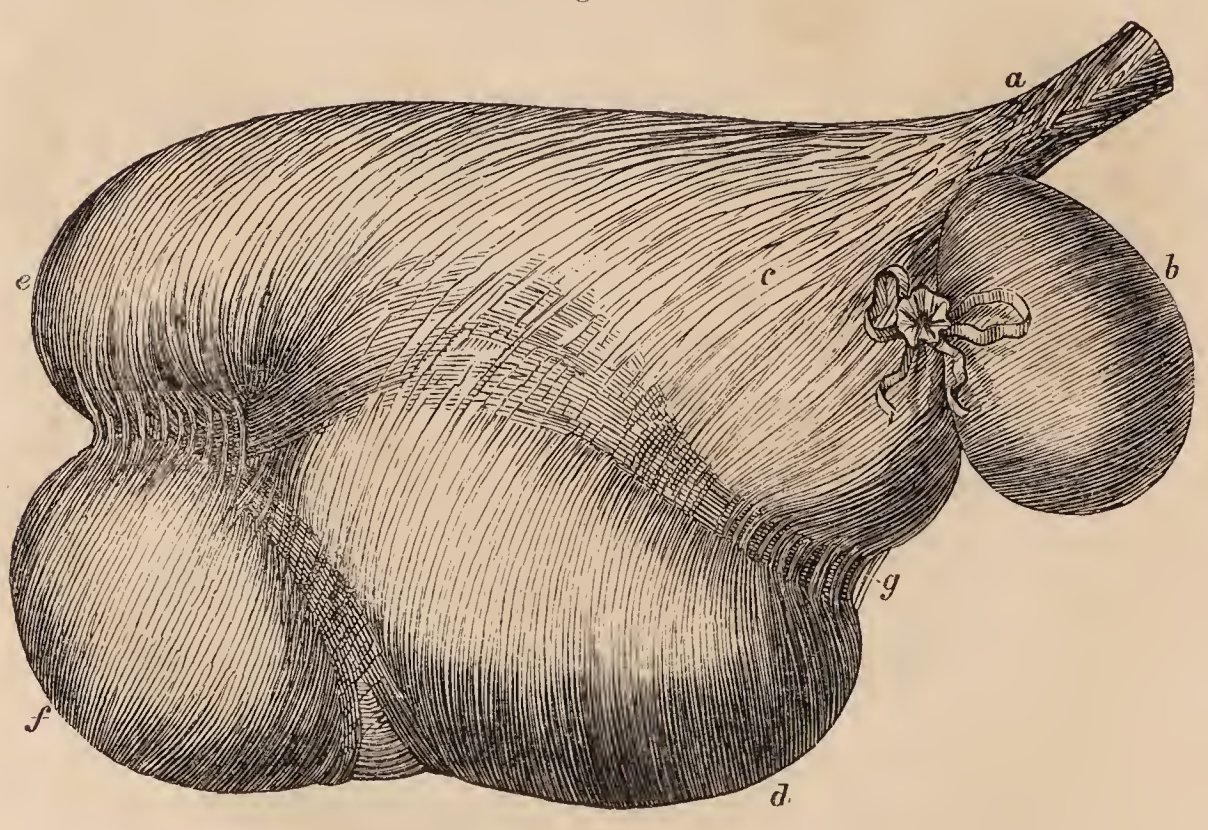


The references are the same; the Omasum is not seen.

