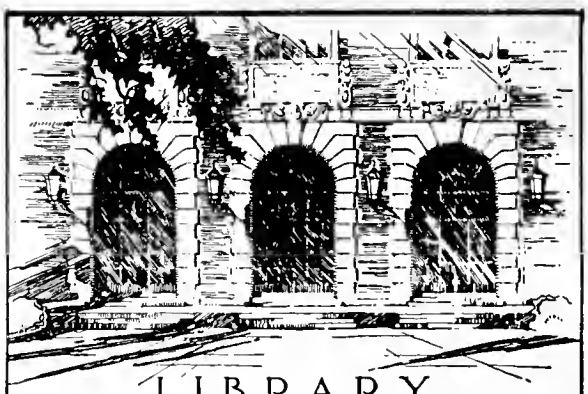

THE

VETERINARIAN:

A

MONTHLY JOURNAL OF VETERINARY SCIENCE,

FOR 1879.

VOL. LII—VOL. XXV, FOURTH SERIES.

EDITED BY

PROFESSOR SIMONDS,

ASSISTED BY

PROFESSORS BROWN AND TUSON,
AND T. SPENCER COBBOLD, M.D., F.R.S., F.L.S.

Ars Veterinaria post medicinam secunda est.—*Vegetius.*

LONDON:
PRINTED BY J. E. ADLARD, BARTHOLOMEW CLOSE.
PUBLISHED BY LONGMANS, GREEN, & CO.
PATERNOSTER ROW.

THE

VETERINARIAN.

VOL. LIII. No. 625. JANUARY, 1880. Fourth Series, No. 301.

Communications and Cases.

ON THE PROGRESS AND PRESENT STATE OF VETERINARY SCIENCE IN AMERICA.

By John Henry Steel, M.R.C.V.S., F.Z.S., Corresponding Member of the Italian Veterinary Academy.

Vade Mecum of Equine Anatomy. By A. Liautard, M.D., V.S., Professor of Comparative Anatomy to the American Veterinary College, &c., &c. New York, 1879.—We gladly avail ourselves of the opportunity afforded to us by this work being placed in our hands for review to draw the attention of English veterinarians to the present condition of veterinary science on the other side of the Atlantic. Such observations as we pen will perhaps not be considered out of place if we remember that the work whose title is placed at the head of this article is of much greater importance as a *sign of the times* than its elementary character and small bulk would give it at other times and in other places. Its author is Dr. Liautard, who is the leader of the veterinary profession in the United States, editor-in-chief of the only American veterinary periodical, corresponding member of the Central Veterinary Society of Paris, and principal of the Veterinary School, which an impartial examination of the various institutions claiming that title

shows us to be doing the best educational work of any in the United States of America. It is dedicated to Mr. George Fleming, and is the first work of importance on Anatomy of the Horse produced in America, being preceded only by the obsolete work of Dadd. The *Vade Mecum* is very elementary, though prepared for "the use of advanced students and veterinary surgeons." It is arranged in chapters, each on a region of which the various component structures are reviewed seriatim; it is not quite so free from errors as we should expect so elementary a work to be, while the imperfections necessary to a condensed account of anatomical structure are sometimes glaring. We must attribute these defects mainly to the demand for the work necessitating hasty preparation, and hope a second edition may soon afford scope for correction. We fully feel that the author's pupils owe him a debt of gratitude for this work, the preparation of which must have trespassed much on his valuable time. In January (1877) number of the *American Veterinary Review* the author gave a list of American veterinary works, as follows:

Carver's work, 1818; Budd's work, 1861; Dadd's works, 1866 ('Anatomy,' 'Veterinary Journal,' and 'Modern Horse Doctor'); works by Jennings and McClure; W. C. Holme, 'American Farrier,' 1852; Herbert, 'Hints to Breeders, 1859; translation of Guenon, 'Milch Cows,' by Trisk, 1868; 'American Farmer's Horse,' by R. Stewart, M.D., V.S., 1866; 'Percheron Horse,' by C. Du Hays, 1868; 'American Cattle,' by L. F. Allen, 1868; 'Appendix to Stonehenge,' by A. Large, M.D., M.R.C.V.S., 1869; J. Harris on the 'Pig,' 1870; J. A. Reason on the 'Hog,' 1870; Hanover on the 'Law of Horses,' 1872 (2nd ed., 1875); Bouley's 'Hydrophobia,' translated by A. Liautard, 1874; J. Law, 'Farmer's Veterinary Adviser,' 1876. Since that time Dr. Tellor brought out a popular work on 'Diseases of Live Stock.'

This list, even allowing for omissions, seems meagre enough until we come to consider the influences acting on the progress of the American veterinary literature. Professional writers need a reading professional public, such as America until recently has not afforded, though now we hope she is in a fair way to encourage much energy in this direction. Again, when veterinary science was introduced into English-speaking America, she had at her disposal such works as the professional labours of British writers had produced. We see the impress of this still in the list of text-books recommended at the schools, the works of Williams, Fleming, and Dun having a well merited prominence.

The American Veterinary College names the work we have under notice, and Fleming's translation of Chauveau as anatomical text-books. We might suggest the addition of Professor Vaughan's edition of 'Strangeway's Veterinary Anatomy.' Of course we must not forget that the American laws, as becomes those of a free nation, prove exacting to importers of foreign works, causing an increase of 75 per cent. on the native price in some cases, and therefore removing aids from the reach of the poor student. This, however, is counterbalanced by the enterprise of the American publishers, who advertise one English work at a price considerably less than it costs in this country! (See *Veterinary Journal*, July, 1869.)

The influence of English literature is perceptible in an advertisement published monthly by a leading New York firm, which has some noteworthy points. We believe none of the works therein mentioned are American. *Mr. Fleming's* name is not mentioned in connection with his 'Sanitary Science and Police;' Professor Williams is a F.R.S.C., and we are surprised to find ourselves a M.R.C.V.C., whatever that means? Perhaps an additional-e appended to our name alters our professional qualification! These points we mention as well in the interests of our American confrères as ourselves. One of the most highly educated of them (Mr. Billings) complains bitterly of this defect in American legislation, which he justly terms a "Tax upon Brains." We now turn with pleasure to the AMERICAN VETERINARY REVIEW, of which the first number appeared in 1877 (January), as the organ of the United States Veterinary Medical Association, under the editorship of Dr. Liautard, assisted by A. Lockhart, M.R.C.V.S.; later we find Mr. Lockhart replaced by three members of the staff of the American Veterinary College—A. Large, M.D., M.R.C.V.S.; J. L. Robertson, M.D., V.S., and A. A. Holcombe, D.V.S. Now Dr. Liautard is assisted by "a selected staff of veterinary practitioners." We have examined *all* the volumes of this work with care, for we wished to draw from its pages the lines of thought of our Transatlantic cousins, to trace any inherited British characters, and to solve the difficulties which prevent us from thorough appreciation of the value of American veterinary degrees. Removed as we are by space from the country of which we write, and having only personal sympathies with those who, like ourselves, are zealous to promote professional progress, we are perhaps in a position to point out what we can learn from America, and what we may teach in return. We are much indebted to Professor Liautard's

papers on the history and progress of veterinary medicine in the United States, in the first number of his journal, and to his subsequent editorials, and especially also to the papers on veterinary education by Professor McEachran, of Montreal.

The *American Veterinary Review* takes a broad view of veterinary science, its needs, its progress, and its various subdivisions. It notes progress in European countries, and by every means in its power endeavours to promote professional unity and a higher standard of education of veterinary surgeons. Its editor several times appears before us as an advocate for enlargement of the journal and reduction of its price; he acts for the United States Association, and seems to enjoy the entire confidence of the members of that influential body. In his paper above mentioned, he tells us that the first qualified practitioner in New York State was Rose, a Prussian graduate, 1817. Shortly afterwards Grice, a London graduate, and some members of the Royal College of Veterinary Surgeons appeared—Messrs. Curtis, Lockhart, Pilgrim, and Budd, the latter author of a treatise on the 'Foot of the Horse,' 1831. In 1857 Dr. John Busteed succeeded in obtaining from the State Legislature a Charter of Incorporation of the New York College of Veterinary Surgeons. He associated with himself Mr. Ralston, M.R.C.V.S., formerly of the Indian army, and they constituted the faculty, which proved insufficient for its duties, and the school was closed. It had started in a handsome building erected by private subscriptions, which was burnt down in 1865 or 1866. Dr. Busteed's ardour prevailed against this discouragement. He again, in 1864, organised the school, assisted by Drs. Liautard and Large and Mr. Copeman, Dr. Liautard holding the chair of Comparative Anatomy and Surgery. In 1870, Dr. Busteed retired and six gentlemen formed the faculty, of whom Drs. Liautard, Large, Stein, Percy, and Robertson still hold office. Dr. Weisse having been replaced by A. A. Holcombe, D.V.S., in the chair of Surgical Pathology, and Dr. Lyons having relieved Dr. Percy of Chemistry, leaving him lectures on Materia Medica and Therapeutics. Dr. Liautard retains his original subjects, and with them takes Sanitary and Clinical Medicine; Dr. Large, who is a M.R.C.V.S., takes the Theory and Practice of Veterinary Medicine and of Clinical Medicine; Dr. Robertson, Cattle Pathology, Obstetrics, and Clinical Medicine; Dr. Stein, Histology and Comparative Physiology; Mr. Coates, D.V.S., is Demonstrator of Anatomy; and Messrs. J. Rogers and R. A. McLean, both D.V.S., lecture on Pharmacology and Anatomy respectively. These officers, however, do not *now* belong to the New York Col-

lege, for difficulties which occurred about 1873 led to secession of the whole teaching staff, who, under Professor Liautard, founded the American Veterinary College. The original institution closed its doors, again flickered into life, and an expiring spark of it recently appeared when a memorial was signed by some of its graduates endeavouring to obstruct the sanitary efforts adopted for repression and eradication of pleuro-pneumonia zymotica. After this let us hope it will no more be seen nor heard. A curious feature of its existence was presented in 1868, when the faculty lectured to a class of *one* student.

We have before us the Annual Catalogue and Announcement of the Columbia Veterinary College and School of Comparative Medicine, New York, on the back of which is a woodcut of the said college, which we are assured on credible authority is not accurate in all particulars. It has one room with six windows, indicated as the "Canines Hospital," and an equally large pathological laboratory. We find on opening this catalogue a request if we are not interested in veterinary science to hand it on to some one who is. We find among the councillors the name of Chas. P. Lyman, veterinary surgeon; this is C. P. Lyman V.S.E., who in 1877 was appointed veterinary lecturer to the Massachusetts Agricultural College. He writes to the *Review* to say he has not sanctioned the insertion of his name, and does not like the company. The staff includes seventeen officers. Specialism is carried to its highest extent, there being a professor of veterinary ophthalmology, a lecturer on animal hygiene, a teacher of jurisprudence of veterinary medicine, a lecturer on ornithology and diseases of domestic fowls. The demonstrator of anatomy graduated in 1879. The list of prizes occupies a prominent position in the catalogue. Mr. J. A. Going, "M.R.C.V.S.E.," gives a gold medal for general proficiency. This individual, who is *not* a member of the Royal College of Veterinary Surgeons, with some of the Columbia professors, sent in an official statement that pleuro-pneumonia did not exist in Blissville, where it has been proved to have been very rife at the time. Eleven freshmen entered for 1879. We cannot conscientiously congratulate these gentlemen on their choice, the Columbia Catalogue is quite sufficient for us. We believe this institution is in some way a relic of the New York College of Veterinary Surgeons, and, therefore, has a legal existence and a right to confer its degree D.V.S., Doctor of Veterinary Surgery. We note the name of Noah Cresy, Ph.D., among the councillors; it is well known in the profession.

The Catalogue of the American Veterinary College is before us, and is by no means so formidable as that above mentioned. Though the lecturer on one important branch of veterinary study graduated only in the present year, we note in the names of the staff some which are familar to us as connected with professional progress. This school was incorporated in 1875, is recognised by the Board of Regents of the University of New York, in 1878 instituted a matriculation test, has winter and summer sessions, and gives the degree D.V.S. The examinational test is written, oral, and practical. Prizes are awarded by the Alumni Association, by the New York Veterinary Society, by Professor Liautard, Dean of the Faculty, and by the Board of Trustees. There are, for 1879, 42 students; 32 gentlemen have already obtained the degree of D.V.S. of this school.

Massachusetts in 1835 was visited by C. M. Wood, who practised successfully. Dadd followed him in 1849, and started a veterinary journal in 1851; this lasted only one year. It was revived in 1855, when, under the protection of a Charter from the State, Dadd associated himself with Messrs. C. M. and R. Wood and A. S. Copeman, and established the first American Veterinary College. Both college and journal lasted only a short time.

Pennsylvania has an unenviable notoriety in veterinary history in connection with the "bogus degrees," the fame of which, extending to this side of the Atlantic, has rendered us suspicious of qualifications, even sometimes more searching than those to which we subject our own graduates. In 1818 James Carver announced himself the author of a book entitled "*The Farrier's Magazine, or Archives of Veterinary Science,* containing the anatomy, physiology, and pathology of the horse and other domestic quadrupeds, and compiled from the lectures and practice of veterinary colleges of London, France, Germany, Russia, and British India, by James Carver, Veterinary Surgeon, Master of Equitation, and Corresponding Member of the London Veterinary Medical Society and the College of India." The work contains a little over one hundred pages treating upon these matters. For an account of a worthy successor of Mr. Carver, devoid, however, of his ubiquity, but resembling him very closely in his literary pretensions, my readers may consult the *Review* for November, 1877. Here they will learn how "Professor" McClure, "M.D.V.S.," who was the "Veterinary College of Philadelphia" as the officers and professors of the school "by the authority vested in us by the sovereign power of the State of

Pennsylvania confer the degree of Doctor of Veterinary Medicine and Surgery." Unfortunately he appended to the diploma announcing this signatures not his own, and so experienced the sovereignty of his state under the form of a visit from a constable and resulting incarceration. It is interesting to extract a passage from one of his letters: "This entitles you to the degree—Dr. Daniel Underwood, M.P.C.V.S. These letters differ only from the English by R, from Edinburgh by E, Glasgow by G, from Dublin by D." In 1866 the Pennsylvania College of Veterinary Surgeons was granted a charter. It announced six officers, among them Isaac Mitchener, one of the leading men of his state. It had no building, gave few, if any, lectures, we may, therefore, conclude all Pennsylvanian veterinary diplomas as worthless. In 1878 an energetic "plea for veterinary science," by Mr. H. J. Smith, led to the attachment of a veterinary school to the University of Pennsylvania. We are not aware whether or no it still exists.

In 1868 an important event occured. Professor James Law, F.R.C.V.S., was called to occupy the Chair of Veterinary Medicine at Cornell University. The subjects comprised in his course are:—Principles and Practice, Surgery, Obstetrics, Surgical Pathology and Anatomy, Examination of Soundness, Principles of Shoeing (Physiological and Pathological). The course of study comprises five lectures per week throughout the academic year. Laboratory work on bones, skeletons, clastic models, pathological preparations and parasites, and clinical instruction; anatomy, physiology, histology, zootechny, hygiene, botany, toxicology, pharmacy, and therapeutics are taught by professors of the agricultural department. Two degrees are granted; after two years' agricultural studies, and two years of special veterinary study, a candidate may present himself for the degree of Bachelor of Veterinary Science. And then, after two years of post-graduate study, may, by passing a satisfactory examination, reading a thesis, &c., obtain the higher degree of Doctor of Veterinary Medicine. To give these degrees their full value Professor Law has constantly endeavoured to obtain a full veterinary staff to constitute the faculty of a veterinary department of Cornell University. This grand step, promoting the advance of veterinary surgery by making it a special section of university study, is unparalleled in Great Britain, the only approach to anything of the kind being the lectures which Youatt delivered long ago before the London University, and those which are now perverted to pathology pure at the same place annually.

Professor Law tells us that in nine years but two candidates have graduated at Cornell, but we are inclined to think even F.R.C.V.S. might envy these gentlemen their degree of B.V.S. or D.V.M. The Illinois Industrial University has its veterinary hall, in which Professor F. W. Prentice, M.D., M.R.C.V.S., delivers his lectures on veterinary science. The university confers no degree. This department has an endowment of 3000 dollars. The Washington and Lea University in Virginia, and the Agricultural Colleges of Ohio, Pennsylvania, Dartmouth (New Hampshire), Vermont, and formerly the Bussy Institute of Boston, have veterinary chairs, but grant no diploma. The Iowa Agricultural College is about to reorganise its veterinary department, and to establish a veterinary college in connection with its curriculum of agricultural studies with six or seven qualified professors. This movement is supported by the legislature of the State. The Agricultural School of Amherst endeavoured to organise a system resembling that of Cornell, but less rigid. J. Stickney was appointed first professor in 1869, and in 1873 Dr. Noah Cressy was appointed to the same post. The attendance is very small. Such being the native sources of veterinary qualified practitioners and the native means of veterinary instruction, we must next consider the foreign elements of the profession in the U.S. of America. These are derived from Canada and from the countries of Europe, notably Great Britain, Germany, and France, in order according with their importance as source of supply.

There are two veterinary schools in Canada, one at Montreal, the other at Toronto. The latter takes precedence as regards age, the former as regards progressive tendencies and the standard of education. The *Montreal Veterinary College* is under Principal McEachran, F.R.C.V.S. It is connected with the McGill University of Montreal, and thus the students have the privilege of attending courses of lectures delivered by the professors of that school of learning. This must give them a good acquaintance with the accessory sciences, and recalls to our minds that early stage in the history of our London College, when the students attended courses of chemistry, physiology, &c., at the various metropolitan medical schools. The period of study comprises three sessions of six months each, after which each student is required to pass an examination before a board of veterinary surgeons and professors of the McGill University, the members of the board being appointed by the Council of Agriculture. In one respect there is an advance on the English examinational system, for the candidates are

subjected to a *written* as well as an oral test. A peculiar feature of this school is necessitated by the fact that while the population of Montreal City is English, the inhabitants of the surrounding country are French-speaking descendants of the primitive settlers in the colony. So two courses of lectures and two examinations are conducted. All students before admission are subjected to a matriculation test, not of a very searching character, but sufficient to ensure orthography. This school is now in its thirteenth year of existence, and is a centre of interest to us at present on account of Professor McEachran's application for affiliation with the Royal College of Veterinary Surgeons. We are in hopes this will not be allowed to lapse, but that the powers of our Royal College may be so extended as to enable her to embrace colonial as well as British schools. With graduates in Australia, South Africa, India, and Canada, the Royal College of Veterinary Surgeons should be the grand centre of professional unity, not of Great Britain only, but of the British Empire! All sincere professional workers will forward Professor McEachran's application. In 1875 the Council of Agriculture of Quebec voted 1800 dollars annually to Professor McEachran for ten years to promote improvement of the school. This gentlemen is Chief Inspecting Officer at Quebec.

Ontario Veterinary College was originated in 1861, and the first professional studies commenced in 1862. A diploma is given by the Board of Agriculture to such students as have attended two sessions *at least* at the school. It is also understood that the student must pass such vacations as occur with a veterinary practitioner. The matriculation is but nominal. The students are much more numerous than at Montreal. Professor Smith is principal. The competition between the two Canadian schools is very keen, and we give preference to one of them solely because we advocate strongly those measures which it adopts, even at the expense of placing itself at a disadvantage with its competitor in such an essential matter as student supply. This school has indirectly received a grant from Government of 2000 dollars to the Association of Agriculture and Arts Association for formation of a veterinary museum and library. The Governor of the Province attends at its opening meetings, and none but legally educated veterinarians may practise in this province. We have read also of a *Halifax Veterinary Institute,* but are not aware of its working. *Professor Grange* delivers a course of veterinary lectures annually at the Guelph Agricultural College.

British veterinary qualifications, as seen in America, are, we fear, very often imaginary. Individuals abound in the States who place M.R.C.V.S.L. after their names without the slighest claim to this distinction. However, a number of British graduates occur in various parts of the country. In 1877 there were fifty-nine such living in the United States of America and in Canada (*Am. Vet. Review,* October, 1877). The qualification seems to be highly appreciated by the public and the profession; hence the number of false assumptions of it by unqualified practitioners. We find an applicant for a spurious diploma writing to McClure—"Could you not get a London graduate to sign it?" We are well acquainted with many American graduates, and from experience can testify to the excellence of the American element of the students at the Royal Veterinary College. A number of practitioners hold the Highland and Agricultural Society's diploma, and sign themselves V.S.E., &c. We hope after the recent happy fusion of elements of the profession in this country that our supplies to America in future will be of a uniform stamp, and will tend to maintain the status of our College. We hope, too, that American practitioners holding this certificate will avail themselves of the present opportunity of enrolling themselves as members of the Royal College of Veterinary Surgeons.

Quacks are fond of assuming British titles, and many of them sign themselves V.S.G. or V.S D., as they happen to come from Glasgow or Dublin, not, of course, for a moment imagining that the public will think they have duly studied at colleges in those places. But America is a long way off, and we can hardly wonder that even "Yankee shrewdness" is not proof against imposture in this matter. The German contingent is small but select, Mr. F. S. Billings being the only fully qualified German graduate. He is a Medicus Veterinarius of Berlin, and, we are pleased to see, entertains and forcibly expresses the most advanced ideas on the subject of elevation of the profession, both into the position of a recognised state institution and to a higher standard of professional education. We wish every success to his efforts to promote professional unity. He seems to have made one of the proverbial American flights through Great Britain, as well as other parts of Europe, and, having settled down in Berlin to his graduation studies, proves anything but complimentary to the British schools, upon which he deigned a hasty passing glance.

We must not close this account of the ingredients of the

veterinary profession in America without noting that the newness of the profession prevents it from embracing those unqualified practitioners who have a good education, professional and general, a good general practice, and are universally respected. These gentlemen have a vested interest in veterinary surgery; when there was no means of obtaining a qualification at home they studied scientifically, and the verdict of success is their claim to professional status. In an early stage of our professional existence in this country we had such men to deal with; they were admitted to consultations, they sent their sons to College, and are now practically extinct. We believe the American Veterinary Medical Association has some members of this stamp; many certainly are in the army. It has been suggested that a power of granting honorary licentiateships of veterinary medicine should be vested in the hands of veterinary associations, subject to supervision. We may hint that if such be granted it should be but temporary, as, after some years, it would be liable to abuse. In various states action has been taken in this matter, notably the "Act to incorporate State and Judicial District Veterinary Surgeons, for the purpose of improving the Practice of Veterinary Medicine in New York State," which was drawn up by the New York veterinary surgeons, and in which the idea of licentiateship was broached (1878). Again, the Society for Preventing Cruelty to Animals in the same State brought forward an "Act to regulate the Practice of Veterinary Medicine and Surgery in New York State," in the same year. This was pigeon-holed, and no more heard of. It suggested that there should be organised a Board of State examiners and censors in veterinary medicine and surgery, to consist of five members, of whom three must be graduates of a duly incorporated veterinary college or veterinary department of a medical college or university, the other two physicians or surgeons, duly licensed, and members of some county veterinary society. The Board to meet at least three times annually, and three to form a quorum.

We have now seen that in America there are qualified practitioners, with the following diplomas:

D.V.S.—Doctor of Veterinary Surgery, given at American Veterinary College, New York, and Columbia Veterinary College, New York.

B.V.S.—Bachelor of Veterinary Science, given at Cornell University.

D.V.M. — Doctor of Veterinary Medicine, given at Cornell University.

V.S. (New York).—Member of New York College of Veterinary Surgeons in New York City (dated prior to March, 1875).

V.S. (Ontario).—Graduate Ontario Veterinary School.

V.S. (Montreal).—Graduate Montreal Veterinary School.

V.S.E.—Highland and Agricultural Society's Certificate holder.

M.R.C.V.S.—Member of the Royal College of Veterinary Surgeons of Great Britain.

F.R.C.V.S.—Fellow of ditto.

V.M.—Magister or Medicus Veterinarius of Berlin, or other continental school.

Besides these there are practitioners with doubtful qualifications, such as cannot be allowed to be a sufficient guarantee for professional education. These are agricultural certificate holders, holders of diplomas from ephemeral schools, &c. Here we may place undiplomated members of veterinary societies. Finally, there are in America impostors who adopt a good title without the slightest authority, trusting to their own impudence and public ignorance; others adopt a useless degree (so called), derived from a worthless diploma; others assume mountebank cognomina, and exhibit considerable ingenuity in the selection, among these the "Voluntary Edidemo-zoological Missionary" is *facile princeps*, though the "Homœopathic, Mesmeric, and Psychological Veterinary Surgeon" is worthy of note. Cow doctors, farriers, and the like, abound in proportion to the deficiency in qualified men.

The immediate future demands the formation of a register of all practitioners who are duly qualified, and measures tending to promote professional unanimity among them. Also the adoption of some means for securing a uniform standard education of future veterinarians. In taking a broad view of our subject we can see that the uncombined action of states is unsatisfactory, too often leading to failure and seldom producing more than bare success. The question must be made a *national* one, and, taking a right view of this and other matters, Billings has been writing to the *Field, Turf, and Farm* letters advocating the formation of a National Veterinary School. This would, doubtless, prove of inestimable benefit, but liberty would still demand consideration for all *bonâ fide* private institutions of the same character. So, it seems, a *Central United States Veterinary Examining Board* is a more immediate necessity, and one which the Legislature would be more ready to supply.

It would prove a stepping-stone to obtaining the National School of Veterinary Science, and in its powers might resemble our Royal College of Veterinary Surgeons. The aristocracy of intellect in America lends its support to Government scientific efforts; so, perhaps, there is more likelihood of official recognition of veterinary science in America than in this country. It is doubtful, however, whether we here or our *confrères* in America will ever bring the profession into such intimate relations with the state as we see in France, Germany, and other continental countries.

Professional unity is promoted by Associations. Of these we observe healthy signs in America. In 1858 the first of these was originated in Boston as the *Veterinary Medical Association,* with C. M. Wood as first president and E. F. Thayer as treasurer. The *American Veterinary College Allumni Association* held its first meeting in 1878, with C. B. Michener as secretary; in 1879 Professor Holcombe was elected president. The *New York State Veterinary Society* holds regular meetings and does good professional work. We may also mention the *Ottawa Central Veterinary Medical Association, Rochester Veterinary Medical Association* (J. McKenzie, secretary). The Ontario and Montreal Schools have Associations connected with them (the latter two, one French, the other English), and in 1878 was originated the *Medical Society of the American Veterinary College,* which holds meetings every Friday during the session. In Canada are also the Canadian Veterinary Medical Association, and the North American Central Veterinary Medical Association (Dr. Coleman, president). There was a proposal to form a Canadian Dominion Veterinary Association, with power of conferring all veterinary degrees. This important means of promoting unity was not considered necessary by the authorities of the Toronto School among others. It therefore fell through. But by far the most important is the *United States Veterinary Medical Association,* founded 1861, Dr. J. Stickney, M.R.C.V.S., being its first president. This grand national representative of the profession holds meetings semi-annually, and has several times taken measures of political importance. Thus in 1879 a committee of its members was appointed to draw up resolutions for Congress in relation to investigation and prevention of contagious diseases of domestic animals, and it was arranged that a sub-committee of three delegates proceed to Washington during sitting of Congress to further the interests involved. The Association offers prizes for essays on professional matters, has its own special organ, the

American Veterinary Review, and has a Committee of Diseases and a Committee of Intelligence and Education. The latter in 1878 made a laudable attempt to call a Congress of teachers of veterinary medicine in America. This unfortunately fell through, but let us hope the matter will not be allowed to drop, but prove more fruitful next time. Cordial co-operation of teachers is needed, not in America only! We fancy we see a trace of John Bull in some of the reports of the meetings of the Association. We are told several times of "those matchless dinners of Boston."

In examining lists of American veterinary surgeons and teachers we are struck by the number of them who affix M.D. to their names. No doubt many of these gentlemen have the highest qualifications, but we fear some few are the American medical degrees with which we are too well acquainted in England. However, we are tempted to inquire whether any substantial benefits to the veterinary profession have resulted from this, and whether the two branches of medicine are in America more closely united than in our own country. In 1878 Dr. Townshend read a paper on "Hog Cholera" before the Columbus Academy of Medicine, which gave rise to resolutions for promotion of veterinary science. In 1868 Texas fever gave rise to fearful mortality in cattle. Health Boards of Physicians, as in our great outbreaks of rinderpest sat, discussed the matter, and did no good. In 1870 Dr. Stein (now of the American Veterinary College) was delegated by the New York County Medical Society to the American Medical Society meeting in Washington. He was then Professor of Physiology at the New York College of Veterinary Surgeons. Professor Antistell read a paper on "Veterinary Colleges abroad." Dr. Stein carried a motion that the paper and the whole subject of veterinary medicine be referred to a Special Committee. The Committee recommended State and County Medical Societies to promote the establishment and support of veterinary schools, to solicit the aid of the governors of their respective states in the matter, to recommend association of thoroughly educated veterinarians with other medical officers as Commissioners of Boards of Health. Also they recommended employment of veterinary surgeons in the army and one in the Agricultural Department with the rank and pay of other medical officers. After a remarkable effort on the part of Dr. Stein these resolutions were adopted, but lapsed through some informalities. The veterinary profession was thus publicly recognised by the representatives of human medicine. We must conclude that the relations between the professions are

not more advanced than in this country, nor so advanced as we even might reasonably expect.

Agriculture is closely related to veterinary surgery to their mutual advantage. This has been several times acknowledged publicly in America. In 1878 N. H. Paaren, of Chicago, read a paper on veterinary sanitary reform at the *National Agricultural Congress*, which led to an important resolution whereby the attention of agricultural colleges was directed to vigorous efforts in veterinary education. The author was appointed State Veterinarian to the Board of Agriculture. Professor James Law is Consulting Veterinary Surgeon to the Agricultural Society of New York State. We have seen that various agricultural schools have their veterinary professors. However, at the meeting of the National Agricultural Congress for this year only one Veterinary Surgeon was appointed on the committee. The American Veterinary College offers a free scholarship to the United States Agricultural Department, and to each State agricultural society in the country. Also allowance is made to graduates of agricultural colleges for courses of lectures which they have attended on the subjects mentioned in the College curriculum.

We have noted certain signs of professional remonstrance against the veterinary editorships of agricultural journals by qualified practitioners, but are not inclined to find fault with them, for any means serving to enable agriculturists to appreciate the complexity of medical treatment of stock must redound to our advantage, transferring them from the hands of empirics to those of the duly educated practitioner. We can see no more objection to this than to the delivery of courses of lectures on veterinary science at agricultural schools, which in this country has proved of decided advantage to the profession. We see Professor James Law is editor of the *American Live Stock Journal,* and have no fear that in his hands it will fall to the low prescribing and puffing level of certain other American journals.

The prohibition of importation of American cattle into this country, necessitated by the prevalence of pleuro-pneumonia in the United States, by driving the important live-meat trade wholly into the hands of the Canadians, has necessitated State investigation of the matter. This event constitutes an era in American veterinary history. Professor McEachran has been sent into the United States to investigate the disease. Professor James Law, with his veterinary staff, has been "stamping out" the affection in New York. Professor Holcombe is at work in New Jersey; Mitchener in

Pennsylvania. These three states form the centres of contagion. In Connecticut the cattle commissioners have powers of quarantine, but not compulsory slaughter. In Maryland and Virginia the disease is also rife. Massachusetts (which has several times "stamped out" the disease), Rhode Island, and Chicago, were reported free in April of the present year. We may now see the special necessities which render Mr. Billing's suggestion of a *National Veterinary Police* an important one. In 1877 the value of cattle in the United States was reckoned at 1,600,000,000 dollars. In the *Review* for May, 1878, are some highly valuable calculations, tending to show that 4762, or 39,019 veterinary surgeons are required to protect this animal wealth. In August, 1879, we are told, with regard to laws for prevention of cattle disease, that twenty-one states are without any, ten with some regulations, sixteen with an indefinite state of affairs, while one furnishes no information. In Massachusetts there is only one veterinary official—Thayer, of Boston—who since 1859 has been on the staff of the Cattle Commission of that State. The 'Ohio Agricultural Report' of 1877-78 tells us there are there no veterinary sanitary laws and regulations.

National veterinary organisation was brought before *Congress* by Dr. John Busteed, when President of the New York College of Veterinary Surgeons; but though he attracted some attention to it, the matter dropped when it passed from beneath his immediate control. This is a matter in which America has yet to act.

Army veterinary organisation of the United States is receiving some attention. We are told by a highly educated and liberal-minded medical man in the August (1879) number of the *Review* that "a report of the epidemic among horses in Fort Randall, Nebraska, 1856, is the only veterinary observation noted in the medical reports for a period of more than twenty years. Though the United States army consists mostly of cavalry there are no veterinary surgeons in the service, so sick horses almost invariably die." Since this time it has been decided that, in the future, none but regularly educated veterinary surgeons shall be appointed, that all candidates must be recommended by commanding officers, must be approved by intermediate commanders, and pass an examination. Liautard gives us some facts concerning the development of the United States Army Veterinary Department. In 1863 one veterinary surgeon was allotted to each regiment of cavalry, with pay of 75 dollars per mensem and rank of sergeant-major. In 1866, matters improved, the pay being

raised to 100 dollars; but even the military authorities did not seem aware of the exact position of these officers, the Army Register classing them among enlisted men, whereas, they were appointed by the Secretary of War, and considered only civilians. Empirics abounded in the service until the 1879 warrants, hence we cannot wonder that in 1869 a simple farmer was appointed by the General Government as Clinical Lecturer on Horseshoeing to the Army Veterinary Surgeons and Farriers. The United States Veterinary Medical Association entered a protest against this. Under the new warrant it is one of the duties of veterinary surgeons to instruct the farriers and men. Also veterinary surgeons and farriers are to be encouraged to make and preserve specimens, and each veterinary officer is to furnish a monthly report, his patients being of three kinds, mules, horses, and oxen. We observe a tendency still to group army veterinary surgeons with farriers. Let us hope the influx of educated practitioners will lessen this. We understand that those unqualified army practitioners at present holding appointments are to be allowed facilities for the regular course of study necessary for graduation. Recently the obsolete and imperfect list of veterinary means and appliances allowed in the army has been very satisfactorily modified. Among the instruments and appliances we specially note the urinometer, thermometer, trephine, and hypodermic syringe. This at any rate *sounds* well. One omission has been pointed out—a pestle and mortar! The books allowed are not of a very high scientific stamp, though good in their way; they are 'Law's Veterinary Adviser' and 'Parrish's Pharmacy.' There is considerable room for improvement still in theposition of the army practitioner, but he is now no longer in the rank and file.

There is much work in prospect for veterinary surgeons in America. Though we are informed by Professor Smith's communications to the *Veterinary Journal* that disease is not very prevalent in Ontario, we are always hearing of new and obscure diseases of cattle in the vast territory of the United States. Hogs are carried off in large numbers by the disease known variously as cholera, pneumo-enteritis contagiosa, and typhoid fever. The prevalence of *Trichina* threatens to interfere with the export trade in dead pork. Anthrax, tuberculosis, and parasitic disorders are so formidable and on such a large scale that each may be considered a national calamity. Let those who are promoting veterinary science across the Atlantic think when they find their task a difficult one—

Forsan et hæc olim meminisse iuvabit.

There is evidently a great future in store for our profession in America.

We have now completed our work, and hope we have collected material interesting to the English practitioner. If any American reader notes errors, let him be assured that we shall be anxious to correct our statements when proved to be in the wrong.

ABSTRACT OF LECTURES, BY DR. W. S. GREENFIELD, Professor Superintendent of the Brown Institution, ON "RECENT INVESTIGATIONS IN THE PATHOLOGY OF INFECTIVE AND CONTAGIOUS DISEASES."

SPECIALLY REPORTED.

On Wednesday, 17th December, at 5.30, Dr. Greenfield commenced his course of lectures in connection with the Brown Institution at the University of London, in the Theatre. The audience was large, including several well-known medical and veterinary practitioners and professors. The proceedings were opened by Dr. Quain, who, as chairman of the Committee of the Brown Institution, introduced the lecturer, taking advantage of the opportunity to allude to the valuable services rendered to science by Dr. Burdon-Sanderson, as based on the experiments and observations made by him at the Institution, and also, by a few judicious remarks, to condemn the proceedings of those individuals who fail to see that the small amount of injury inflicted on the few in such investigations as are pursued at the Brown Institution must be productive of a very large amount of benefit to man and to the many lower animals. The lecturer was received with applause.

He commenced his lecture by some remarks on the position which the "relation of diseases of animals to man" occupies in the minds of medical men, and expressed his opinion that it is not adequately appreciated. He gave those illustrations of the relations between diseases of animals and those of man which are most familiar to us, and said that the only instances of attempt to inoculate animals with human morbid products with which he is familiar are vaccination for distemper in dogs, not in his opinion a very hopeful operation. He alluded to Drs. Klein, Sanderson, and Simon, as workers in this matter, and stated that for assistance in his researches he is indebted to Mr. Banham,

M.R.C.V.S., Veterinary Officer to the Institution, and to Dr. Sanderson, while Mr. George Fleming has kindly supplied him with material from abroad. Having served on the recent committee on septicæmia and pyæmia, he had examined these diseases very closely, and since they, though rare, are not unknown in the higher classes of lower animals, he appreciated the value of investigations of them in these animals, where certain complicating elements of this study in man are absent. He proposed, in the first place, to examine the relations of Bacteria to disease, and thought that at present there is much confusion in the views with regard to the relations of these organisms to contagion. In studying the *general pathology of contagion* we have to do with its nature, mode of action, and methods of reproduction and communication, as leading to general laws. But in examining the *intimate pathology of contagion*, each disease and each contagium must be investigated on its own merits, the causes of latency and of incubation and the means of preservation of the poison outside the body being especially important. The diseases to be treated of may be divided into—(I) *specific contagious fevers* which are not known to arise *de novo*, but always are communicated from one animal to another. Of these the virus is usually most intense in some special fluid or tissue, and it is destroyed by putrefactive processes. Its effects once manifested in the system successfully resisted, future immunity, temporary or permanent, results. There is no absolute line of demarcation between these and the (II) so-called infective diseases, such as pyæmia, septicæmia, and traumatic erysipelas. In them there is no true period of latency nor specific lesion, and they tend to produce changes of the tissues allied to putrefaction. They generally arise *de novo*, and spread by infective processes from the seat of inoculation. They can be transmitted to all species of animals, whereas those of the first class affect special animal forms.

The view of the particular nature of contagium is now generally allowed, but there are many hypotheses as to its true nature. Putrescence is looked upon as one of its sources, and there is now a generally current belief that contagion depends in some way on Bacteria both in acute specific diseases and infective disorders. We may pursue this supposition still farther and say that if Bacteria have anything to do with disease probably each disease has a special organism, each of these specific forms belonging to a distinct species and having its own morphological characters, that we may possibly be able to isolate and cultivate these distinct forms, and by ascertaining what conditions are prejudicial to them, lay the foundations of a true system of preventive medicine. They may be studied in blood or lymph, by reproducing them in the animal system, or in

cultivating solutions. Bacteria have been largely investigated, notably by Cohn, Böllinger, Billroth, Ewart, and Klebs. Cohn's classification in 1872 is now found to be of doubtful value. His definition of Bacteria is good, and we may for convenience describe them as assuming various forms—*spheroidal, rod-shaped, bacilliform, spirilliform,* &c. The simplest of them are the *spheroidal* or *globular,* known as micrococci or microsporon, leading to the formation of zoogloea or mycoderma by aggregation, or becoming united in chains resulting from transverse division, as may be well seen in decomposing blood and aqueous humour. Sometimes they divide transversely as well as longitudinally, producing groups of fours. Klebs, Billroth, and Dallinger believe these micrococci can become converted into the rod-shaped form or true Bacteria, but the lecturer has not been able to trace this. He believes that some micrococci never pass beyond the spheroidal stage. *M. vaccinæ* and *M. diphthericus* are some of the supposed pathogenic forms of micrococci. The *rod-shaped form or bacterium proper* is usually flagellated or ciliated, and often presents nuclei or spores. Ewart has found these in *B. termo ;* it presents alternate stages of rest and motion, and forms zoogloea masses with a permanent and abundant intercellular substance. *Filamentous Bacteria* or *Bacilli* of one form occur in anthrax; and Koch and the lecturer have observed another very different in septicæmia of the lower animals.