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

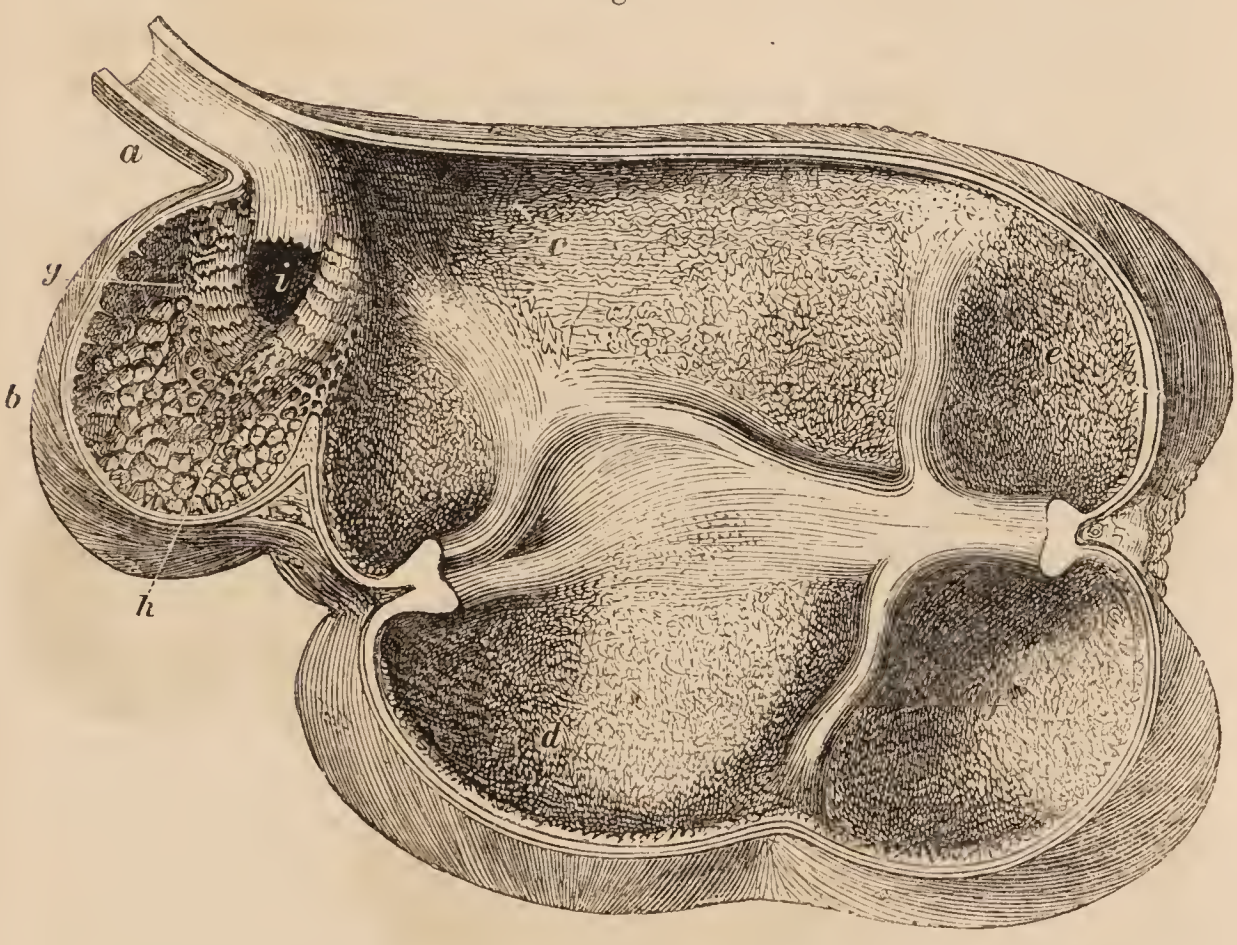
Fig. 4.



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.