The lecturer has also recently observed a Bacillus in farcy. It resembles in its general characters *Bac. anthracis,* as described especially by Ewart, and presents the appearance of a lateral formation of spores, which may be arranged in pairs; they escape or are set free by the breaking up of the filament. Sometimes separate couples of spores result, and a large convoluted chain-like form has been observed. Also the spores sometimes divide into fours. The filaments are aggregated in masses, and each has a looped arrangement. (These remarks were illustrated by diagrams, to scale, executed from the lecturer's specimens.) In the Bacilli the spore develops into the filament. Klein, Koch, and Ewart have described this, but the observers differ as to the details of the process, it not being decided whether the spore itself elongates or its chitine-like investment. The Bacilli of septicæmia first elongate and divide transversely into pairs. Masses of these occur, with nuclei generally at the ends, but sometimes centrally placed. The filaments further elongate and then break up. In collections of this form, as in *B. termo,* rods are generally seen at the outerpart radiating from the centre where the spores are situated.

The lecturer then proceeded to touch upon *methods of investigation.* Given a specific disease such as smallpox: It is

certain the contagious power resides in certain lesions ; and it is a reasonable hypothesis that the contagium is an organism with definite life conditions ; hence we may hope to see the organism, to grow crops of it, and thus from distant generations reproduce the same disorder ; to trace its transit through the body from the seat of inoculation, to discover what relations exist between the specific lesions and the bacterium. But we may reasonably suppose there are some Bacteria too small to be seen by our present artificial aids to vision. Klebs introduced the "*fractional culture method ;*" which, however, has only a limited value, as so many conditions are necessary to its success. The secondary reproduction of disease in the higher animals is important, but more precaution than is generally adopted must be taken to prevent the accidental communication of the disease under investigation to the experimental subjects by contagion. The culture method, unguided by sight, is very difficult. Error is liable to arise from confusion of harmless Bacteria with the virulent forms.

Lecture II.—Specific contagious disorders may possibly be due to the introduction of lowly organisms into the system, or, according to some, of altered protoplasm which is capable of communicating to other protoplasmic masses, similar changes to those which it has itself undergone. Most infective diseases are producible by animal fluids at certain stages of decomposition, and it is held that Bacteria are either the essential contagia or that they generate the poison which originates the infective process. Some, however, consider they are simply innocent parasites, and so to prove that these organisms are contagia, they must be isolated, cultivated, and when introduced by inoculation into the system of an animal, reproduce the disease. With some forms this is very difficult, so we often need to base our conclusions with regard to some special organism and its resulting disease on analogy. The poisonous material sepsin, which is produced by the action of Bacteria concerns only a small number of cases of septicæmia as they occur clinically, this is not a virus but a poison, its presence is a matter of importance, but it does not give a clue to those cases where only an extremely minute quantity of material introduced causes death, the fluids of the subject of the experiment being active when used for inoculation. The particular stage of decomposition is important, as generation of the septicæmia-producing material occurs only during the early stages, and may be lost at other stages, as was observed by Davaine long ago. With regard to the power of different forms of Bacteria to cause septic poisoning, it is presumed they constitute the essential virus, for it is known that many Bacteria are reproduced in the body, and that fluids devoid of Bacteria have no powers

of true septic infection. Also in anthrax Bacilli have been found to generate the disease. In *pyæmia* we find the phenomena of thrombosis or phlebitis, entrance into the blood and diffusion throughout the system of the products of breaking down of the clot, leading to embolic pyæmia with secondary abscesses, and often producing the condition known as septico-pyæmia. It was originally supposed that softening of the clot, setting up embolic abscesses in the lungs, and then in serous and synovial membranes constituted pyæmia, but it was observed that sometimes the products of solution are prevented from entry into the general mass of the blood by a second thrombus. Also, sometimes no abscesses occur in the lungs, therefore the embolic theory does not suffice, and we must find some other septic influence. The observations of the presence of micrococci on the wound, and in various parts of the system are sufficient to account for pyæmia; and the arguments against the potency of their influence are not conclusive. But it is argued that they are not constantly present, and therefore are not essential. In cases of acute necrosis and ulcerative endocarditis, the lecturer has found the leucocytes largely increased, and in spite of the absence of those conditions of the blood, commonly considered septicæmic, various forms of Bacteria are present. Thus Micrococci abounded in masses in the venules, and arterioles of various organs, filling up the vessels and sometimes diffused in the tissues around the vessels; they stain readily with logwood and methyl aniline, and these colourings were not removed by the action of dilute acids or alkalies; even in the lymphatic glands they were found in the vessels; they occur to a marked degree in the periphery of abscesses. With regard to their non-constancy, on re-examination of organs supposed to be free from them they have been detected, for scattered Micrococci in various organs are distinguishable only by certain methods. Again, they often occur in parts which give no visible evidence of pyæmic change, and they probably disappear when the diseased processes are far advanced, or lose their power of staining. They occur especially where the greatest retardation of the blood-current occurs, as in the glomeruli of the kidney and they set up changes due to obstruction of the passage of the blood, such as abscesses. They may cause ruptures of the smaller vessels. They are therefore competent by their presence to give rise to the ordinary phenomena of pyæmia. They are usually found in the infective material of similar diseases in the lower animals. In the vessels they first adhere in zoogloœa masses to the walls and aggregate round the white corpuscles. The connective-tissue corpuscles, too, are centres of aggregation of large Micrococci often in chains causing surrounding swelling. As is

the case in anthrax, the vessels tend especially to become blocked up where the current of blood is slow. So the Bacteria are marked in the thyroid body, and in certain parts of the kidney where stagnation of blood first occurs, and in the lobules of the liver adjacent to the central venule. They tend to invade the epithelium of the blood vessels and are found in abundance in softening clots, and therefore perhaps are the direct agents in the production of thrombosis, and the softening of the clots in veins. The conditions essential to *investigation of blood poisoning in the lower animals* are peculiar, and require some experimental experience. Guinea-pigs are most unsatisfactory subjects for they die easily, and often without any apparent cause. Rabbits also are not good, their variations in temperature are very uncertain. Rats and mice answer very well. But many inaccuracies of observation have resulted from neglect of the fact that different animals give varying results. Often we can produce disease very like the pyæmia of man. Caseous masses generally form at the seat of inoculation, and abscesses in various organs with a peculiar absence of true suppuration, the product being of a waxy character. On microscopical examination it shows the dumbbell form of Micrococci, and inoculation with the blood sometimes produces no effect, but often show inflammation of a local character, and sometimes acute disorder rapidly leading to death. In these latter the symptoms are of a febrile character, ecchymoses and abscesses being the most marked lesions. After death Micrococci may be found in the smaller blood vessels and especially in the patches of ecchymosis observable in the heart. These Micrococci are not generally in masses, but in chains or pairs, and are of large size. As has been found with other diseases, the blood is not the most likely fluid to communicate the disease by inoculation. Serum or fluid from a macerated portion of tissue will produce septicæmia with almost absolute certainty. The lecturer then gave a very hasty résumé of Koch's experiments, showing how at first he injected subcutaneously a large amount of decomposing fluid, when true poisoning resulted. But later he tried smaller quantities, and he found that after introduction of two drops many subjects remained unaffected, some sickened after twenty-four hours, death supervening in forty to sixty hours. He transmitted the disease thus produced in continuous series through seventeen inoculations. At first he could detect no Bacilli in the tissues and fluids, but he at length succeeded in detecting very minute forms by special means of illumination. They seem to enter the blood directly through the walls of the vessels, and to extend widely through the loose connective tissue. (Here the lecturer drew attention to diagrams of septicæmic Bacilli, some taken from specimens under $\frac{1}{25}$ inch

power.) Another form of septicæmia has been observed in the lower animals, its lesions are especially those known as necrosis. In it Micrococci of another form crowd the lymphatics and blood vessels, and cause solution of healthy tissue. Differences were observed in the field mouse and the house mouse in their relations as bearers to these distinct forms of Bacteria. Micrococci have been observed in many other diseases, notably diphtheria and smallpox; but it must be remembered that there are many different forms of Micrococci distinct in their distribution and in their grouping. In the diphtheria cases, however, it must be remembered that these are generally endocarditic growths, which tend to undergo softening like the thrombi in pyæmia.

Lecture III.—*Anthrax* is one of the diseases which can be most readily connected with certain vegetable organisms. Allied to the ordinary form, as seen in the ox, are certain diseases termed anthracoid, such as Loodianah Fever and Cape Horse Fever, also certain forms affecting the elephant and camel, as has recently been rather forcibly shown in India. There are certain general conditions under which these disorders occur; they are especially prevalent in malarial districts, and from them may spread both sporadically or epidemically to higher altitudes. In some respects they are not unlike true septicæmia. *Splenic Fever* is due to Bacilli, and blood from an animal affected with this form of anthrax will convey the disease even to cold-blooded animals as frogs. By some the pigs are considered not liable to be affected by it, but these animals suffer from inoculation either exhibiting true anthrax or the disease called "Diphtheria," which is characterised by swelling about the throat, but with no formation of false membranes; swelling of the lymphatic glands also occurs frequently resulting in suppuration. Dogs are less liable to the disease. Pasteur has proved that by reducing the temperature of fowls, they may be rendered susceptible. Beyond all question, the disease is due to Bacilli, such as were first described by Pollender. Artificial anthrax differs somewhat from the natural forms of the affection, and the former varies according as it is produced by intravenous and subcutaneous injection. In the former case the poisonous effects is proportional to the dose, in the latter often local swelling occurs, most frequently when the experiment is not likely to succeed, this is therefore in some measure protective. There can be no doubt that the Bacillus of anthrax has irritant properties, but whether these result from its activity or from some poison generated by it is not yet decided, though Pasteur has procured from it a hydrolytic ferment resembling diastase. From the subcutaneous tissue these or-

ganisms sometimes pass directly through the lymphatic walls, so swelling of the glands in the vicinity of the inoculated part first occurs. In the higher ruminants and horses, swelling occurs at the seat of inoculation, and the poison multiplies in the serum of the parts, it is then absorbed into the lymphatic glands of the part where it continues to multiply, and it thus causes swelling; it is more likely that it pierces the walls of the smaller blood-vessels, and thus gains the round of the circulation, than that it passes by way of the thoracic duct. Thus in some cases the glands do not seem to be affected, but the Bacilli mainly occur in the capillaries. In the mouse, guinea pig, and other small mammals, the symptoms after inoculation may be practically nil, the temperature rising two or three degrees, and falling again before death to as much below the normal; in the latter stages a cyanotic condition has been observed. At first only a few Bacteria can be observed on a slide in a drop of blood, but later they are more numerous. Often, however, Bacteria cannot be seen in the blood, the white corpuscles are increased in number, and the spleen is not generally enlarged in the guinea pig. The Bacilli are found to be more irritant than when taken directly from a diseased animal than after cultivation.

The blood of the animals subject to experiment is interesting as having its white corpuscles increased in number, containing many Bacilli, and in that coagulation does not freely occur. Sometimes the filaments are longer than three or four red corpuscles. The suppurative infective properties of anthrax-virus disappear on putrefaction but perhaps not entirely. To test this the lecturer allowed a guinea pig which died from anthrax, to remain after death exposed to putrefactive influences; after nine days Bacilli remained. On the sixteenth day the body swarmed with spores, remains of filaments, and spores with portions of filaments attached. A small amount of fluid containing these communicated the disease to a guinea pig. *Mode of action of the Bacilli;* it is known that they depend on the presence of free oxygen for free growth, and therefore, they have been supposed to deprive the red corpuscles of oxygen. This is not yet proved, for there can be no doubt that the obstruction to the passage of blood through the lungs prevents it from obtaining its obtaining its proper amount of oxygen, which would account for the small amount of oxygen in anthrax blood. The irritant action of the organisms must also be remembered. But the *morbid anatomy* throws some light on this matter, an enormous number of Bacilli are found, but they do not seem to be especially abundant in the spleen. In the heart they abound within and around the vessels, and in the interspaces of the muscular fibres. After they so crowd the small vessels as to

lead to rupture and ecchymosis, but some observers needlessly attribute the extravasations to direct irritation. In the lungs they may be very well seen around the alveoli; some of the capillaries seem to be striated, they being completely filled with layers of Bacilli; they are seldom numerous in the pleura. The liver is comparatively free from them, but when present they occur in the intralobular venule and its adjacent capillaries, the kidneys contain a large number, especially in the glomeruli near the surface of the organ and in the afferent and efferent small vessels (often these present the peculiar striated appearance). Sometimes rupture of these small vessels occurs, and in these may be often seen masses of spores. Bacilli may escape into the convoluted tubes, but Koch has never seen them in the straight tubes, but as blood corpuscles may escape through the tubules so probably may these bodies, and so probably the urine becomes a conveyer of contagion. This fact should lead to fuller sanitary precautions for Feser has conveyed anthrax by inoculation with the urine. Urine, too, is known to be a useful cultivative fluid, and in it the Bacteria can generate their spores. These bodies must have some mechanical effect in impeding the action of the heart, preventing excretion, &c. Some of the symptoms point to the mechanical action; thus in the brain the Bacilli are not frequent, which accounts for the remarkable retention of consciousness by the patients. After inoculation of Bovine animals with anthrax matter passed through rodents, in Dr. Sanderson and Mr. Duguid's experiments, it was found to produce intense symptoms, but in no case to prove fatal. If anthrax resembles acute specific contagious diseases, this means ought to secure immunity; to test this important point the lecturer repeated the experiments. He took a steer in good health and inoculated her with virus which had been passed through guinea pigs and then cultivated in aqueous humour, but no appreciable results ensued. He considered that not enough material had been used, so after a second cultivation he inoculated the animal again, also a mouse, the latter died. On the evening of the following day the temperature of the steer was 102°. Next morning 104°, and the animal was dull and refused its food, on the third day 106°5. On the 8th day, in the evening the temperature fell to 102°, and on the 9th day again attained the normal. These experiments need repetition.

The lecturer then alluded to the relations of anthrax of the lower animals to diseases of the human subject. Where anthrax prevails so also does malignant pustule. Bollinger treats this matter fully, but probably describes several different diseases as anthrax, angina Ludwigii, woolsorters' disease, and other diseases of man, are probably of this nature; so there is much need

of more thorough sanitary inspection than now exists. We must hesitate to attribute to the disease a spontaneous origin from local conditions of food or from malaria. Food is a most ready means of conveyance of contagium, and experiments prove that the disease occurs most readily when there are wounds in the mouth. The endemic prevalence of anthrax in pastures is attributed to persistence of the virus in earth, and it is possible that, at certain periods of the year, Bacilli in the soil have their powers of generating disease roused into activity. It has been suggested that the disease is due to certain plants, but none have been found capable of producing the symptoms of anthrax. It is thought that the spores may soak out from the carcases of buried animals and be taken up into plants, and thus conveyed into the alimentary canal; so it has been suggested to burn the carcases of anthrax patients, but Koch suggested burying them so deep in the soil that the sun's warmth could not reach the spores. [These spores are very resistant, but it has been shown that their vitality is impaired by compressed oxygen, and that they are destroyed when heated up to a certain point.] Feser made a series of exhaustive experiments on this point in the Bavarian Alps. Ho interred the carcases of a series of animals, inoculated and proved to be affected with anthrax. He placed them in various positions, and disinterred them at periods ranging from fourteen days to four months. He then made an elaborate examination of the tissues microscopically, and endeavoured to produce anthrax by inoculation, but in only one case with any result. In this a portion of a muscle of the quarter of a sheep, which had been buried fourteen days, was introduced into a horse which died in four days. It is known that anthrax material can be preserved by freezing and enclosure in capillary tubes. These experiments show that, under certain conditions, buried carcases do not serve as means of transmission of the disease. Vegetables, of various kinds, grown over the places where anthrax patients were buried, gave no result when used as food.

Messrs. Pasteur, Chamberland, and Roux, produced charbon by earth taken from around carcases, ten months after burial; it was found that earth from the superficial layers produced anthrax; from the deep layers—a peculiar form of septicæmia. *Bacillus anthracis* (Cohn) is isomorphous with the hay Bacillus. Tommasi and Klebs collected particles which had been floating in the air, and inoculation with them produced splenic disorder, the organisms found in the blood being somewhat similar to *Bacillus anthracis*. It is possible the disease thus produced was true malarial, fever but, according to another hypothesis, both anthrax and malarial fever result from the soil. [The lecturer here compared the diagrams

of *Bacillus anthracis* and *Bacillus malariæ*; also he showed the resemblances of these to an organism from a farcy bud, as figured by him.] He completed his observations on this subject by combating the opinions expressed by Dr. Lewis, in his work on 'Organisms found in the Blood in Health and in Disease,' showing how that gentleman had not correctly interpreted the opinions of Bouley and Bollinger, and also how he did not show that the organisms found in the blood of healthy rats immediately after death, which may be grown in urine, are anthrax Bacilli, for he did not attempt to test their effects when inoculated. His argument, then, that Bacilli may be present in the blood without producing serious effects is not substantiated, as far as it bears on *Bacillus anthracis*. It is well known that there are innocent forms of Bacilli.

ON PLANTS IN RELATION TO ANIMALS.

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

(*Continued from* vol. lii, *p.* 870.)

Our notice of poppies will be incomplete without a description of our truly wild species, we therefore propose to review our native forms, first, however, giving the following synopsis of the genus.

PAPAVER—Poppy. *French, Pavot; German, Mohn.*

Sepals 2, rarely 3, herbaceous, very caducous, falling off when the flower opens. Petals 4, crumpled in æstivation, caducous. Stamens indefinite. Capsules globose, ovoid, or clavate, 1-celled, with placenta projecting more or less into the interiors, and forming imperfect partitions. Stigmas 4 to 20, sessile, radiating upon a flat or convex disk, at the top of the capsule. Capsule opening by small scale-like teeth underneath the edges of the expanded disk. Seeds very numerous, punctured, containing a bland, sweet, nutty oil.

Herbs, often glaucus, with white or pale yellowish sap. Leaves often lobed or dissected. Flowers solitary, erect, drooping in bud, the sepals falling off when the flower opens. The generic name is derived from *papa*, pap, or thick milk, or *pappare*, to eat pap. This may have arisen either from the milky nature of the juice of the poppy, or because it was at one time given to children in their pap, or food, to make them sleep. We are also told that the seeds, having a pleasant nut-like taste and being innocuous, and without any soporific qualities, have

been considered a good addition to the food of children.* The species may be arranged as follows :

A. Capsules smooth.

1. *Papaver Rhœas.* Common Red Poppy.
2. „ *Lamottei.* Lamotte's long smooth-headed poppy.
3. „ *Lecoqii.* Long smooth-headed poppy.

B. Capsules prickly.

4. *Papaver Argemone.* Long prickly-headed poppy.
5. „ *hybridum.* Round prickly-headed poppy.

Before commencing our notes on the species, we would beg our readers if possible to look at the plates of the poppies just enumerated, and when summer comes to examine these interesting plants in the field, and as we have often done so with extreme delight, we at once direct more particular attention to their points of interest.

These field poppies are remarkable for their fugacious floral envelopes, thus the calyx of two leaves as soon as the corolla begins to swell and unroll, the calyx-leaves fall off, and shortly afterwards—the period depending upon sunshine and the state of the atmosphere—the corolla of four petals expands in all its glory. It, however, is destined not to last long, but soon falls off also, to be followed by other flowers.