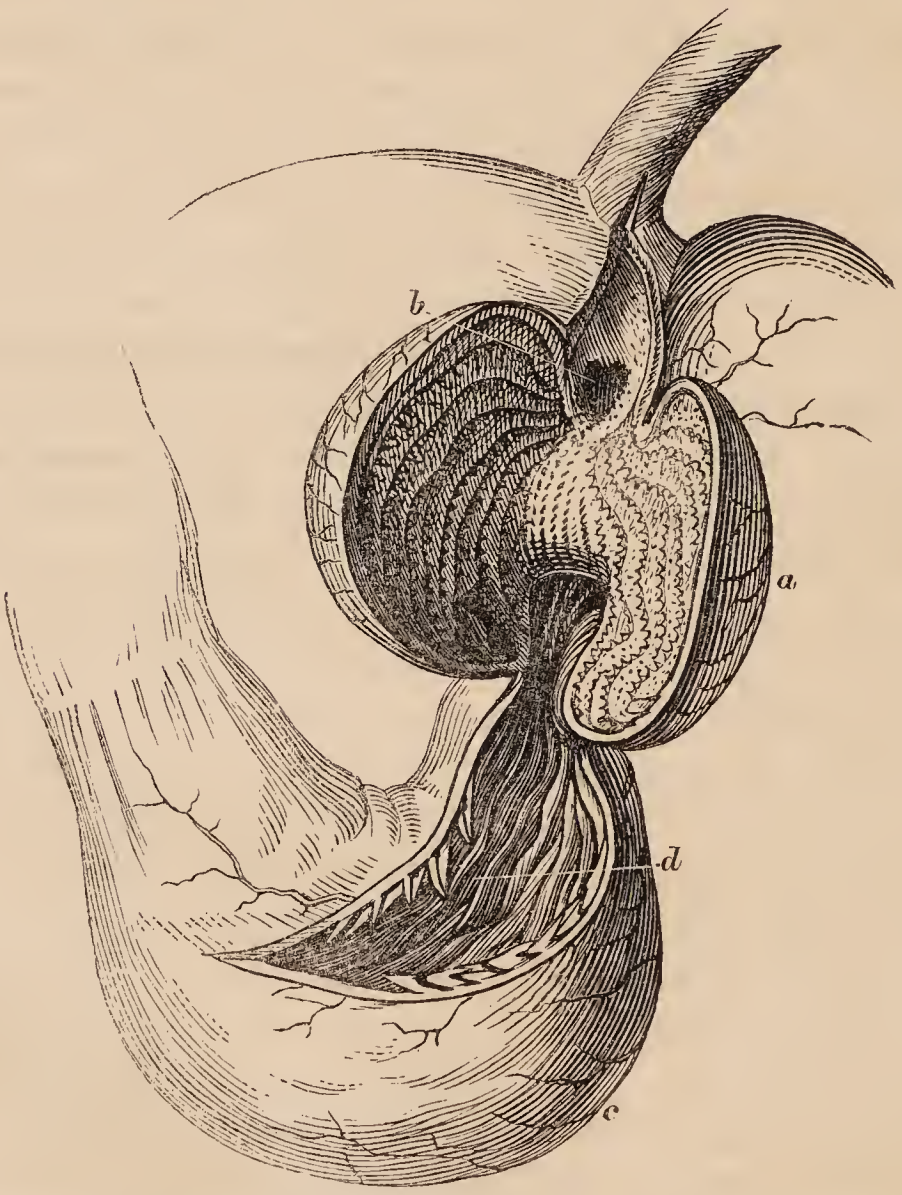
Thus we ascribe the same function to the rumen which is said to belong to the reticulum. The situation of the second stomach must interfere with its supposed property of propelling upwards the pellet, for it is placed nearly at a right angle with the course of that tube. This objection does not apply 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.

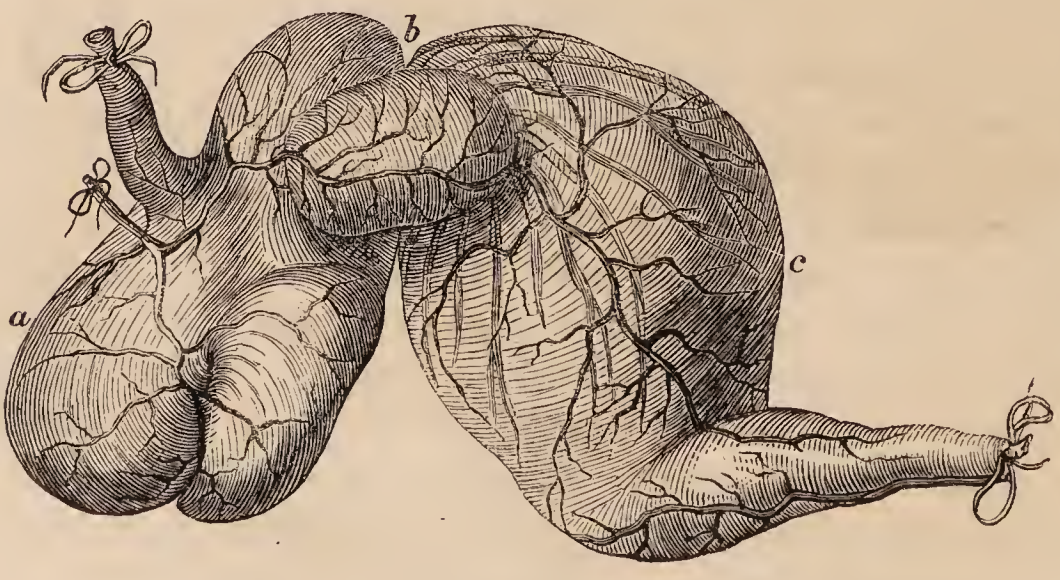
true digestive stomach. Its ordinary name, *manyfolds*, is given to it from the lining membrane being plicated. The plaits vary in length, and follow no definite arrangement with reference to the dimensions of those which are placed side by side: their number also differs in different animals; from 80 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 rugæ 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.

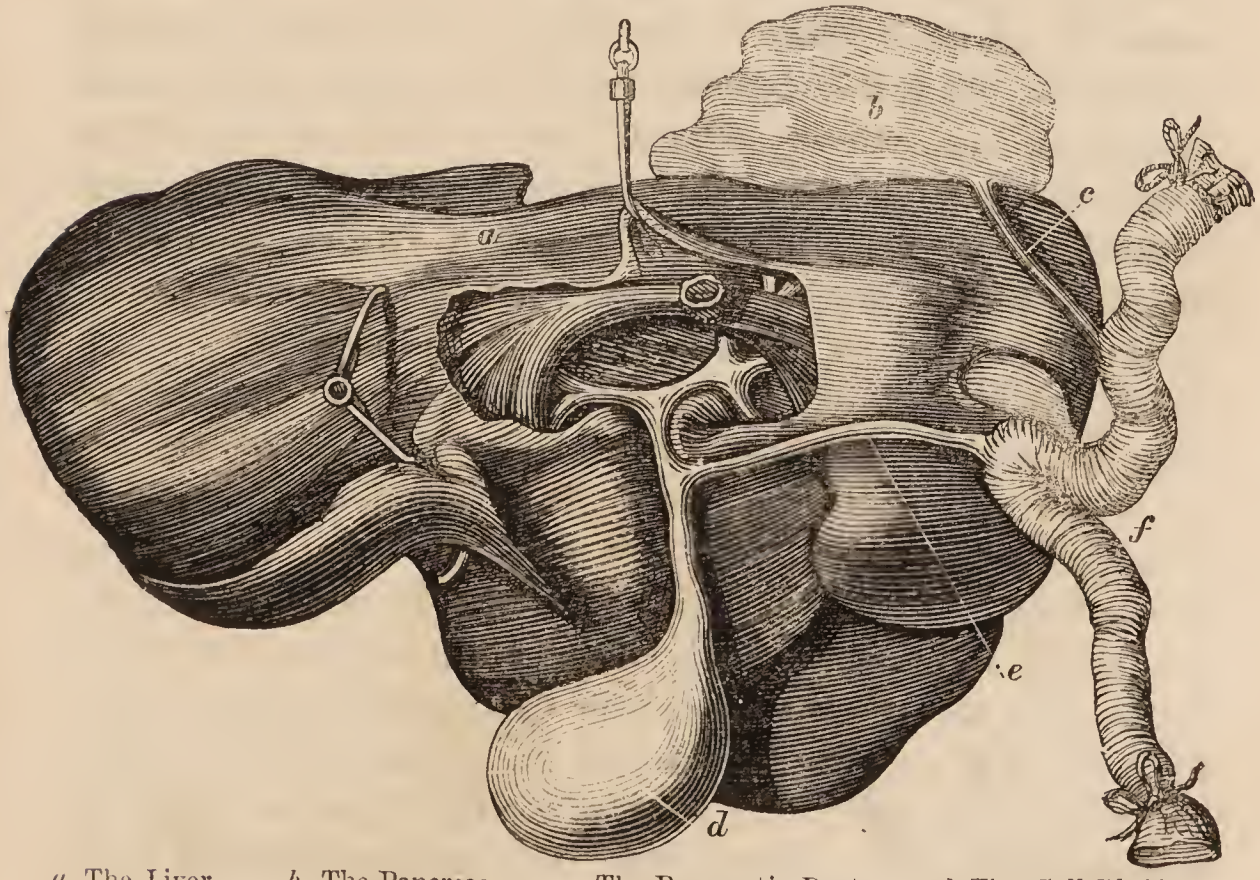


a, The Rumen. *b*, The Omasum. *c*, The Abomasum.

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.