Now, it should be noted that while the flowers that are ready to expand are perfectly upright, and are so exposed to the ripening influence of the sun; the flowers that are coming forwards are all of them in a bent and drooping position. In this case the calyx acts as a protection to the flower in the shape of a pent-house roof. As soon as the upright capsule becomes exposed, the bent flowers begin to assume the upright form, and so to go through the same phases as the former. The capsules being hard and coriaceous and protected from the rain, and hence the whole period of flowering and fruiting is one with most curious and interesting adaptations best calculated to bring about this important end.

1st. Papaver Rhœas. *Common Red Poppy, Corn Poppy, Corn Rose, Red Weed,* &c.

"The specific name is said to be derived from ῥωνα (*rhoua*), pomegranate, which the capsule resembles; or from ῥεω (*rheo*), I fall or flow, in allusion to its perishable flowers; or from the fact that when bruised or pressed a red juice exudes from the petals. This species of poppy is considered narcotic, though its properties must be slight. From the petals a syrup is made, which is extensively used for colouring medicines. Oil of

* Adapted from Syme.

poppies has been drawn from the seeds. Gerarde records that in his day it was considered pleasant and 'delightful to be eaten.' From the bright coloured petals of this plant, an ingenious little insect, the drapery bee (*Megachile papaveris*), chooses the hangings of her apartment. She dexterously cuts out the petals of the half-expanded flowers, strengthens the folds and fits them for her purpose, over hanging the walls of her cell with this splendid tapestry, in which, when complete, she deposits her honey. In classic lore the corn poppy has long been held sacred to Ceres; as it is, however, by no means a welcome guest in the fields dedicated to her service, we may regard it rather as a sacrifice required by her worshippers than as an offering to be encouraged, excepting in the sense that the eradication of weeds, of whatever kind, found intruding in the crops, and detracting from their value, must be a labour worthy of all true disciples of the agricultural goddess."*

This species is well distinguished by its uniformly bright scarlet flowers, which is succeeded by a more or less rounded capsule, and the long spreading hairs with which the whole plant is armed. It is pre-eminently a lover of sand, and hence in all sand districts, whether recent or of older geological date, the presence of this poppy sufficiently indicates the nature of the soil. As a rule land in which this plant loves to grow is too light for wheat, but on the contrary it is safe to grow peas that will boil well, a matter which at one time was considered of great importance. Now the spread of the potato and the general use of white bread has caused less care to be exercised in the growth of boiling peas, a question we think much to be regretted, when a potato contains somewhere about 75 per cent. of water, while peas have about 14 per cent. of this fluid, and while the tuber is mostly starchy the legume is highly nitrogenous.

2. *Papaver Lamottei,*

3. *Papaver Lecoqii,* are considered as varieties of the old form of *P. dubium.* Both forms are well distinguished from the *P. Rhœas* by strong appressed hairs over all the stems, flowers somewhat less bright, and a more or less oblong or conical capsule. The *P. Lamottei* is usually distinguished by its exudation of a delicately white milk wherever the young stems are broken, while in the *P. Lecoqii* this exudation is of a dark yellow colour inclining in drying to ochreaceous, but it is but right that we should state, that on our farm we sometimes meet with even common poppies in which this juice is more or less discoloured, while we have seen both forms of *P. dubium* very variable in respect to the colour of the juices; thus, sometimes

* From Notes by Mrs. Lankester.

Lamottei has a juice inclining to yellow, while *Lecoqii* may have this only slightly tinged. We therefore agree in considering these only as varieties of *dubium*, if, indeed, this latter is not itself a variety of *Rhœas*, as Dr. Syme says of the long smooth-headed poppy. "Its Latin specific name 'dubium' signifies the doubtful nature of its distinctions to superficial observers."

4. *Papaver Argemone*. As the authority just named observes:—"The specific name just quoted is probably derived from *Argemon*, cataract; a disease of the lens of the eye, for which an infusion of this plant was considered a cure, and possibly its emollient power did allay inflammation. Our plant is distinguished from the three previously described forms by its conical capsules being armed with strong bristles or rather prickles. The flowers are smaller, and the whole plant is less hairy. Its favourite soil is that of a sandy marl, thus we have a corn field which is sometimes red with *P. rhœas*, indicating its unmitigated sandy nature, but on a part of this where we applied some Upper Lias Marl the *P. Argemone*, year by year makes its appearance in such quantities as we have nowhere else met with.

P. hybridum is comparatively rare, it is larger than the preceding, which is the smallest of our poppies. It has more or less appressed hairs, the capsule is ovate and armed with several rows of coarse hairs or fine prickles. It is said to have been found in several English counties, but we have never met with it.

As regards the properties of this section of the poppy genus, there can be no doubt that to a limited extent its members possess in greater or less quantity the somnolent virtues of the opium poppies; this is indicated by the heavy smell of the bruised herb, and the fact that the juices are so strong and disagreeable, that the cattle and stock of all kind uniformly refuse to eat it. Birds, however, eat the seeds with avidity, and one of the services performed by the finches is the destruction of the seeds of poppies, which is a favourite food of these birds.

It was formerly much employed as a medicine, and especially with children; now, however, it has lost its repute, and the petals of the red-leaved section are only used to make a syrup.

S. rheados, which is only employed as a colouring matter to disguise other medicaments, or perhaps to add a charm to some noxious draughts. There are other poppiform plants, such as *Meconopsis Cambrica*, the so called Welsh poppy; *Roemeria hybrida*, Violet Horn Poppy; *Glaucium corniculatum*, Red Horn Poppy; *G. luteum*, Yellow Horn Poppy, all of which were formerly held in great repute for their medicinal virtues. At present, plants which at one time were honoured with names on account

of some supposed magic virtues, are now only looked upon with interest by the prying botanist. Still, as an evidence of the mythological interest attaching to some of these, we cannot forbear extracting the following from Mrs. Lankester's notes on the folk lore of plants.

Yellow Horn Poppy. *Squats* of the Portland Islanders.

"*Luteum* signifies pale yellow. This is perhaps the most striking and remarkable of our sea-shore plants, and cannot fail to arrest attention where so little vegetation flourishes. With our notice of this pretty plant, it may not be uninteresting to recall the history of Glaucus, whose name it bears. He was, according to a mythological tradition, the son of Neptune and a sea nymph, but lived upon the shore. His parentage had some influence on his habits, and he was fond of fishing. One day, having been successful in his sport, he laid his scaly captives on a neighbouring marsh, when to his great surprise they began to nibble the green grass, and then—

> "Sudden darting o'er the verdant plain,
> They spread their fins, as in their native main.
> He paused with wonder struck, while all his prey
> Left their new master, and regained the sea."

Amazed at what he saw, Glaucus resolved to try the power of the herbage in his own person; no sooner had he bitten it than his hereditary aquatic propensities seized him, and into the ocean he leaped:

> "Farewell for ever, farewell land, I said,
> And plunged amid the waves my sinking head;
> The gentle powers who low that empire keep
> Received me as a brother of the deep."

For his faith and courage Glaucus was admitted among the sea-gods. In their domain he still shows his royal descent by wearing a golden robe; and yet from old affection, high above it he bears his favourite long and curved fishing rod, with its point bent, as if a captive fish ever showed it. Glaucus never goes far out to sea, but rather frequents the shores and the cliffs; for Scylla, whom he loved, was turned into a rock with howling waves around her, and his faithfulness retains him still close to her side. The horned poppy has no recognised active properties, nevertheless the chemists have discovered two alkaloids in its structure. Glaucine is found in the leaves and stem, and forms, with acids, salts which have a bitter and acrid taste. Glaucopicrine, the other, is found in the roots, and also forms with acids bitter and nauseous salts.

STRONGYLUS PARADOXUS IN THE PIG.

By Thomas James Poulton, M.R.C.V.S., Messing, Essex.

The following cases having recently occurred in my practice, and not having seen similar ones recorded in veterinary literature has induced me to pen this paper, hoping it may prove interesting to the readers of your invaluable Journal. That I should have stumbled over them, as it were, proves that we are not, while making *post-mortem* examinations, sufficiently careful in elucidating all the causes of disease, but are apt to shelter ourselves under the *ipse dixit* of any or every authority rather than pursue that original line of research which is incumbent on each and every one of us—losing, in a word, our own individuality in order to become homogeneous. We know that when local authorities appoint veterinary inspectors, diseases other than contagious are given them for investigation, so that, in fact, we have greater opportunities, especially *post-mortem*, of forming correct conclusions than the higher or sister profession is able to secure. Let us use these opportunities, then, as they present themselves, carefully and diligently, that we may—feebly, it may be, but from conscientious motives—forward the interests of veterinary science, and we shall then be looked up to as scientific men whose only thought and aim is the advancement of science and the public weal.

May 26th, 1879, I was requested to examine a herd of swine as inspector, the property of Mr. M——, reported to be suffering from swine fever. I found an absence of any eruption on the skin, of increased temperature, or increased fœtor of the alvine or urinary dejections. There was a thick, moist, and husky cough; the animals crowded together, and carried their muzzles erect; altogether I found it was an outbreak other than of swine fever. I told the owner that when he reported the outbreak he had stated that a pig had died. He said it was still in an outhouse, and forthwith produced the carcase. I commenced by making an autopsy of the stomach and intestines, which I found in a perfectly healthy condition. I then severed the trachea, the interior of which contained some frothy mucus, although its inner coat was of a normal colour, and, wanting to know what caused the mucus, I made a longitudinal incision down below its bifurcation, and into the bronchial tubes, where I found large quantities of filaria (strongyles). There was slight interlobular emphysema, accompanied with pink dis-

colorations, and around the margins of the lungs in places small consolidations as in broken wind in horses.

Sept. 13th, 1879—Mr. N——, of this place, had two pigs, one of which had gastric fever. A draught was administered, which was followed by another, but rheumatism having supervened, it was thought advisable to slaughter the animal. The owner afterwards told me that his wife, in preparing the fry, cut the lungs into several pieces, when large quantities of long threadworms (strongyles) made their appearance.

October 30th, 1879—Mr. B——, also of this place, came to my residence and informed me that, as one of his pigs had had a fit that morning, he had slaughtered the other three, but that, for fear of consequences, he wished me to examine it, as he said it was "fired" over the ribs. I found the same pink discoloration as in the first case in places on the lungs, accompanied with interlobular emphysema and consolidation of the lungs, more especially along their free margins. There was frothy mucus in the trachea, and on cutting into the bronchial tubes some very fine specimens of strongyles (filaria) presented themselves.

November 15th, 1879—In making an autopsy on a pig which had died the night before, I found the well-known lesions, very powerfully developed, of pneumo-enteritis, and recognising the scientific name, I determined to look more closely into the conditions of the lungs. I found them in the same condition as in the first case—slight consolidations in places along their free margins, interlobular emphysema, and pink discoloration of the affected parts, also frothy state of the mouth and the interior of the trachea. I likewise found large quantities of filaria (strongyles), which I at once forwarded to Dr. T. S. Cobbold, who recognised them as the species *Strongylus paradoxus*. Three more were slaughtered on the 17th instant for swine fever, but it was with the greatest difficulty that I found in one of them two specimens of (to me) the same worm.

Such, then, is the record of these cases, which, as I said before, are to me highly interesting. The question that naturally arises is—How far and to what extent do these parasites go in the development of disease? I may say that I have found consolidations of lung present in cases of *Strongylus micrurus* in calves, and I have heard of a practitioner, not qualified, who, when these existed, although, as it ultimately turned out, the lungs were full of strongyles, certified that the case was one of contagious pleuro-pneumonia. I should like to see some remarks by Dr. Cobbold

as to the distribution of this worm and its other habitats, as I am sure they would be highly interesting to those members of the profession who, like myself, have not had the advantage of attending a course of his invaluable lectures.

CASE OF DEATH AND RETENTION OF A FŒTUS; SUDDEN DEATH OF THE COW.

By E. S. Hewens, M.R.C.V.S., Hayes, Middlesex.

The subject of this case was a cow which, during the night of Saturday, Aug. 2nd, was at pasture, and thus exposed to one of the most fearful thunder storms ever experienced in this neighbourhood.

On Sunday, August 3rd, I was requested to attend at a gentleman's house at Hillingdon to see the animal, an Alderney cow, five years old, reported as being unwell. Upon examination I found her to be about four months in calf. She was feverish, would not feed, the bowels were constipated, the milk diminished in quantity, and a slight discharge was flowing from the vagina; she did not, however, show any parturient pains.

I gave a mild aperient and a febrifuge draught, and ordered her to be kept quiet. In a few days she appeared quite well again; the lacteal secretion returned, the discharge from vagina ceased, and the appetite and rumination became natural.

On the 22nd August I was again requested to see the cow, when I found the symptoms to be analogous to those first observed, with the exception of there being no vaginal discharge; in fact, the vulva and vagina seemed to be in a constricted condition. I ordered similar treatment as before. The health of the animal greatly improved, but in a few days I noticed a stinking discharge from the vagina.

Having made several attempts to introduce my hand *per vaginam*, for removal of the fœtus, without success, I had recourse to the use frequently of antiseptic injections, as I was afraid of the absorption of the morbific matter into the system.

A generous diet was ordered, and vegetable tonics with antiseptics given. The discharge from vagina continued for about a month, when it ceased, and also the lacteal secretion. The animal was now turned out in the day, and taken up at night; her appetite was good, but she gradually wasted, and on November 30th she dropped dead.

On making a *post-mortem* examination I found the lungs, heart, bowels, and kidneys healthy, but the liver was enlarged to twice its natural size, and studded over with hundreds of small abscesses, about the size of a walnut, containing a yellow and thick pus. The uterus contained a dark-looking substance, about the size of a man's fist, which upon further examination proved to be the remains of the skeleton of the fœtus pressed into the mass. The coats of the uterus were thickened. Some of the bones, which I forward for your inspection, I consider to be unusually developed at the points of ossification, considering that the cow was not more than four months gone in calf at the time of my first visit. I should like to know if you think the storm had anything to do with the case in the first place, and if the state of the liver was due to pyæmia.

[We thank Mr. Hewens for forwarding the bones alluded to, which did not to our minds present anything unusual in their development.

Many cases of a similar kind have come under our notice, and several years ago we remember to have met with the osseous remains of a fœtus in the uterus of a cow which was *extra fat* at the time she was killed by a butcher.

It is not unlikely that the death of the fœtus depended on exposure of the cow to the storm, but we do not think that the sudden death of the cow was connected with the retention of the fœtus, but rather with the condition of the liver. The absorption of animal matter in a state of change very possibly might have led to the deposits in the liver; but without having had an opportunity of examining the organ we are necessarily unable to speak with any confidence on this point.—Eds.]

THE CASTRATING ECRASEUR.

Letter from G. W. Bowler, M.D., V.S., Cincinnati, Ohio.

On reading over the last number of the *Veterinarian* I find considerable importance is attached to the use of the écraseur as an instrument for castrating, &c.

The castrating écraseur is spoken of in your Journal as a recent and valuable discovery in veterinary science, and I must say that I am not alone in expressing myself as surprised that English veterinarians should be so many years behind the times as regards improvements in veterinary science, when we take into consideration the advantages they enjoy in receiving Government support for its advancement.

In this great and progressive country we do not receive either the support or encourgement of the Government; consequently every man has to rely on his own oars, and he who makes the most progress and is the most successful carries the palm; thus we find it useless to rely on the practices and appliances in surgery as well as in medicine, set down in the books and often lectured upon in the colleges, but which prove to be unsuccessful in the treatment of cases. What is the use of going over and over again the same course of treatment, when we know before we commence that it will be unsuccessful? But because it is laid down *as a rule* it must not consequently be deviated from. This, I am sorry to say, is a great failing of the English practitioners. They think and believe they know it all; the result is there is little or no progression in them.

A man calling himself Farmer Miles travels from this country to England, carrying in his coat pocket one of our old castrating écraseurs, and imposes it upon the veterinarians over there as a new invention of his for castrating, because he has heard that the Britishers have not yet commenced to use that which with us is very old, but that they are still practising the barbarous methods of burning and clamping as in years gone by.

The castrating écraseur which Farmer Miles has exhibited to the English veterinarians was first suggested to me by Dr. R. Jennings, of Philadelphia, but now of Detroit, Michigan. This was seventeen years ago, at which time we made a drawing of the instrument now used, and of which we had two made by a surgical instrument maker in Philadelphia.

At the first meeting of the United States Veterinary Medical Association, held at the Aston House, in New York City, Dr. Jennings introduced this instrument to the members, and spoke of the advantages derived from its use in castrating, but as many of them did not seem to appreciate, or were otherwise afraid to use it, it did not come into general use for several years afterwards, but from that date to the present I and also Dr. Jennings have continued to use it, and have, during all these years, castrated thousands of animals of all ages, without an accident or the loss of a single one; and it must be borne in mind that during this period a considerable number of these animals were cryptorchus.

About ten or twelve years ago I had a number of these instruments manufactured, and sold them to parties in various parts of the States. Ten years ago I furnished a gentleman friend of mine with one of the instruments, in order that he might castrate his own stock, he being a large stock raiser and owner of a large farm in Illinois. He has used it up to the present time, castrating many thousand head of stock during

that time, and, as he informed me a short time ago, that he had never lost a single horse.

At the Midland Counties Veterinary Medical Association Captain Russell states that he had taken great interest in Farmer Miles, and that there were two or three things required to be known about this instrument before it could be used in confidence, and goes on to state how Farmer Miles does, &c.

Now it is all sheer nonsense about placing the instrument slanting or straight, as also the twisting of the testicles, and only serves to show a want of experience on the subject, as an eight-year-old boy can perform the operation as easily and successfully as any old practitioners, there being not the slightest risk in either old or young horses, and I would be perfectly willing to allow a person to operate, even though he has never witnessed the operation before.

During my last visit to Europe, in 1873, I called on Professors Axe and Pritchard, and endeavoured to explain to them the advantages to be derived from the use of the castrating écraseur, and I must say I was rather surprised when they informed me that they still continued to adopt the old-fashioned method of castrating. I also remember explaining to Professor Axe my methods of throwing and fastening horses without any risk of accident, which I have no doubt he will at once recall to mind when he sees this article.

And now, Messrs. Editors, I must ask your correspondents to give us something new in the future other than reports of colic cases which yield to Sp. Nit. Eth. and Tr. Opii. They are getting very stale. And then there is that dog case, and as the writer states *treated homœopathically*—Five-drop doses of the saturated tincture of aconite to a little Scotch terrier, every three hours, and be followed by the same dose of belladonna.

If he calls this homœopathy, what in Heaven's name are his allopathic doses? I should hate to be that man's dog. I wonder how much whisky he puts in his water at one time? I should much like to know, because I feel satisfied he uses allopathic doses on those occasions.

To the Editors of the 'Veterinarian.'

ON THE USE OF THE ECRASEUR.

By George Wartnaby.

In reading Mr. South's letter in your last number I see an allusion to my name as having been present at an operation

performed by him with the écraseur. I am sorry to say I was not fortunate enough to see him operate on that occasion.

I have at different times, during my course of study at the College, through the kindness of Mr. William South, witnessed many highly interesting operations at their infirmary in New Bond Street, and though invited to be present at that particular occasion was unavoidably prevented at the last moment. Hence, no doubt, the mistake. I may add that I learned from my fellow-students of the highly satisfactory character of the operation to which Mr. South refers.

I am able to bear out the remarks of Mr. South respecting the mode of using the écraseur, as both my partner, Captain Russell, and I, besides removing tumours, warts, &c., have castrated horses, bulls, sheep, dogs, and cats, with this instrument with the greatest success, excepting sheep over six months old, and for my part I do not recommend the use of the écraseur in the castration of the last named animals.

The instrument we use is "Farmer Miles's" pattern, which we have found equal to every operation up to the present, where such was required. The chains belonging to these I have no doubt are stronger than the one used by Mr. South, which, I presume, was made for use in human practice.