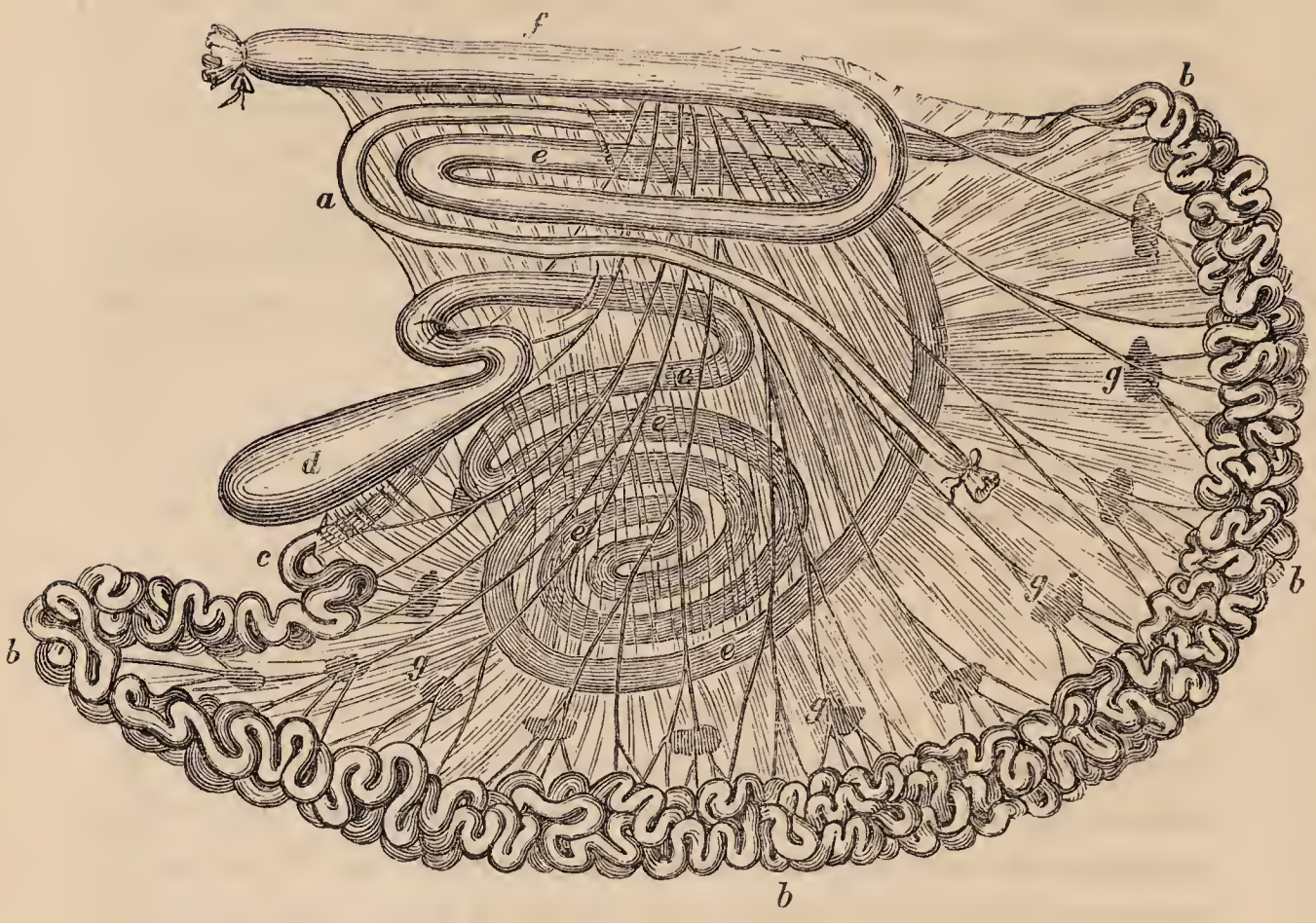
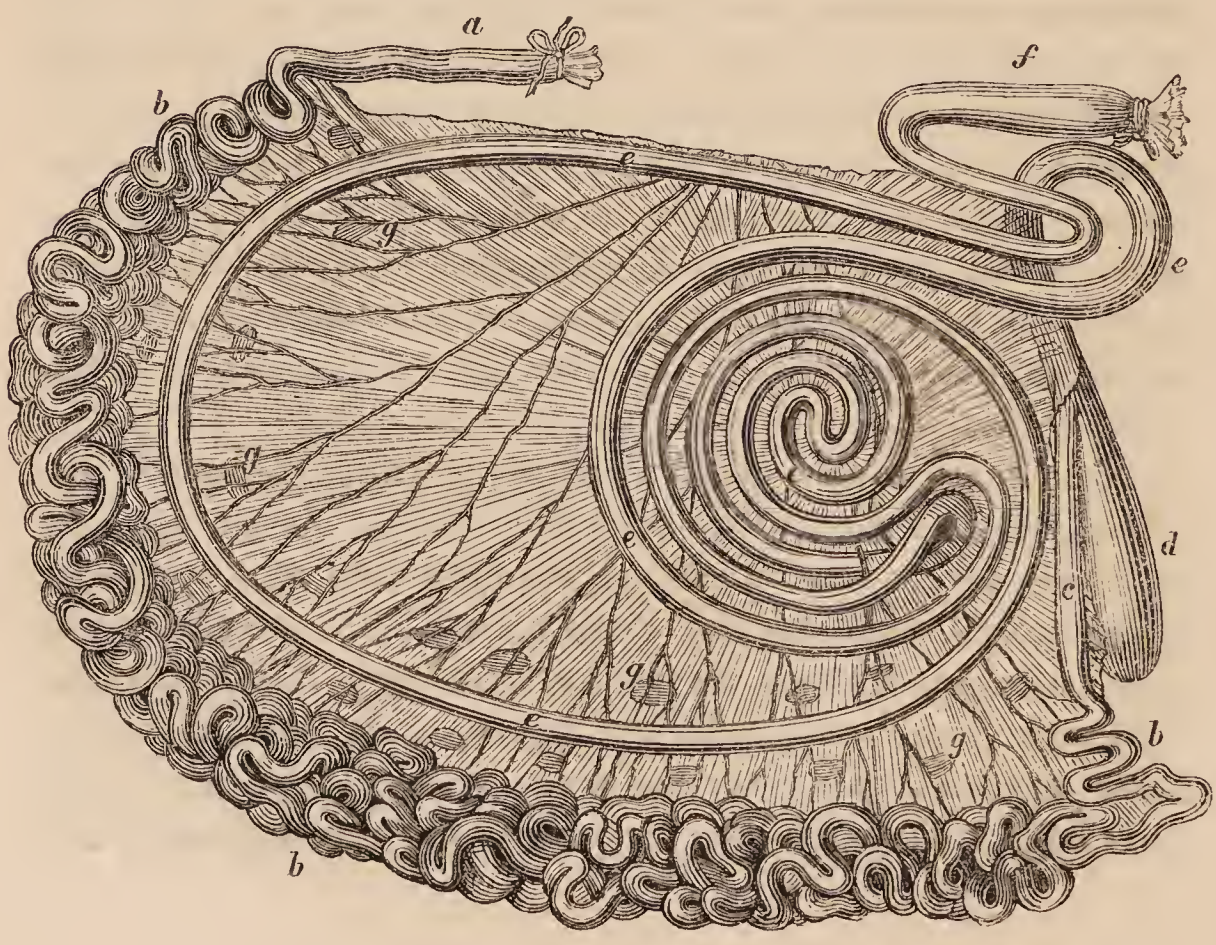


Fig. 10.



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.

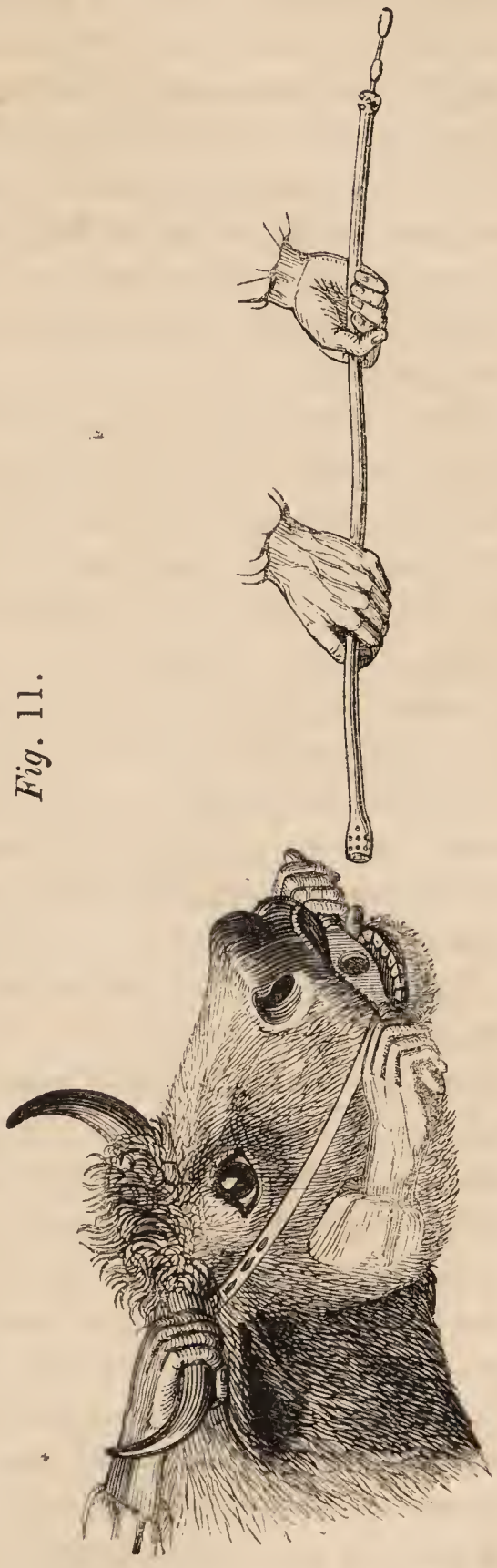


Fig. 11.