I would, by the way, suggest that intending purchasers should apply to Mr. Miles's authorised agents, Messrs. Krohne and Seseman, as I have heard from the "Farmer" that there are other productions called his wanting in two essentials.

Pathological Contributions.

PLEURO-PNEUMONIA.

The information received from the Netherlands is very encouraging, as during the four weeks ending 29th of November only one case of this disease is reported as having occurred in that country.

From the United States we hear that pleuro-pneumonia is decreasing in Pennsylvania, and that no cases have been reported from the States of Illinois, Iowa, Michigan, Indiana, or Wisconsin. The subject of diseases of animals appears to be receiving a considerable amount of attention in that country, and it is stated that every state proposes to petition Congress to pass a stringent National Cattle Disease Law.

The introduction of neat cattle into the United States from Canada is now prohibited.

CATTLE PLAGUE.

A SERIOUS outbreak of this disease has lately broken out in several places in the immediate neighbourhood of Warsaw, in Poland.

The disease also continues to prevail in the provinces of Bessarabia, Volhynia, Ekaterinoslav, Petrokoff, Podolia, Taurida, and Kherson, in Russia.

In Austria the cattle plague is still very prevalent, the following provinces being declared infected with that disease:—Slavonia, Croatia, and on the Military Frontier, likewise in Carniola.

In the district of Smyrna, in Turkey, the disease has ceased to exist.

The cattle plague which was introduced into the Mauritius on the 7th of May last, by animals brought from the island of Madagascar, has advanced with great rapidity throughout the island. The total number of animals which are stated to have died or been destroyed since the commencement of the disease up to the beginning of November, amounts to 17,946 out of a total cattle population of 30,000, besides 343 deer.

CATTLE PLAGUE IN CYPRUS.

ON December 8th telegrams were received from Larnaca to the effect that the cattle plague had broken out in the town, and that many animals had died. Since then additional information has confirmed the statement, and also that the malady was on the increase, and had extended to the Turkish quarter of the town. The latest news, which comes down to the end of December, is to the effect that the plague was still spreading, and that no cattle were allowed to enter or leave Larnaca by sea or land.

SWINE PLAGUE.

ACCORDING to the *Mark Lane Express* of December 22nd, the steamer Bernard Castle has arrived in the Clyde with a large number of pigs from Montreal, which have been condemned by the Government Inspector as suffering from swine plague. One hundred died on the passage, and twelve since. This is the first outbreak of swine plague among swine imported from Canada.

Facts and Observations.

We make the four following extracts from the "Live Stock Notes" of the *Mark Lane Express* of December 15th:

Quarantine orders at Quebec.—According to a Reuter's telegram, orders have been issued by the Dominion Government that neat cattle from Europe, on entering Quebec, Halifax, or St. John, shall be subject to ninety days' quarantine before coming in contact with Canadian cattle.

Veterinary Surveillance of Cattle in Oldenburg.—An official notice has been issued by the Government of Oldenburg, enacting that, after the 11th of November, all cattle coming from Great Britian or America, will be subjected to a veterinary surveillance for a term of four weeks, and after that can only be removed inland with a declaration of health by the veterinary inspector.

Conscription of Horses for the Russian Army.—It is stated that steps are now being taken in Russia to carry out a conscription of horses for the army in all parts of the Empire.

Restrictions on the Importation of Foreign Cattle.—At the recent dinner of the Hayward's Heath "Fat Stock Show Society," Mr. Lawrence Peel, Clerk of the Privy Council, referring to the restrictions placed on the importations of Foreign Cattle, said it was a singular fact that, in spite of more stringent rules, the number of cattle brought into England during the first ten months of the present year was nearly 50,000 in excess of the number in the corresponding period of last year.

Danger of the Use of Borax for the Preservation of Food, and Causes why Certain Substances Deprive Meat of its Nutritive Properties.—*C. le Bon.*—Meat steeped in a solution of pure borax, or covered with the powdered salt, may be preserved unchanged for a long time; but if taken as food such meat produces intestinal derangements which necessitate its disuse. Borax taken in small successive doses is a poisonous agent, the use of which in the preservation of alimentary substance ought to be strictly prohibited. M. Peligot has already pointed out the poisonous action of borax upon plants. Several *Campagnies* in America who had begun to use the salt for the preservation of meat have been obliged to give it up. The author further shows the necessity of avoiding saline substances altogether for the preservation of food, an object which he considers attainable solely by the use of cold.—*Chemist and Druggist.*

THE VETERINARIAN, JANUARY 1, 1880.

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

THE SMITHFIELD CLUB EXHIBITION OF STOCK.

IT has been more than once remarked that the various exhibitions of stock and agricultural produce do not afford any evidence of the depression under which agriculture has been for some time past, and is now, suffering. Indeed, it is clear enough that the owners, and not the animals, are the victims; and it is hardly necessary to point to flourishing cattle, sheep, and swine, in proof of the proposition that, in spite of severe seasons, and the extensive prevalence of diseases which depend on atmospheric and climatic influences, animals which are protected from such influences escape the consequences.

In accordance with the usual practice at exhibitions of the Smithfield Club, all the animals which were sent for exhibition were inspected in the yard previously to entering the Agricultural Hall. This precaution was the more necessary, as the restriction upon the entrance of animals which had been at other exhibitions at any time within a fortnight had been rescinded, and a considerable number of stock arrived in consequence from the Birmingham exhibition, which ends just in time for the opening of the Smithfield Show.

No signs of contagious disease were observed by the inspectors during the examination of the stock, and on Saturday evening all the animals were in their places.

During the week of the exhibition the temperature was generally low, and on two occasions a dense fog prevailed and caused some apprehension. Many of the visitors would recall the events which happened in 1873, when, owing to the occurrence of a fog of singular pungency and density, over ninety cattle were suffocated, or suffered so much from symptoms of suffocation, that it was necessary to remove them for slaughter as quickly as possible.

No satisfactory explanation was given at the time of the peculiar atmospheric condition which led to this fatality. It did not occur to any one to collect some of the mist for examination, and it remains doubtful what caused the serious effects which were experienced in the Agricultural Hall and many of the dairy sheds in the neighbourhood. Fogs of equal density have occurred repeatedly since that time, but it has not transpired that the slightest injury has been done to cows in the London sheds, or to cattle at preceding Smithfield shows.

Almost immediately after the last of the animals had entered the Hall on the Saturday preceding the opening of the last exhibition a dense cold fog penetrated the building, and on the following morning several cattle were suffering from oppression of the breathing; the symptoms of distress, however, soon passed off. On the following Thursday the fog was again very dense in the early morning, and continued till mid-day, but no harm resulted; and it was remarked on the last day of the show that all the animals were looking exceedingly well.

The cases of illness during the time of the show were few and trifling in character, and only two animals were removed for slaughter owing to ordinary congestion of lungs, to which plethoric animals are especially subject.

No outbreak of contagious disease occurred among the exhibited animals, and the arrangements which had been made by the local authority for dealing with diseased animals were happily rendered unnecessary.

Consolidation of Orders of Council relating to Diseases of Animals.—We may remind our readers that the Animals Order which was passed on December 15th ult., and is now (January 1, 1880) in force, consolidates all the previous orders relating to diseases and transit of animals. The only other orders in force are the Dairies and Milkshops Order, and certain orders relating to ports and others of purely local significance.

Review.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

Strangeway's Veterinary Anatomy. Second edition. Revised and edited by J, Vaughan, F.L.S., F.Z.S., Member of the Royal College of Veterinary Surgeons. Lecturer on Anatomy and Zoology at the New Veterinary College, Edinburgh.

The editor, in his preface, ranks this work, which he has revised, as a "current text-book." As such we must examine it, and we must clearly estimate the requirements of ordinary students of veterinary anatomy if we desire to form an opinion as to whether this revision is a success or the reverse. Practical teachers of veterinary anatomy will not hesitate to admit that with the present arrangement of the examinations before the Royal College of Veterinary Surgeons the students have not the time requisite for properly preparing anatomy in its various forms—equine, comparative, veterinary and general, and surgical. It is therefore not the least onerous part of the teacher's duty to select that matter which is of the greatest value practically as bearing most directly upon the future duties of those studying under him; his course of work cannot be *exhaustive,* it must be a guide to the student's private efforts. This is felt in our medical schools, though the time of study at them exceeds that necessary for the veterinary diploma; how much more then must we feel it? We have never heard it stated that veterinary students are less skilled as practical anatomists than students of the sister profession, and we fully believe it is not possible to do so with truth. Yet the veterinary anatomist has to deal with mammals of several different orders, has to note special peculiarities of certain domesticated ones, and as subsidiary subjects must treat, more or less fully, anatomy of the exterior and zoology. With this great bulk of work occupying the attention of the student for fourteen months instruction cannot be exhaustive, but when we consider that the first eight of these precious months are spent by the student mainly in preparing for examination in chemistry, botany, &c., while during the last six he is occupied with physiology and histology, as well as descriptive (comparative and special) anatomy, it becomes very evident that even a general preparation of the anatomy required at his examination involves much labour on the part of the student; it also necessitates energy on the part of the teacher. Not only must the teacher select material for the student, but

the very text-book must to a certain but less marked extent, exhibit a tendency in this direction. They must "judge all things and select the good," or they will fail in producing satisfactory results. Thus, of works on human anatomy, 'Gray' is more popular than 'Quain and Sharpey,' though much less exhaustive, and we have long needed a work like 'Gray' on veterinary anatomy, dealing comprehensively with the subject, but not overloaded with technical terms nor verbose to excess.

We have had text-books of this nature: *Percivall's* 'Anatomy of the Horse' is well written, and was an admirable text-book some five-and-twenty years ago; but anatomy is a progressive science, and we are hardly content with the anatomy which our fathers learned. *Strangeway's* first edition was much of the same stamp, but we considered it badly put together; we could not rely upon its statements; many of its pages were verbatim translations of foreign anatomists, so it hardly met our requirements. But it now appears under a new form from the hands of an able officer of one of our schools, increased very materially in bulk, and with many valuable illustrations. If we find it accurate, plain, and complete, it is just the work we require. It is accurate, in so far as we have examined it. We do not here refer to all its minor points, for we find on these much difference of opinion among anatomists, but to those broad facts and statements which should be accepted by the student. Of its clearness there can be no doubt; it is adapted to the comprehension of any student; its plainness even, in some cases, seems to amount to imperfection of detail; but this is certainly better than obscurity. We, therefore, can most highly recommend this work to the student; he will find that Chauveau is only adapted to the advanced stages of study, but here he can read with facility and profit, even at the earliest stage of his collegiate career. It is not quite so complete in some matters, especially comparative osteology, as we should wish to find it; but it must be remembered that the comparative-anatomy examination to which students are subjected is very elementary. We doubt not Professor Vaughan deals with this more thoroughly in the lecture theatre, and with us holds that many matters should be touched upon there of a more advanced character than those included in the veterinary curriculum of the present day, for we see he is Professor of Zoology, and places his comparative observations on a zoological basis. We may reasonably be allowed to congratulate the profession on this useful addition to its anatomical literature. We feel satisfied that, in the matter of text-books, the anatomical is "second to none" of the branches of veterinary study.

J. H. S.

Extracts from British and Foreign Journals.

THE TERMINATION OF THE NERVES IN THE STRIATED MUSCLES.

The termination of the nerves in striated muscles has given rise, in recent times, to numerous researches, which, notwithstanding all the interest which they present, have not yet cast a complete light on this part of science. It was thought, for instance, that the termination of the sensitive nerves in the muscles had been discovered; but these results, due to defective researches, cannot be considered as correct. Moreover, all the efforts which have been made to find intermediate forms between the terminations in plates and the motor termination in the frog have remained without success.

The process of colouring the nerves by means of chloride of gold, recently communicated by M. L. Ranvier, having furnished me with an excellent and certain method for studying the nerve terminations, I have undertaken, with this double object, a series of researches, which have led me to some new results.

1st. The nervous fibres without myeline which are found in the thin muscles of the frog, as, for example, in the thoracic cutaneous muscle, and which had been regarded hitherto as sensitive fibres, do not belong to the muscle properly speaking, but to its aponeurosis. These fibres, arising from the intramuscular nerves, form in the aponeurosis a network of large meshes. Their terminations are identical with the nerve terminations which are found in the cornea.

It is evident from their microscopic structure, as well as from their anatomical relations, that these nerves of the aponeurosis ought to be considered as centripetal nerves, starting from the muscle. The necessity of admitting the existence of these nerves is insisted on in a work which I have recently published.

Nerve-fibres similar to those which I have just pointed out in the frog are also met with in the aponeurosis of other animals.

2nd. I have found it quite impossible to prove in the dissociated muscles of the frog, and of some other species of animals (tortoise, triton, lizard, snake, and rabbit), the presence of nerve-fibres without myeline, other than those which belong to the vascular or aponeurotic nerves, and the presence of nerve terminations, other than the motor terminations.

3rd. I have, on the contrary, been able to find in several species of animals new forms of nerve terminations, which constitute intermediaries between the motor termination, as it is found in the frog, and the terminal plates.

I have proved the existence of terminations of this kind in the tortoise, the triton, the salamander, the lizard, and the snake. In the three first named these terminations are the only ones which we are able to find, whilst in the snake and the lizard they are found beside the terminal plates, chiefly in the young muscular fibres.

The most simple form of these terminations is shown in the tortoise; nerve-fibres, destitute of myeline, ramify without anastomosing, and terminate on the muscular fasciculi, by branches which sometimes are smooth, but which most often are moniliform, or surrounded by grains deeply coloured by the gold. These grains, which are placed around the terminal branches, are sometimes so numerous that their *ensemble* presents an appearance similar to that of the terminal arborization of a little motor plate.

These new forms of nerve terminations all present this peculiarity, of only being found on nerves destitute of myeline, although these always arise from nerves with myeline. In the snake these fibres without myeline may even have a very long course.

In the case in which the nerve terminates in the muscle by a well-developed plate, never more than a single plate is observed for one whole muscular fibre; when, on the contrary, we deal with the terminations which we have just described, we generally meet with several nerve terminations on the same muscular fibre. And in the snake their number may even be from six to seven.

A more detailed work, accompanied with plates, will shortly be published.*—*Journal of the Royal Microscopical Society.*

TUBERCULOSIS AND THE MILK SUPPLY.

At a meeting of the Munich Medical Society last month, Professor Böllinger read a paper on Artificial Tuberculosis as induced by the consumption of the milk of tuberculous cows. In the course of his remarks he endeavoured to demonstrate that the milk of such animals has a pre-eminently contagious influence, and reproduces the disease in other animals experimented on from that point of view. He

* M. Tschiriew, in 'Comptes Rendus,' vol. lxxxvii, p. 604.

believes also that such milk even when boiled still retains its injurious properties. Further, he maintains that beyond doubt the tuberculosis of the human subject, though not completely identical with that of the cow, is yet strictly analagous to it, and that consequently the wide prevalence of tuberculosis in the native herds—at least 5 per cent. of which are affected—is a standing danger to the health of the community. Seeing the enormous mortality from consumption, more especially in towns, Professor Böllinger believes it to be of the utmost importance to urge upon all classes, and particularly upon farmers, the absolute necessity of taking every possible means of stamping out the disease among cattle. Meanwhile some measures of safety may be secured by the rigid exclusion of all diseased stock from town dairies, a measure which forms a prominent feature in the programme of the recently established Associated Dairy at Munich, where all the cows are constantly kept under skilled veterinary surveillance, and any that may exhibit the least symptom of tuberculosis are at once weeded out.—*North British Agriculturist.*

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Monthly Council, Wednesday, Dec. 10th, 1879. Present: H. R. H. the Prince of Wales, K.G., the Duke of Bedford (President in the chair).

Veterinary Committee.

Mr. Dent reported that the Committee had received from Professor Simonds a report on the inquiries of the past month, and they recommend that the following cases be published in the proceedings of the Council:

"Since the November meeting of the Veterinary Committee the following communications have been received from Members of the Society, relating to the existence of disease among Cattle and Sheep, and asking for advice in the respective cases.

"Nov. 4th.—Mr. Denchfield, Burston, Bucks, forwarded the livers of two sheep affected with 'rot,' and requested to be informed 'what length of time the animals had been diseased.' The examination disclosed the existence of young flukes in immense numbers in the gall-ducts of both livers, but an entire absence of any matured or fully-developed ones. This fact, together with the small amount of structural disease which had taken place in the livers, as a consequence of the presence of the parasites, led to the conclusion that the animals had only been affected with 'rot' about three months. In addition to the changes of structure alluded to, one liver was here and there affected to an extent which must have taken many months to produce; but, from the nature of the changes, the function of the liver

would not have been materially interfered with, nor the health of the animal much affected.

"It is greatly to be feared that serious losses of sheep from 'Rot' will take place during the present winter, the past summer having proved so wet that hundreds of acres of pasture land, which practically may be regarded as free from the punultimate forms of the flukes, have been by the excessive rainfall rendered sources of mischief by the diffusion of these embryos. Cake, corn, and the daily use of salt mixed with the manger food of sheep, will be beneficial in enabling them to bear up against the progress of the disease; but 'rot,' once established, must be regarded as being altogether incurable.

"Nov. 10th.—Mr. E. Budd, Leatherhead, asked for advice as to the best means to be adopted to save the lives of some in-lamb ewes, seventy-nine in number, being part of a lot of 100, which he had bought in July, and which were now affected with 'rot.' The account given by Mr. Budd showed pretty clearly that the disease had been contracted on his, Mr. Budd's, farm by the sheep having been pastured on some low-lying meadows. He was advised to keep the ewes from turnips, grass, or other watery food; to give them a full allowance of oats and peas, with linseed cake and hay chaff, and to mix with their food daily some table salt, at the rate of $1\frac{1}{2}$ oz. for every twelve sheep.

"He was also informed that as the time of parturition drew near, say in January, to discontinue the use of the salt; experience having shown that abortion is not unfrequently caused by this agent.

"Nov. 20th.—A letter was received from Mr. Davies, of Bellington, Cheshire, stating that 'blackleg' had made its appearance among some calves, and that two out of a lot of twelve had already died. Full directions for arresting the further progress of the malady were at once forwarded, which essentially consisted of an entire alteration of the food and management of the animals, and the administration of saline aperients, to be followed by doses of hypo-sulphite of soda, nitrate of potash, and salt daily. The insertion of setons in the dewlap was also recommended. As no further communication has been received from Mr. Davies it may be inferred that no more cases have occurred. Should another animal be attacked, Mr. Davies was asked to give early information thereof, and if the case proved fatal, to send some of the blood and parts of the body to the College that experimental researches might be made into the true pathology of this fatal malady."

The Committee had asked Professor Simonds to prepare a short paper on the Prevention and Treatment of the disease called Milk Fever, or Dropping after Calving.

Only three candidates had been entered for the Society's prizes for proficiency in cattle pathology. The Committee recommended that the Secretary communicate with the Council of the Royal College of Veterinary Surgeons as to the possibility of holding simultaneous examinations for the Society's prizes in Edinburgh and London.

Half-yearly Meeting.

The following extracts from the report of the half-yearly meeting of the Society also relate to veterinary matters. Referring to the Metropolitan Show, the report states that "the live stock department attained unprecedented dimensions; and the Council rejoice to add that owing to the precautions taken, and to the vigilance of a most efficient staff of veterinary inspectors, no case of contagious or infectious disease appeared amongst any of the animals. Notwithstanding the very inclement weather, the proportion of animals affected with ordinary ailments,

in comparison with the number exhibited, was reported as not so great as in the average of years."

The Report also states "that the new arrangement with the Governors of the Royal Veterinary College continues to work satisfactorily, and the Council would again call the attention of the members to the valuable reports by the Professors of the College on the principal cases which have come under their notice. These reports are published in the proceedings of the Council meetings in the agricultural newspapers."

"The experiments on quarter-evil and allied diseases are still being carried on at the Brown Institution; but the director of the Institution finds great difficulty in procuring cases at a sufficiently early period of the disease. The Council therefore hope that any outbreak of quarter-evil or splenic apoplexy may be at once made known by telegraph to Dr. Greenfield, the Brown Institution, Wandsworth Road."

"In consequence of the numerous applications which Prof. Simonds continues to receive for copies of his paper on sheep-rot, published originally in 1862, in the 23rd volume of the *Journal*, the Council have resolved to re-publish it as a pamphlet, considering that after the wet season of this year, sheep-rot is likely to be more prevalent in the country than usual."

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF THE COUNCIL, HELD NOVEMBER 21ST, 1879.

Present.—Professors Pritchard and Axe; Messrs. Anderton, Batt, Cartwright, Collins, Dray, Fleming, Freeman; General Sir F. Fitzwygram; Messrs. Greaves, Harpley, and the Secretary.

In the absence of Professor Williams, the President, through domestic affliction, Mr. Dray (Senior Vice-President) took the chair.

The *Secretary* read the notice convening the meeting.

The minutes of last meeting were read and confirmed.

The *Secretary* stated that letters had been received from the President, Professors McCall, Walley, and Messrs. George Morgan and P. Taylor, of Manchester, regretting their inability to attend the meeting.

The *Secretary* stated that 'Strangeway's Veterinary Anatomy,' edited by Professor Vaughan, F.L.S., of the New Veterinary College, Edinburgh, had been presented to the Library of the College by the author.

On the motion of *Mr. Cartwright*, seconded by *Mr. Batt*, a vote of thanks was accorded for the presentation.

The *Secretary* read a series of letters between the President, Mr. Loch, and Mr. Thomas Moore, in reference to a requisition sent by Mr. Moore, signed by twenty members of the profession, asking the Council to call a meeting of the members of the College for the purpose of considering the advisability of requesting the Governors of the Royal Veterinary College to revise their system of subscriptions.

The following is a copy of the requisition:

To the President of the Royal College of Veterinary Surgeons.

10, RED LION SQUARE, W.C.

SIR,—We the undersigned Fellows and Members of the Royal College of Veterinary Surgeons hereby request you to call a General Meeting of Members of the College, as provided by the charter and bye-laws, to take into consideration the advisability of requesting the Governors

of the Royal Veterinary College to revise their system of subscription, and to make the practice of the institution less competitive to private practitioners, which in the opinion of your requisitionists is a source of injury to the profession. Dated November first, Eighteen hundred and seventy-nine.

Some conversation having taken place as to the informality of the notice, and as to whether the Council could, in conformity with the bye-laws and the charter, accede to the terms of the requisition.

General Sir F. Fitzwygram said it seemed to him desirable to waive any informality in the notice, and to discuss the main question, which, he thought, was whether the Council at a general meeting had power to discuss any matter unconnected with what might be called the affairs of the College. The only question before the Council was whether it was legal to do so, or whether they had the power to do so. It seemed to him, as Mr. Loch had stated, that the Council had no power to do anything of the sort, and he thought it desirable that the meeting should be adjourned for the purpose of taking the advice of an eminent counsel, as to whether the Council had any power in the matter at all. Of course, all things that concerned the four walls of the College, such as examinations, &c., the charter said the Council had the regulation of; but he thought it refused to them any control over the operation of fees, &c., in schools; and he very much doubted whether the meeting could be called for the purpose indicated. He, therefore, moved that the Council should obtain the advice of some eminent counsel as to whether they could act in the matter or not. His own opinion was that they had no power to act at all.

Mr. Batt seconded the motion.

Mr. Fleming pointed out that, according to the bye-law, when a petition had been received by the Council, signed by a certain number of members of the profession, to call a general meeting, the meeting must be called.

Sir F. Fitzwygram said that there were certain things *ultra vires*, and the meeting might be called for a purpose totally unconnected with the matters pertaining to the Council.

Mr. Fleming said that was no doubt the case; but he did not think that twenty members of the profession would appeal to the Council to hold a meeting if it were not for the purpose of considering a subject connected with the profession. The present meeting was not the occasion, he presumed, to discuss the object of the proposed meeting, but only to grant or refuse the prayer of the petitioners.

Prof. Axe expressed his opinion that anything which did not pertain to the importance of the veterinary art or the science of veterinary medicine, did not come within the cognisance of the Council, and the question to be discussed at the meeting seemed to be a question entirely beside that. He therefore suggested that the question should not be taken into consideration.

Mr. Collins suggested as a compromise that the meeting should be allowed to assemble, because at present the Council did not know what the proposals were, and they ought to hear what was said. The opinion of counsel could then be taken afterwards.

Prof. Axe remarked that the precise object of the proposed meeting was specifically set forth in the circular convening the present meeting of Council.

The Chairman hoped that General Fitzwygram's motion would be carried.

Mr. Greaves thought the Council had no power in the matter, and

that it rested entirely with the president, according to the rules, to call the meeting in accordance with the requisition. He would support the course suggested by Sir Frederick Fitzwygram to obtain counsel's opinion on the matter. At the same time he thought the grievance—as the petitioners had called it—ought to be ventilated more than it had been, as it might then be looked at in quite a different light from what it was at present, and some reasonable concession might be made which would satisfy everybody, and be an advantage to the profession.

Mr Fleming again urged that the Council had no option but to call the meeting, because, in his opinion, the petition was perfectly formal and proper.

Mr. Anderton supported Mr. Fleming's view that the requisition should be entertained, and said he was willing to second an amendment to that effect.

After some further observations from Mr. Fleming, Professor Axe, and Mr. Greaves,

The *Chairman* put Sir Frederick's motion to the meeting, which was put and carried unanimously.

The *Secretary* was then instructed to write to Mr. Loch to nominate some eminent Queen's Counsel to give his opinion on the subject, and that the same, when obtained, should be laid before the Council.

House Committee.

The Report of the above Committee stated that at a meeting held on October 27th, it was resolved to appoint Mr. George Greenwood, of Southampton Row, to survey and report upon the value of the property at 16, Fitzroy Square, and that an advertisement be inserted in the *Times, Builder*, and *Standard*, in reference to the purchase of a suitable property.

The Report of the Surveyor, which was read to the Council, stated that he surveyed the property, and was of opinion that they were worth together in their present repair £2750, and that the house would require for the occupation of a family re-decorating; also that the stables and coach-houses were small and required repairing.

The *Secretary* stated that having placed himself in communication with the President, he received a letter from Messrs. Whyte, Collisson and Prichard, dated 21st October, stating that there were applications from another gentleman, who desired to have the property, and requesting a definite answer as to the decision of the Council within a week of the date of the letter.

A reply was sent to the effect that the Council did not wish to stand in the way of any available offer being made to them.

The *Secretary* read the replies to the advertisements that had been inserted in the newspapers.

Mr. Collins said that the replies to the advertisements had been very few. He had gone over them all, and none of them appeared to be at all satisfactory. At the commencement of the year a deputation waited upon the Duke of Richmond on the question of getting some pecuniary grant from Government, and he promised to take it into consideration. Last week Mr. Fleming and himself had called at the Privy Council Office, and saw the Clerk of the Council, who advised them to write a letter, which they did, stating the claims of the profession on the country. A reply was sent, stating that his Grace did not seem to think there would be any use in applying to Government for pecuniary assistance at the present juncture. It only remained, unless the Council wanted to go on with the purchase of the house in Fitzroy Square—if it had not

already been disposed of—for the House Committee to look around and see if there were any other suitable buildings. There was also a desirable building in Bedford Square, but it was found that to purchase it at present would be out of the question. He thought the Council should stick to the money they had until more was added to it, and by-and-bye they might obtain the building they required.

In reply to Sir F. Fitzwygram,

The *Secretary* stated that the price of the house at 16, Fitzroy Square, was 4000 guineas, and that possession could be obtained at any time.

Mr. Fleming thought that the house in Fitzroy Square would not be an eligible one. There was not sufficient accommodation internally, and the locality was a tumble-down one, with a bad character. The house in Bedford Square was the best he had seen in London. It had a capital frontage, and was in every respect the best that was required for the purposes of the College. The agent told him that the house would only be let on lease, and that he was in treaty with a party about to purchase it. He (Mr. Fleming) pointed out, in a letter to the Duke of Bedford, that the building was a suitable one, but that they were a poor profession, and had not money to buy new premises; and by the same post he had written to Col. Kingscote, asking him to use his influence with his Grace. He afterwards received a letter from the Duke, stating that he had referred the matter to his agent in London, at the same time stating that the inhabitants in the square would not like a public building in their midst. He was not satisfied, and applied again to the Duke, who said he had no choice in the matter but to leave it to his agent, as he was responsible. He thought the only course now open was an appeal to the country through the House of Commons, because he thought the position of the profession at present was a disgrace to the country. He thought the way in which they had been allowed to toil and struggle did not reflect credit on a great country like ours. If the public knew the position in which the profession was placed, and what was done for other public bodies, which did not render so much service to the public, he was quite sure they would consider their prayer, and grant them a proper building. He felt almost convinced that some members of the House of Commons, who were very much in favour of the profession, and had such a large stake in the interests of the country, would gladly bring forward and support any motion which had for its object assisting the profession in this matter. He should not like the Council to leave the present building until they had something superior to enter into.

Mr. Greaves said he was sure that nobody wished to see the profession raised so high as Mr. Fleming did. Neither the Government nor Parliament would respond to their call, and they must, therefore, rely upon what they were, and be content to be modest in their expectations and reasonable in their demands. He counselled the purchase of the house in Fitzroy Square as being suitable for the purposes of the Council, and moved a resolution to the effect that some member of the House Committee be authorised to wait upon the agents for the purpose of negociating for such purchase, and to offer £3000.

Mr. Freeman seconded the resolution.

Sir Frederick Fitzwygram said that, without advocating the purchase of the house in particular, if the Council wanted a good and cheap house they could not have it in a fashionable locality, and it ought to be remembered that the instructions of the House Committee were to get a house somewhat north of the present one, and between it and the Royal Veterinary College, for the advantage of the students; and he thought

it would be admitted that there was scarcely a fashionable locality between Red Lion Square and Saint Pancras.

Mr. Fleming said he meant not a fashionable locality, but a respectable locality. He begged to move, as an amendment to Mr. Greaves' motion, that no steps be taken for the purchase of the house until further attempts had been made to receive assistance.

Professor Axe seconded the motion, believing that the time was not far distant when they would be able to obtain a considerable amount of political influence to bear on the demands by the profession for pecuniary assistance. He thought it better to defer the matter for the present, as he felt sure that by-and-bye they would be in a position to purchase such a property as would not only give satisfaction to, but also bring credit on, the profession.

Mr. Fleming's amendment was then put to the meeting and lost, and Mr. Greaves' motion was put and declared carried.

Mr. Harpley said he should not have voted for Mr. Greaves' motion if he had thought that a price was to be stated. He was of opinion that the matter should be referred to the next quarterly meeting, and that in the meantime the Secretary or the House Committee be instructed to ask what price the house could be purchased at.

Mr Greaves said he would withdraw his former proposition, and propose that the House Committee be instructed to have an interview with the agents for the house in Fitzroy Square and ascertain the lowest price at which it could be purchased.

Mr. Freeman seconded the motion, which was carried.

The *Secretary* then read a letter dated Nov. 18, 1879, from the surveyor to the estate asking for some additional improvements to be made on the premises 10, Red Lion Square.

After some conversation, it was resolved to allow the letter to lie on the table.

A letter was received from Mrs. Green-Armytage, Northlands, Bournemouth, stating that her son, in an engagement in the Zulu War, had lost his diploma, and asking that it be renewed.

The *Secretary* stated that he had sent a reply to the effect that the gentleman in question ought to make his own personal application.

The *Secretary* read the following letter from Dr. Dunsmure relative to an application made to him for refunding fees which were said to be overcharged.

Mr. A. McKenzie,
6, Lute Street, Aberdeen.

EDINBURGH, *Nov.* 8, 1879.

SIR,—You are quite right in stating that the fee for the diploma of the Royal College of Veterinary Surgeons is £10 10s.

The bye-laws of the College enact that every rejected student before re-examination must pay a fee of three guineas.

In July, 1877, you paid £7 7s.; you were rejected, and consequently paid three guineas when you came up a second time for your minor in January, 1878. You then paid, or should have paid, one guinea for registration,that made eight of the ten guineas.

In January, 1879, you paid three guineas instead of two from your not having told me that you were under the old rules; but, as you were rejected, you only paid two in April instead of three, thus making ten guineas for the diploma, and the remainder for your re-examinations.

(Signed) JAMES DUNSMURE.

On the suggestion of *Sir F. Fitzwygram* the Secretary was instructed to reply to Dr. Dunsmure to the effect that the legal decision was that only those fees which were received for successful candidates contributed towards the diploma. In consequence of that decision a bye-law was drawn up charging three guineas for each unsuccessful candidate. Previously they came up for nothing, and in consequence of this the College was nearly insolvent.

Mr. Fleming incidentally pointed out the necessity of the bye-laws being in accordance with the charter. He thought that bye-laws drawn up so obscurely so that nobody could understand them without the aid of a lawyer, required much amendment. The charter would almost mislead any one with regard to the fees for examination and the diploma.

The *Secretary* stated that a letter had been received from Mr. F. Payne, Devizes, and another from Mr. W. B. Fretwell, both rejected candidates. They had presented themselves three different times and were rejected, and wished to know whether they could again present themselves for re-examination.

After some discussion as to the merits of the two cases, and as to the bearing of bye-law 34 had upon them, the Council came to the opinion that the two applicants were ineligible to present themselves at Christmas, that they would have to recommence their studies before presenting themselves before the Board of Examiners.

Mr. Harpley said he had received a letter from the Secretary of the Royal Agricultural Society asking what steps the Council proposed to take with reference to their prizes. It would be remembered that these had not been competed for by a sufficient number of old students from the Royal Veterinary College at Camden Town, and it was in contemplation to have some additional rules framed, so that the competition might be open to all the students of the United Kingdom. Mr. Jenkins was anxious to place the scheme before the Royal Agricultural Society, and had asked him (Mr. Harpley) for information on the subject. He was not, himself, in possession of any information, but as he did not wish the matter to remain in abeyance, he should be glad if the Council would give him any information on this important subject, so that he should be able to communicate with Mr. Jenkins.

The *Secretary* announced a list of fifty-three applicants for the diploma of the Royal College of Veterinary Surgeons, who hold the Highland and Agricultural Society's certificate, each certificate having been verified by the principals of the various colleges.

It was agreed that the diploma be granted to the applicants, and that their names be published in the two veterinary journals.

The Secretary was instructed to write to the principals of each college asking what time it would be most convenient for them to hold the examinations in London and Scotland.

Cheques were ordered to be drawn for the current expenses at the Christmas examinations and insurances. This concluded the business of the first special meeting.

A SECOND SPECIAL MEETING

was then held to consider the alteration of Bye-law No. 7, of which notice had been given by Sir F. Fitzwygram at a previous meeting. The effect of the alteration was to appoint at a meeting prior to the annual meeting, not less than six members of the profession to act as scrutineers in the matter of the election of members of the Council, instead of at the

annual meeting, the object being to dispose of the scrutineering business practically before the general meeting of the Council, and thus allow the scrutineers to take part in the proceedings.

Mr. Greaves seconded the motion, which was carried.

The bye-law, as altered, will read as follows:

"At a meeting prior to the annual meeting the Council shall choose from among the members of the profession not less than six persons to act as scrutineers in the matters of the election of members of Council."

Alteration of Bye-law 4.

Mr. Collins moved the alteration of the above bye-law, notice of which had been given at a previous meeting. The object of the alteration was to admit of those veterinary surgeons who were practising abroad in the army to have a voice in the voting for members of the Council.

The bye-law, as amended, would read:

Add after the words "Every member" "in the United Kingdom," and the words "in the case of members resident abroad it will suffice if they forward to the Secretary, on the prescribed form, so as to reach him seven clear days prior to the election, the names of not more than six gentlemen for whom they wish to vote."

Mr. Fleming seconded the motion.

In answer to the Secretary,

Mr. Collins said it was in no way intended to make it compulsory on the part of the Secretary to send the forms unless they were applied for.

The motion was put and carried, and it was also agreed that the Secretary be instructed to send the blank forms through the principal Veterinary Surgeon to the Army to all the veterinary surgeons abroad.

Sir Frederick Fitzwygram submitted a scheme for a general matriculation examination for all the schools. As regards the London school there was no objection to the scheme, nor had Prof. Williams and Prof. McCall any objection to it; and he had received a letter from Prof. Walley, from which it appeared that the scheme was accepted by the trustees of the Edinburgh school with some modifications.

A Committee was, on the motion of *Sir F. Fitzwygram*, seconded by the Chairman, appointed to endeavour to adjust some general scheme.

The names of the Committee appointed are, Mr. Collins, Sir F. Fitzwygram, Mr. Fleming, and Mr. Robertson, of Kelso.

On the motion of *Mr. Greaves*, the best thanks of the Council were awarded to Sir F. Fitzwygram for his exertions in the matter, and the Council adjourned.

CENTRAL VETERINARY MEDICAL SOCIETY.

At a meeting held at Red Lion Square, W.C., November 6th, Mr. Fleming, Vice-President, in the chair, it was intimated that the President, Mr. H. T. Batt, had declined the office, but it was hoped he would reconsider it and accept it.

The *Secretary* then showed a specimen of azoturia that Mr. Tailby had remitted some time back with a history of the case (letter read)

A month after receiving it the urine assumed a deeper colour than port, and decomposition began.

The *Chairman* observed the disease was of very rare occurrence, he only recollected three cases in each of which death took place. Azoturia he did not consider a good name for the disorder; by means of the spectroscope points of hæmoglobin could be traced; the proper designation of this disorder and the name given in *Huian Medicine* was hæmoglobinuria: we find the matter in the blood without any blood-cells. Where this change takes place is uncertain; was convinced they would find it a disease arising from the horse being kept in for a few days, and receiving the same food as when working hard; becoming fat, is taken out and put to draw a heavy load, when suddenly he falls, death or recovery being equally rapid.

Mr. Mole said Mr. Hopkin, of Manchester, had told him he now rarely lost a case if he could get the bowels to act; he applies hot water to the loins, gives purgative medicines, and keeps the horse comfortable. The pathology of the disease was rather obscure, as it was impossible to say where the change takes place.

Mr. G. Fleming said a horse of the Army Hospital Corps was attacked and died; he examined it after death and found the liver extremely softened, and the mucous membranes of a deep colour; the kidneys were large, one weighing over two pounds, the other about two pounds; the urine was dark, and highly obnoxious. He was unable to study the case much, as it was some distance from his camp. It died within three days after it fell.

Mr. Hancock mostly gave turpentine and linseed oil daily until the bowels were opened. His cases invariably recovered.

Mr. Thomas Burrell, junr., remarked that as a rule where this disorder developed itself there was a loss of power in one of the hind legs; he attributed the disease to the horse being fed too freely, and resting for two or three days; previous to an attack the animal invariably was very fresh, and people would remark they never knew him in better health, but after proceeding a mile or less these symptoms appeared. The sweating was profuse, distress great, with lameness of one of the hind legs, and that out of all proportion to the amount of work it had done. These cases did not show themselves until the horse was excited, and the circulation increased; he did not recommend the use of slings. It had been asserted this disease only affected mares, but he had seen it in yearlings. In treatment, usually gave small doses of belladonna; the action of the kidneys must be kept up; sometimes when the animal is tolerably quite, and when not slung up opening medicine, but not always; it is bad to give a full dose, and examination of urine should be made as soon as possible after micturition, as it so soon generates to ammonia.

Mr. Steel considered Mr. Fleming's observation as to the condition of the liver one of importance, and he would be glad if some gentlemen would give cases where after death the condition of the liver had been observed.

Mr. Shaw agreed with Mr. Burrell in his remarks about sedatives. His son had two cases in which he gave nothing but sedatives until the horse got better. He gave belladonna twice a day.