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.

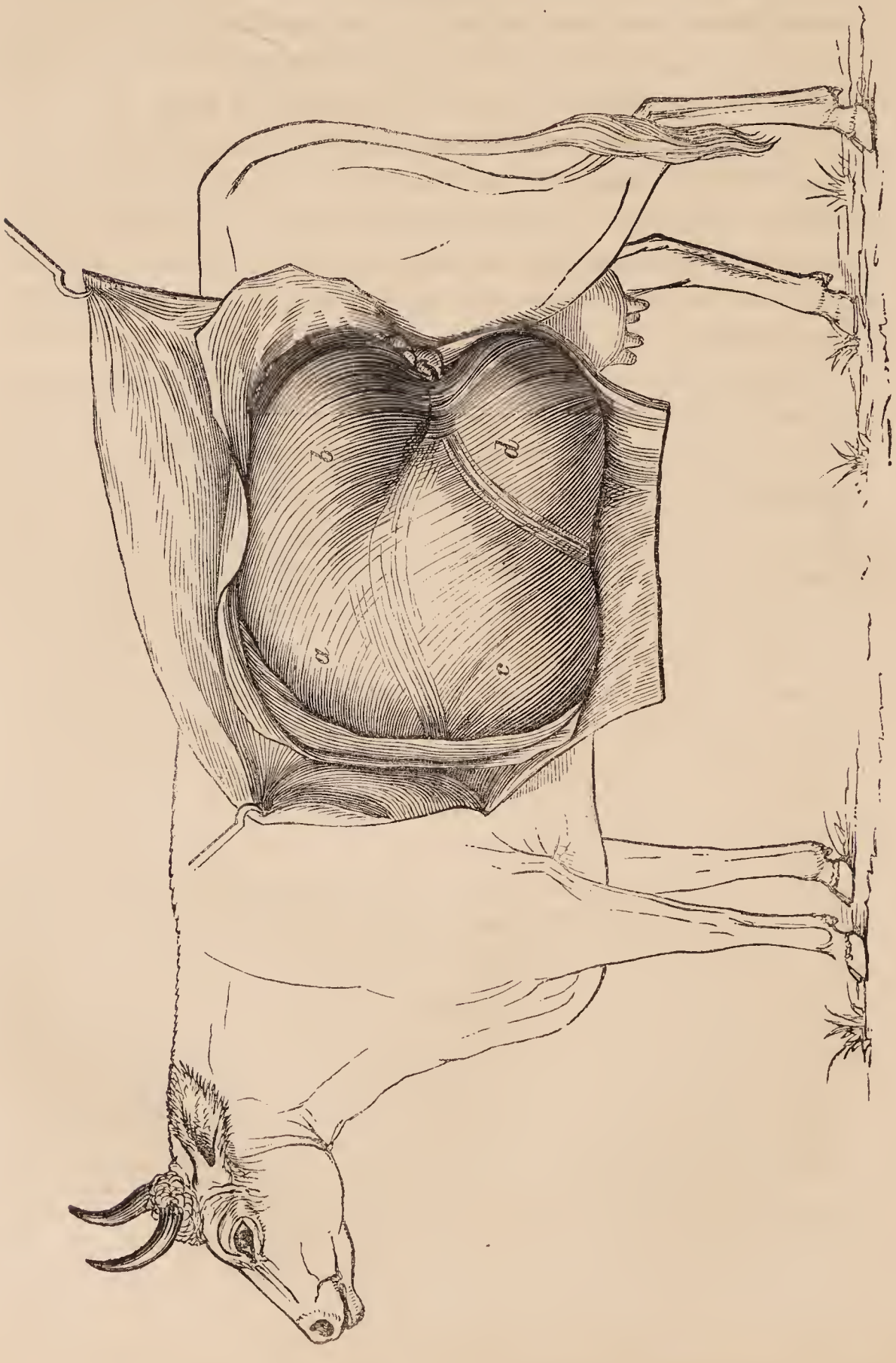
Rapid gathering of the food is necessarily associated with both imperfect mastication and insalivation, and, besides these causes of impaired digestion, the sudden repletion of the rumen weakens or suspends its ordinary peristaltic action; hence the aliment goes into a state of fermentation. Or we may 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-