The *Chairman* regretted Mr. Daniel was not present, as he had had a great number of cases. Once he was very unsuccessful, lately had been more fortunate. He relies upon purgative medicines. Aconite in the first instance was given. The symptoms in this malady are peculiar. He saw a case where there was excessive perspiration. It was able to

move its hind legs perfectly well. He told the driver to drive him up. He moved like a dog walking on his hind legs, and could not raise his hind quarters. Went round for half a circle, then fell and never rose again. This horse had never been ill before. Had been resting for two or three days. He found the condition of the liver very startling, the mucous membrane extremely yellow, and the liver pulp a clay colour. The Germans have studied this disorder pretty well. The last accounts of the malady by Böllinger, of Munich, of the symptoms ascribed to poisoning of urea, were very interesting. The change takes place in the kidney, though the kidney does not appear diseased. Bile salts get in the circulation, and in that way disorganise the blood. He found the blood-cells perfect, and everything all right. The animal died in convulsions.

Mr. Atkinson had seen some twenty or thirty cases during the last four or five months in the Tram Company. He thought the best thing was to get them to the nearest stable, and then sling them. Some cases he had seen they had literally to drag them off their feet. The treatment should be the same as used for fever. Since they had tried the strong purgative system and slinging they had never lost one case. He advised them to try the slinging process.

The *Chairman* had heard from Mr. Hopkin he had found slinging was dangerous in this affection, it led to several horses having their tails broken off by means of the breech strap getting under the tail. This objection to the use of slings was worthy of notice, as if they recovered and were so disfigured, it was obviously better to do without them. In the cases he had seen the bodies were covered with perspiration. The condition of the muscles and the urine were also very characteristic of this disease, as distinguishing it from paralysis ; the urine was either a lighter or darker colour than when in its normal condition. In the early stages the animal moved its hind legs like the case he had previously described, in which the horse moved for half a circle and then fell. This disease was quite different from paralysis as far as pathology was concerned.

Mr. Atkinson said the last case he saw was very much paralysed, the marked pressure upon the animal was intense. He gave no sedatives whatever, but a brisk stimulant and a purgative. There were two or three veterinary surgeons present ; some considered putting it into slings cruelty to the animal, but if he had not been so treated he most probably would have died, as all did prior to the practice of slinging them. They generally recovered in about twenty-four hours. The last three cases began to recover from the twelfth hour.

Mr. Gerrard was of opinion slinging did them harm, those he had slung never recovered. He remembered one case very distinctly. A large horse in good condition. It was slung up. After four days the rope gave way, and he fell down and did not recover. If he had not slung him but turned him over occasionally as he was in the habit of doing before, he believed he would have done better.

Mr. Burrell thought unless the horse was allowed to stand when in the slings he frequently became suffocated thereby. On the second or third day when he was able to stand it was better to let him do so; sometimes the abdominal muscles were injured, and probably the case would prove fatal. In one case he experienced the owner had seen the horse stand, and was anxious to have him slung up. He objected, but the owner persisting it was done, and the animal died in a couple of hours from suffocation.

Mr. H. J. Hancock believed slings did more harm than good unless the horse could take some portion of its weight.

Mr. Gerrard exhibited a specimen of rupture of the walls of the heart, stating the horse was a large one, aged about eight years, a brewer's; while engaged with two others in drawing about a ton and a half, in ascending a hill, fell down and died very suddenly. On making a *post mortem* found the wall of the right ventricle ruptured, also the pericardium. In many of these cases the drivers were found fault with for supposed carlessness.

Mr. Gerrard also showed a specimen of ruptured intestine, and said about twelve months previously it was attacked with inflammation of the bowels and had since had attacks, but had always recovered until that day. He was not a ravenous feeder. The rupture was close to the ileo-cæcal valve which was dilated, and the walls of the gut much thickened. The animal was taken ill nine days ago. Partially recovered and was put out to grass. He was called to the last attack on November 5th, and then saw him for the last time alive. He ate, and he thought he would recover. The pains being so lingering he believed there was a tumour existent.

The *Chairman* said this specimen was very interesting on account of its duration. There must have been some partition in which the food lodged. The absence of peritonitis proved there had been some disease in the intestine before death took place. It appeared at the commencement of the cæcum close to the ileo-cæcal valve, which was dilated; and the intestine had evidently for a long time been trying to overcome the obstruction.

A case of ectopia cordis with extreme contortion of the spine was exhibited by Mr. Banham. The specimen was forwarded by Mr. Wilson, of Nantwich, to the Brown Institution. The creature, a calf, had been removed with great difficulty by Mr. Wilson. The thoracic cavity was reduced to the smallest dimensions, through the spine being first curved abruptly upwards in the dorsal region, then bent suddenly round in the lumbar region, the pelvis being lodged or rather imbedded in the left shoulder. The heart protruded through the diaphragm, and was external to the chest behind the sternum.

Mr. A. Broad introduced to the notice of the meeting an instrument to enable a practitioner to examine a horse's nostril with safety when examining for glanders. It consisted of a circular hand mirror some six inches in diameter, with a half-inch transparent eye-hole a little to the right of its centre; in use was held before the nose, and examination made with the left eye, the best position being in a dark box looking away from the light.

The *Secretary* suggested it would be an advantage if the glass were convex. At present there was no magnifying power, but it was urged that that would nearly double its cost without materially adding to its utility, and that it was a very good speculum and certainly useful for the purposes designed, the horse being very liable to snort.

The *Secretary* announced that Mr. Henry Surmon, of Red Lion Yard, Clerkenwell, was proposed as a Fellow of the Society.

Mr. Hunting announced his intention of introducing the subject of colic with regard to treatment for discussion at the next meeting.

Votes of thanks being accorded those gentlemen introducing the subjects discussed, the proceedings terminated.

Present sixteen Fellows.

James Rowe,
Hon. Sec

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

The ordinary quarterly meeting of this Association was held at the Medical Institute on the 14th November, Joseph Welsby, Esq., President, in the chair.

There were present: Messrs. Elam, Morgan, Reynolds, and Stevenson, of Liverpool; T. Greaves, T. Taylor, S. Locke, and E. Faulkner, Manchester; Dr. Greenway, West Derby; W. Dacre, Altrincham; Jas. Storrar and T. E. J. Lloyd, Chester; W. Whittle, Worsley; W. Woods, Wigan; J. W. Hill, Wolverhampton; S. M. Wilson, 12th Lancers; S. Knott, Royal Artillery, and the Secretary.

Letters of apology for non-attendance were received from a number of gentlemen expressing their regret that they were unable to be present.

The minutes of the previous meeting were read and confirmed.

Mr. Elam then communicated the following notes of a case of "Fracture of the sesamoid bones of both fore legs in a cob mare," exhibiting the specimens. He said—On the 21st of June last, a grey cob, 14 hands 2 inches high, 6 years old, was brought to my infirmary suffering from a slight cold, the owner informing me that he intended to sell it as soon as it had quite recovered. On carefully examining it in the loose box I found that it appeared to move slightly lame or tender, but, as the owner had not mentioned anything regarding that when he left it, I thought that it might be of no consequence, and that it would likely pass off with a few days rest. A few days after the owner called, and I drew his attention to the fact, when he said, "Oh, yes; she had gone a little tender about a month ago, first on one foot and then on the other." He had her shoes taken off, and her feet carefully examined, but could find nothing to account for the tenderness. He then had a pair of india-rubber pads put on, thinking that they might improve her, and she went very well after. However, as there was a little swelling and heat about the fetlock-joints, I (Mr. Elam) had a cooling lotion and cold-water bandages applied to them. In ten days she appeared to have quite recovered her usual health, and the lameness had almost completely passed off, when the owner called and said that he would send his son for her in the morning, which he did, and my groom remarked how much improved she walked as she was being led out of the yard. In less than half an hour after a messenger came back to say that the mare lay down in the stable as soon as she got there, and broke out into a profuse perspiration, and that she appeared to go suddenly lame just before she arrived at the stable. The owner requested my groom to take her back to my infirmary, but before she had got half the way, her fetlocks came in contact with the ground, and she was unable to proceed any further. A float was then procured, into which she was placed, and taken to the infirmary. When I returned I found her lying quietly in the box, and, so far as one could observe, very comfortably. I got her lifted up on to her feet with great difficulty, but every step she took the toes of both fore feet turned up, and the inferior extremities of the large metacarpal bones came in contact with the ground.

After a careful examination in connection with the symptoms I became quite satisfied that the sesamoid bones of both fore legs were fractured, and that treatment was out of the question. The owner called on the following day, and after explaining the nature of the fracture to him I advised him to have her destroyed, which he agreed to. A *post-mortem* examination showed all four sesamoid bones fractured transversely about the lower third, the upper two-thirds having the appearance of being torn away by the powerful suspensory ligament, whilst the inferior third was held by the inferior sesamoideal ilgaments, thus exposing the internal structure of the bone. I am of opinion that the bones had been diseased at least twelve months, and that the animal would have shown signs of it to a close observer.

The above communication gave rise to a very interesting discussion, in which almost every member present took part. The following is a brief summary of the principal points touched upon :

Mr. Elam, in reply to questions by various speakers, said that he could not detect any diseased condition in any of the other bones of the body, and that from a careful examination of the sesamoid bones made immediately after taking the specimens home, he was of opinion that they were affected with caries.

The general opinion expressed by the other members, however, was in favour of the diseased condition being of the nature of osteo-porosis, from the fact that the lesions occurred simultaneously in both fore legs, without the infliction of any adequate strain to produce them if healthy. The absence of pain when the animal was at rest was considered to contraindicate the presence of caries, and that although from the specimens being dry and surrounded with their periosteal covering, and having the ligaments attached, no very decided opinion could then be given. Still, it was stated that when the long bones are affected, the presence of the diseased condition is difficult to determine until after the bones have been either macerated or boiled.

As to the cause or causes of osteo-porosis no very definite opinion was arrived at. It had been observed in every variety of breeds of horses, and to occur under different systems of feeding. It generally affected young animals, although not invariably so. The most remarkable development of this disease was related by *Mr. Woods*, of Wigan, in which, he said, about a dozen of Hungarian ponies, belonging to a mining firm in his district, became almost simultaneously affected, the acute symptoms manifesting themselves immediately on being put to work, after having rested during Whit-week. One of these ponies was ten years old, and had been in the pit for seven years, while none of the others were over five years old, and had been in the pit for from two to three years. He, Mr. Woods, attributed the disease at the time to the ponies getting too much Indian corn while idle, and it was a curious fact that after its withdrawal no more cases occurred at that period.

The general opinion expressed by the members, however, was, that the principal cause of this disease was some constitutional *diathesis*, which certain other conditions might intensify. And although in Mr. Wood's cases no previous symptoms had been noticed, in the cases related by the other members, symptoms of lameness of a shifting and recurrent character had been invariably observed.

Mr. Elam then communicated the notes of two cases of "Death from intestinal calculi." The first case was that of a chestnut mare, belonging to a detachment of the Royal Dragoons, which had arrived in Liverpool the previous day from Colchester. She was reported to be in good health and spirits during the whole of the journey, and only began to

show signs of pain on arrival in Liverpool. Briefly, the symptoms were—acute abdominal pain, pulse 50. Visible mucous membranes of a dull pale red, mouth hot and dry, with a loathing of food and water. The fourth day she drank water freely, and ate a little. No fæces were passed at all during the attack. In exploring the rectum I observed that no solid fæces could be felt, indicating that the obstruction was very near the rectum. The treatment adopted was—repeated small doses of aloes, in conjunction with carbonate of ammonia, frequent injections, and gave small doses of chloroform to allay the pain. On the evening of the fourth day the pulse became accelerated and weak, and the symptoms of pain ceased. She died on the following day, the fifth after her attack. He, Mr. Elam, made a *post-mortem* examination and found the calculus shown firmly imbedded in the rectum, about five feet from the anus. Mr. Elam's opinion was, that the long march of over 200 miles had caused or accelerated the backward movement of the calculus from the large intestines onwards to the rectum. He considered that a careful exploration of the rectum in all cases of abdominal affections, is an invaluable aid to a correct diagnosis, and might lead, in some cases, to the removal of the obstruction.

The other case was that of a bay cart mare, six years old, which I (Mr. Elam) was asked to attend in July last. I found her manifesting symptoms of colic, for which I gave her a stimulating drink and administered ʒiij of aloes. The next day she appeared better, but in about a week after I was again sent for to attend her, when the owner now told me that she had been griped a little every day for a fortnight. I had her brought to my infirmary. The symptoms were briefly as follows—visible mucous membranes of a dull pale red, mouth hot and dry, frequent pawing, and restless when lying. No symptoms of acute pain, rolled very seldom, but had a perfect loathing of food and water. This condition continued for ten days, when the bowels began to act freely, and she commenced to eat and drink heartily. Three days after she was discharged as all right. The treatment, as in the other case, was—repeated small doses of aloes in conjunction with the carbonate of ammonia. In about a week after I was again sent for to attend this mare, when the same symptoms presented themselves. As I now considered the case a hopeless one, and the owner being a poor man, I recommended him to turn her into a good field, and if she should die to inform me. The mare died in about three weeks after. I made a *post-mortem* examination and found a large calculus at the junction of the large, or double colon, with the single colon.

Mr. Storrar also exhibited some specimens of calculi, pyramidal in shape, which had been so formed by their action on one another in the bowels.

A general discussion followed, of which the following is a brief summary:—1. That there is no reliable diagnostic symptom of the presence of calculi, except in such recurrent cases as the second one in Mr. Elam's communication. 2. That although in individual cases, such as the formation of hair balls in calves, and where an animal has been known to swallow some peculiar article which has formed the nucleus of a calculus, that has been either evacuated or found *post-mortem* at a certain period afterwards, there are no very reliable data upon which to form an opinion as to the length of time which these calculi require to form. As an instance of this *Mr. T. Taylor* referred to a horse, within his own practice, which had been in the habit of manufacturing these interesting articles for several years, their size varying from that of a billiard ball to that of a marble; these he discharged in quantities of

six or seven at once, at intervals of four or five months. Still he enjoys excellent health, and is in good condition, and has never been known to have an attack of colic. His (Mr. Taylor's) attention being only called to him by the attendant with the quaint remark that his horse had commenced the marble trade again. The character of the food and the gastric habits of the animal was believed to have considerable influence in the formation of calculi. 3. Repeated doses of purgative medicine in all cases where the bowels did not respond to an ordinary dose was generally condemned, nerve stimulants in such cases being generally recommended. *Dr. Greenway* suggested the administration of metallic mercury in cases of obstinate obstruction, as is done in the human subject, but several members considered that the horizontal position of the bowels in our patients, combined with the anatomical arrangement of the ilio-cæcal valve, militated against its success. 4. In all cases of abdominal affections in the horse, accompanied with tympanitis, tapping was generally recommended as being both safe and beneficial. The operation should be performed in the same region as you tap for hoven in cattle. 5. As to the best course to be adopted in cases where the presence of calculi had been diagnosed, it was considered by some that purgative medicines, either *aloes* or *oil*, did more harm than good.

Mr. Jas. Storrar then communicated the following notes of a case of "Ruptured abdominal muscles." On the 17th October last I was called to see a very valuable brood mare of the heavy shires breed seven years old, and the dam of three foals. She had not been in harness for several years, having been laid aside from work for breeding purposes and exhibition. She had been kept up to the mark (to use showing phraseology) till the shows were over, when it was considered prudent to allow her to get a little down in her bulk, her last foal being still unweaned. She was grazing in a very rich pasture during the day, and at night was taken up to a large comfortable loose box, where she had a small portion of grass, a feed of bruised oats boiled, and bran. She again had a similar feed in the morning before being turned out to pasture. She was an uncommonly good tempered animal, never running or exerting herself, but most industrious as a grazier, a magnificent animal, weighing nearly 18 cwt., lengthy, but beginning to get a little low in her back, presumably from having had several foals. Such was the animal which I was called in to see.

The groom's statement was that on the previous evening, when calling her to come into her box, he thought she went a little stiff on the off-hind leg. She ate her mash with relish, and having left her for a short time he went back and found her lying down comfortably. Before going to bed he again looked in at her, and found her up and eating her grass. These circumstances relieved his mind so far that he did not consider it necessary to say anything to his master that night.

On the following morning, still thinking her somewhat stiff on the off-hind leg, he informed his master, who went into the field, but was unable to satisfy himself that anything was wrong. He, however, said to the groom, "You know the mare's general appearance better than I do, and since you do not think her right, go for Mr. Storrar."

Upon my arrival the groom pointed out a swelling in the right flank, very slight, soft, and evidently œdematous; there was also a little similar swelling behind the elbow.

The mare was still very fat, but the groom said that she had sunk very much in her appearance, more than she ought to have done considering what she was eating. The mare seemed low in vital force, her pulse soft and languid. She kept up her appetite as usual.

There was no swelling of the legs as we usually find in cases of poor blood, yet these swellings were œdematous, and the case seemed a likely one to recover by a change of diet, and a little alterative medicine. I therefore gave her a six-drachm purging ball, which acted very moderately, while she continued to eat her mashes with relish.

I ordered the green grass to be stopped, good old hay to be substituted, the bruised oats and bran to be given dry morning and evening, and her usual walk at pasture to be allowed her during the day.

After the medicine had acted she seemed better on the right side, but on the 19th, when I again saw her, there was a very considerable œdematous swelling on the left side of the flank; this to me was more puzzling than ever. I asked if there was any cow or other animal in the field that could have interfered with her, as this looked more like an injury to the parts than anything else I could think of, but I was told that there was no animal in the field that could have injured her.

I gave her diuretic medicine, and expected a favorable result from this and the change of diet, but the swelling continued to increase, and I requested that some other professional man should see her.

Upon the arrival of my professional friend we agreed to puncture the swelling, so as to allow of an escape of serum. Upon my doing so, and introducing my finger to break up the cellular tissue, there followed an alarming flow of serum and red corpuscles, which I hastened to stop. Of course there was a certain amount of clot formed, owing to the blood from the skin, but the great bulk of the fluid was watery. Suffice it to say that, nothwithstanding every attention, the animal died on the morning of Saturday the 25th.

The *post-mortem* showed that the swelling in the flanks had arisen from a rupture of the transverse abdominal muscles, the laceration proceeded to extend, no doubt every time she raised herself from the bed, which she did very frequently immediately before death. On the left side the rents were right through the muscles to the skin, and in several places the serous effusion in the abdominal cavity was great, while here and there a black clot floated in it.

The special interest attached to this case is the previous history of the animals' life and treatment, and the very unusual occurrence of such a case. I have on two previous occasions seen mares give way at the attachment of the rectus abdominis muscle to the pelvis, thereby allowing the abdomen to descend very low, and giving the animal a very unseemly appearance, but both these cases occurred very near to the time of the mare's foaling. The mares foaled, reared their foals, and did well. In the present case the mare was in foal, but the fœtus was small, and could not be a factor in the case.

The pathological questions which I have asked myself, and which I now suggest to you for your opinion, are these:

Had the repeated fattenings to which the mare had been subjected for years produced any tendency to fatty degeneration of the muscles of any part of the body?

The heart was fatty, but weighed about eight pounds, quite as heavy as I would have expected the heart of an animal out of condition to have been.

Had the very limited exercise which the mare had been subject to a tendency to generate fat at the expense of the muscular tissue?

Had the bulky, moist, non-nutritious grass, of which she partook so largely, a tendency to distend her abdominal organs, and to relax the system generally, so that the animal may be said literally to have fallen to pieces?

In my very large experience among brood mares of all breeds I have not met with such another case, and I have introduced it to your notice to-night in order that I may elicit your valuable opinions upon it.

I have purposely withheld all names for reasons satisfactory to myself, I trust; however, I think that you will agree with me that the case is a very interesting one.

Mr. Hill, who stated that he was the veterinary surgeon who consulted with Mr. Storrar in this case, said that he differed in opinion from Mr. Storrar as to the immediate cause of death, and also as to the time when the muscular lesions took place.