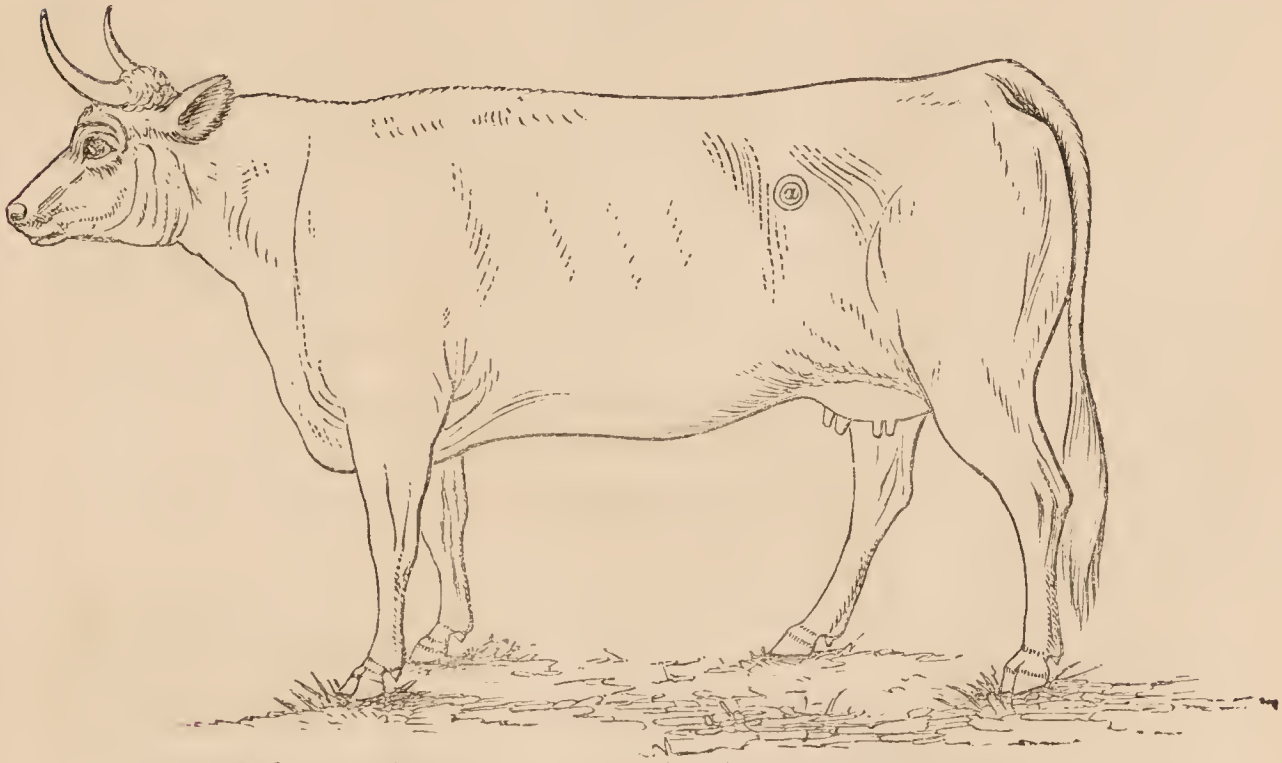
Fig. 12.



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.



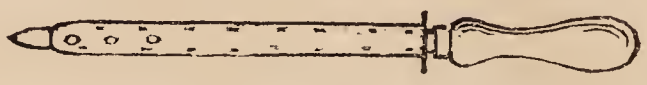
a represents the spot where the trocar should be introduced in puncturing the rumen.

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.

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.—(I. 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.]

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.]

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 depresssed, 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.*

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.

(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 marshmallow 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.

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.

 J. B. S.

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.

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.

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.

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.

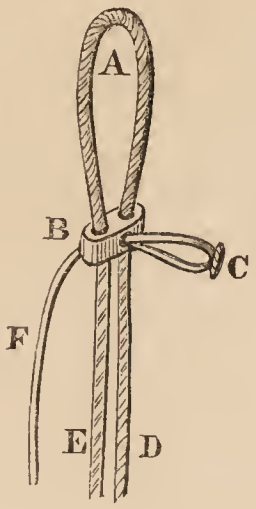
The occiput offers more certain guarantees of stability, and to secure it with a rope noose conveniently prepared is not a task of greater difficulty than the ordinary method; but it is an undeniable fact, that the rope nooses, as usually arranged for the purpose, are a fertile source of untoward accidents. 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.

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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