The mare, he said, had been repeatedly fattened for exhibition. She had taken sixteen first prizes. She had then a foal sucking her, and a *fœtus in utero*.

There was an entire absence of blood in the system, a pure fibrinous clot in the heart, and moulds in the larger vessels. He was of opinion that the *ante-mortem* clot in the heart was the cause of death, and from its white fibrinous character, extending as it did into the larger vessels, must have existed there for some time.

He considered that the swelling was œdematous and due to debility, and that there was no rupture of the muscles when the first swellings appeared in the flanks. Besides, the swelling was in front of the flank and towards the median line when scarified, which with the fact that similar swellings occurred at the elbow convinced him. Mr. Hill said that there was no rupture of the muscular tissue until about an hour before death, when she became very restless, and threw herself down on her bed with great violence.

There was also hepatisation of the lung, which Mr. Storrar had omitted to mention, which goes to show the complicated diseased condition in which the animal was.

Dr. Greenway considered that the immediate cause of death was anæmia of the brain; of course the clots would be the means of shutting off the supply, and might in that sense be considered the cause of death. Speaking of the formation of clots, he said that in cases of sudden death the heart would be found empty or nearly so. When death was less sudden the heart would be found filled with dark coloured clots extending into the vessels; but when death was prolonged, as in this case, there would be white fibrinous clots in the heart, and moulds in the vessels leading from it. He was of opinion that the kidneys should have been examined in this case.

Mr. Greaves was of opinion that the cause of death dated from the time that the accident to the muscles happened, which was at the first appearance of the swelling in the flanks. He said some fat horses would faint before you can get two quarts of blood away from them. He was, therefore, of opinion that first the rupture and escape of the fluid, then the scarifying and further draining the system of blood and serum, brought on fatal syncope, which was the cause of death.

Mr. Reynolds said that animals fed for exhibition purposes had a tendency to the formation of fat instead of muscle. He was of opinion that in this case the abdominal muscles had become deficient in tone, and had partially ruptured at the first appearance of the swelling.

Mr. Welsby, President, said that the mare being a keen pasturer, having no work, and getting very little exercise, would have a decided tendency to produce fat at the expense of muscle. He concurred in the opinion that there must have been rupture of the muscles at the first appearance of the swelling, and although the swelling was considerably in front of the flank, as pointed out by Mr. Hill, when it was lanced, still he saw no

objection in that, as the fluid would gravitate to the most dependent part.

Mr. Elam said, in reference to the state of the lung mentioned by Mr. Hill as being an important factor in this case, that hepatisation of the lung could take place within a period of four days prior to death.

Mr. Storrar, in reply, said the important point for consideration was, Did the cause of death commence at the flanks or at the heart?

There was no indication of derangement of the heart's action when the swelling first appeared in the flanks; besides, there was no filling of the extremities, effusion into the chest or between the fore legs, as we generally find associated with heart disease, or in œdematous swellings arising from debility.

There was no indication either of anything being wrong with the chest until after we had been treating her for several days. The hot fomentations in his (Mr. Storrar's) opinion relaxed the tissues more and more, and consequently increased the effusion, which led to internal congestion. There was tenderness of the throat observed the first day, followed by disease of the chest the second day.

There is no doubt that her violent action immediately previous to death greatly aggravated the lacerated condition of the abdominal muscles, but, taking all the symptoms into consideration and the order of their development, he could not help arriving at the conclusion that the cause of death commenced by rupture of the abdominal muscles, and that the clots in the heart did not exist for any length of time prior to death.

Mr. Tom Taylor exhibited a beautiful specimen of a brain taken from a horse which had an acute attack of apoplexy.

The history of the case is briefly as follows:

I (Mr. Taylor) was called to see a horse said to be suffering from disease of the kidneys. I found him suffering from brain pressure; there was the characteristic slow pulse, 36 per minute. He was about thirty years old, and had been blind for five years. I got him led with difficulty to my infirmary, administered a large dose of physic, and applied cold water to the head.

The bowels acted well in two days, after which I blistered him on the poll, but he made no improvement, and I had him killed by cutting the carotid artery. I had the brain carefully removed, taking off the base of the skull first, which I consider a preferable mode to the usual plan of taking off the top first.

The following is a description of the brain:

"The brain itself was healthy, so also the main blood-vessels. The dura mater, however, showed, on the right side of the vasal portion, considerable thickening, and in some parts a calcareous condition, these results being probably due to pachymeningitis. The thickened area corresponded to the posterior part of the frontal lobe and a small portion of the temporo-sphenoidal lobe on the under surface of the right cerebral hemisphere, and extended inwards over the pituitary body and optic chiasma; it encroached but slightly to the left of the middle line.

In the midst of the thickened dura mater, and apparently between its outer and inner layers, an effusion of blood from one of the meningeal vessels had given rise to a large clot, which measured one and a half inches from before backwards, and one and a quarter inches at its widest part.

The clot was of tolerably recent formation, and showed under the microscope blood-corpuscles and *débris*, without any crystals of hæmatoidine, such as are found in old apoplectic extravasations.

The subject of the re-election of representatives to the Council of the Royal College of Veterinary Surgeons was then discussed, and the secretary was requested to communicate with the other Veterinary Medical Associations to ascertain their opinions on the matter, so as, if possible, to secure unity of thought and action.

The following gentlemen were then unanimously elected officers of the Association for the ensuing year.

President.—Mr. C. W. Elam.

Vice-Presidents.—Messrs. W. Woods, Jas. Storrar, and Jos. Welsby.

Treasurer.—Mr. George Morgan.

Secretary (re-elected).—Mr. D. Hutcheon.

A cordial vote of thanks to the retiring President, Mr. Welsby, which was carried by acclamation, closed the meeting.

DUNCAN HUTCHEON,
Hon. Sec.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held in the "Douglas Hotel," Newcastle-on-Tyne, on Friday, November 28th, 1879. Mr. D. Dudgeon, President, occupied the chair.

There were also present Messrs. H. Hunter, A. Hunter, C. Stephenson, G. Elphick, and F. Gillespie, Newcastle-on-Tyne; F. Gofton, North Shields; W. Wheatley, South Shields; J. Nisbet, Fence Houses; W. J. Mulvey, Bishop Auckland; J. Malcolm, South Hetton; A. L. Butters, and the Secretary, Sunderland.

M. W. Williams, junr., was present as a visitor.

Letters of apology for non-attendance were read from Professors Prichard and Whalley, and Mr. M. Hedley, Darlington.

The minutes of the preceding meeting were read and confirmed.

A letter was read from Mr. D. Hutcheon, Secretary of the Liverpool Veterinary Medical Association, the consideration of which was postponed until the next meeting.

Mr. Mulvey related the history of a very interesting case of "Spinitis," the subject only being in the owner's possession a week when it fell ill. Mr. Mulvey attributed the case to the animal having been recently docked, the tail being excessively seared, and being driven a long distance. The case was improving, and Mr. Mulvey did not despair of it making a good recovery with long rest. After hearing the remarks of several members on the above case the President called on Mr. Mulvey to read his paper on "Injuries to the Coronet and Feet."

Mr. PRESIDENT AND GENTLEMEN,—In fulfilment of the promise given at our last meeting it becomes my duty to introduce a subject for your discussion this evening, and although I had a certain amount of diffidence in doing so, yet having an earnest wish for the prosperity and firm establishment of this Association, I considered that it was the duty of every individual member to do all in his power to promote its welfare; and, therefore, I come before you to make a few observations on "Injuries to the Coronet and Feet."

Injuries to the foot of the horse, I need not tell you, are amongst the most intricate and difficult cases, and yet are the most frequent with

which we, as veterinary surgeons, have to contend. The foot of the horse is made up of an internal vital portion enclosed in horny structure, and it is on this account that the difficulty arises. Inside a horny box we have highly organised structures, so that anything which perforates this box and injures ever so slightly the vital structures it contains often produces results the most serious. I purpose first calling your attention to injuries to the coronet; these may arise from various causes, the most frequent are treads, over-reach, and in collieries and on railways from the wheel of a truck or tub running over the coronet, and in the hind feet, in some instances, from striking the coronet against the sleepers, and in others from the habit acquired by many ponies and horses of sliding down the inclines. In this manner the the coronet or a portion of the hoof is often scrubbed, and sometimes cut completely through by a jagged nail. Another cause of injury is by the foot getting fast between the crossings or switches, the animal being thrown violently down, causing bruise to the coronet, and occasionally fracture of the os suffraginis or coronal process of os pedis. Secondly, injuries produced by pricks in shoeing, by nails, wire, or other sharp substances being trod upon and perforating the sole, and by bad shoeing, producing corns.

A tread is a contused wound on the inside of either hind foot caused by one foot being brought forcibly upon the coronet of its fellow.

Over-reach is a blow upon the heel of the coronet, produced by the hind foot over-reaching the fore foot of the same side. These injuries may be more or less serious; in the majority of instances simple bruise and abrasion of the skin of the coronet is all we have to contend with. In these cases the treatment I should adopt would be to remove with the scissors any skin that may be detached; cleanse the wound, and apply the following lotion:—℞ Tr. Myrrh. c. ʒij, Sol. Zinc. Sulph. ad ʒviij.

This treatment, with a day or two's rest, will generally be found sufficient. In other cases a great amount of inflammation is induced in the parts by the force of the blow, often causing suppuration. Pus forms, which burrows downwards through the soft structures contained within the hoof, producing quittor; or when the injury happens to be in front of the coronet open joint may be the result; or the skin of the coronet may already be in a diseased condition, the animal suffering from cracked or even greasy heels. The local irritation from this cause induces the animal to scratch and stamp upon the itching coronet, and being shod, as most cart horses are, with high calkens to the shoes, the probability is that serious injury to the coronet is the result. I cannot better illustrate this than by relating to you the history of a case of the kind which has lately come under my notice.

The subject was a grey wagon horse, five years old, seventeen hands high. My attention was called to him by the driver informing me that the horse was continually stamping in the stable, and that there was a discharge from both coronets. On examining them narrowly I found that there was an eruption of a carbuncular nature, some of which had burst and were discharging copiously; others had not yet come to maturity. I ordered the mixed feed (which consisted of maize, peas, oats, and chopped hay) to be taken from him, and gave soft food and a dose of aperient medicine, and after cleansing the wounds had them dressed with carbolic liniment, at the same time left instructions for the shoes, which had very high calkens, to be removed. This, unfortunately, was not at once carried out, and during the day the animal struck the off coronet with such force with one of the calkens of the

opposite shoe as to break the skin and make a very ugly wound, which induced so much pain and inflammation to the foot as to bring on a high state of irritative fever. The symptoms when I next saw him were —pulse between 70 and 80, breathing hurried, leg continually drawn up under the body, animal frequently lying down and moaning, then jumping up again as though the pain was beyond endurance, and I have no doubt it was. I at once had the shoes off, slightly thinned the soles, placed the off hind foot in warm water for a time, then dressed with solution of Lq. Plumbi and solution of the extract of belladonna, and afterwards put the foot in a large bran poultice, and gave three times a day the following mixture:—℞ Spt. Æther Nit. ℥iss, Liq. Ammon. Acet. ℥iss, Tr. Aconite (Fleming's) ♏xx.

I continued this treatment for three or four days, and still the animal was suffering great pain, although not quite so acute. I now began to find the discharge had mixed with it what was very like synovia. I then changed the treatment and applied flannel swabs around the coronet, keeping them continually wet with cold water, and applied all over the coronet two or three times a day Sol. of Zinc Sulph. At the end of about ten days the coronet was still enlarging, and the animal almost suffered as much as pain as ever, the foot never being near the ground. I now thought I would examine the sole again and had it completely removed, finding that the pus had gravitated till the whole of the sole was hollow, and that a large sinus extended completely through the foot into the navicular joint, and from which there was a copious discharge of synovia. I then tacked a flat shoe on the foot with two or three nails so as to be able to confine the dressing, and injected just within the wound, from the bottom, a weak solution of Hy. Chlor., and applied a smart blister to the coronet; but do what I would, and I think I tried almost everything, all was of no avail. No sooner did one sinus seem to heal up than another broke out, and finding that the discharge was now mixed with blood and was becoming fetid, I concluded that the case was hopeless, and, therefore, had him destroyed and have brought the bones of the foot for your examination. From their appearance you will see how utterly without hope the case was, as the os corona, os naviculare, and os pedis are all involved in disease; ulceration of the whole of the articular surfaces, and in the case of the os corona the ulceration extends to both sides, and a large amount of morbid bone has been thrown out; the coronal process of the os pedis has completely disappeared, and from the appearance of this portion of the bone I am somewhat inclined to think that it was here the mischief first commenced (perhaps by fracture).

I now want to draw your attention to those injuries which I find so frequently occurring in colliery practice, viz. the walls of the foot being cut through by a jagged nail, or by the wheel of a tub or waggon running over the foot; these injuries, if attended to at once, are not so difficult to treat as would at first sight appear. I first have the part thoroughly cleansed from all grit and dirt, then with the rasp or knife remove the sharp edges of the horn, which will be found to be pressing upon the inflamed and swollen sensitive laminæ beneath, endeavouring to round the edges and removing any horn that may be loose or detached, then immerse the foot in a pail of warm water and apply a good bran poultice frequently renewed. After a day or two I remove the poultice and apply to the wound a salve composed of tar and lard melted together, to which I add, when cold, sulphate of zinc ℥j to ℥j; this ointment is applied on tow, and maintained in position by continuous folds or wrappings of tarred cord. I generally find these cases do well, but every

now and then the horse or pony so injured is worked on for days before anything is said about him being lame, grit and dirt works into the wound, the horn on the inside quarter where the injuries generally occur becomes softened, a disagreeable ichorous discharge squeezes out of the wound, the animal is very lame. In this state of affairs I often find it necessary to remove almost the whole of the quarter and sometimes a portion of the sole, when, after immersing the foot in warm water for a time, I place on the foot a round or bar shoe, seating it so that there shall be no pressure on the injured side, and dress over the parts either with Antim. Ses.Chlor. or Acid. Nit., then apply tow over all the exposed surfaces, and tie the foot loosely up; after a day or two remove the dressing and apply daily the Ung. Zin. Sulph. Co. I have frequently found in these cases that a portion of the os pedis has been injuried, or necrosis takes place as the result of the injury, and in many cases I have removed large portions of the bone which have become detached, and after scraping away any spiculæ that may remain, and dressing in the manner mentioned, the cases have done well. Occasionally we come across cases where a waggon wheel has run over the front of the foot not cutting the horn, but crushing and bruising the parts beneath. In these cases the animal suffers great pain, the limb is continually drawn up under the body, the animal flinches on the least pressure to the foot, the laminæ are generally so much injured that extravasation of blood takes place, and the consequent swelling of the soft structures contained within the unyielding hoof necessarily causes the most excruciating pain. Recently I have had a very severe case of this kind, in which, after some days had elapsed, pus formed and made its way out at the coronet, although I had before removed a portion of the sole. Finding that it was partly underrun, I now passed the probe upwards, and discovered that a portion of the os pedis was exfoliating immediately in front and about an inch below the coronal process. I thereupon removed the horn from the wall to within half an inch of the coronet, and with the forceps took away about half an inch of the pedal bone. After dressing with solution of carbolic acid and Tr. Myrrh Co., and placing pledgets of tow over all, I had affixed to the foot a shoe having a clip at each side of the toe, and although for a time I was troubled with luxuriant growths from the exposed laminæ, which had to be kept down by application of Antim. Ses. Chlor. and pressure, the case has progressed satisfactorily.

Corns.—Bruise of the inner angle of the sole of the foot between the wall and bars, more often on the inside and almost always confined to the fore feet, due to undue pressure on the heels, generally caused by the shoe, but may arise from other causes, as by a stone becoming fast between the shoe and frog, the pressure causing bruise and rupture of small blood-vessels and consequent of blood, which percolates through the fibres of the horn. Should the bruise be severe and the cause not removed, or the injury not attended to, suppuration is the result, pus forms and unless an outlet is given to it by the removal of the horn it burrows upwards through the soft structures and makes its exit at the coronet. The more simple cases of bruise to the foot called corn are easily got rid of by removing the cause and poulticing the foot for a short time, should the cause, as is too often the case, be the result of a wrong system of shoeing, viz. the shoe being seated or bevelled on all the sole surface except where it comes in contact with the heels. Thus, you will find that the only bearing the sole obtains is at its weakest parts, viz. the heels, the wall of the foot carrying all the rest; this unequal pressure is, in my opinion, the most frequent cause of corn. The treatment of those cases of corn in which suppuration has taken place is often very troublesome. I commence by

removing all the under-run portions of the sole, and ascertain by means of the probe to what extent the internal structures are involved. In many cases I find that the quickest treatment consists in inserting a seton through the sole and bringing it out at the heel, thus giving a free exit to any pus that may have formed, and producing by the stimulus of the seton a healthy state of the parts. After keeping the seton in the wound for a week or ten days, during which time I should have it dressed daily with stimulating digestive ointment, I remove it and have the parts syringed every day with solution of Zin. Sulph., and place on the foot a round or bar shoe.

Amongst the most frequent cases of injury to the sole of the foot are those caused by pricks in shoeing. These injuries are often difficult to discover, especially when the nail has been drawn by the smith and a fresh one inserted. I am always most careful to examine the nail holes in every case where there is the least doubt as to the seat of lameness, even if the lameness is said to have come on suddenly, and the horse has not been shod for two or three weeks. For over and over again have I found, on examining the foot in these cases, that a nail has penetrated, perhaps very slightly, through the horn, and the animal may evince very little pain or lameness for a considerable time, when suddenly he is noticed to be lame, and on removing the shoe and examining the foot I have found a great portion of the sole under-run Occasionally, lameness may arise from the nails being too close to the laminæ, although not actually through the horn, yet so nearly as to press upon and bruise the sensitive parts, and if not removed speedily produce so much inflammation that pus forms, and being unable to absorb, it diffuses itself beneath the horn in every direction. In other cases the nail may have been driven in with such force as to penetrate and even fracture the os pedis. Only the other day my attention was drawn to a pony in one of the collieries, in which, in shoeing, a nail had taken the wrong direction. The smith by some means or other had not noticed the animal to show any pain or lameness at the time. Nearly a week elapsed, when the pony was found to be very lame. The shoe was removed. The foot examined without result. Next day matter was observed to be oozing from the coronet, the horn separating at its junction with the hair. It was then my attention was called to the case. I immediately had the foot thoroughly searched, and soon found that the whole of the quarter was under-run, and on passing the probe detected fracture of the alæ of the os pedis. I then ordered the pony to bank into hospital, removed the whole of the horn from the outside quarters of the foot, then with the forceps took away perhaps three quarters of an inch of the os pedis. After cleaning the wound and dressing with carbolic acid liniment and covering over all with tow and bandage, the case has done well.

In addition to injury from pricks in shoeing the sole of the foot is peculiarly liable to injury from being brought forcibly in contact with sharp substances left carelessly about on roads, such as nails, glass, wire, &c., &c. The successful treatment of injuries caused in this manner depends, to a great extent, upon the part of the sole perforated. Not long since I was looking over the ponies in a colliery, when, on making one that had just come from work stand over in the stable, I noticed that he was very lame, and on running my hand down the leg and around the coronet to ascertain the cause, my hand came in contact with something protruding above the heel, and on picking up the foot I found that a lamp nail, some four inches in length, had gone completely through the foot, going in at the outer angle of the sole and coming out in the heel. It took all the force we could exert to draw it out with the pincers. Of

course, a considerable quantity of blood followed its withdrawal. All the treatment adopted was to foment and poultice for a day or two, and in the course of a week he was again at work, apparently very little worse, but how different is the result if the nail, be it only a small one, and small ones, I find, generally do the most harm, happens to have perforated anywhere about the point of the frog, probably injuring the tendon of the flexor pedis and resulting in open joint, and, perhaps, tetanus. In these cases the pain is often so acute that sympathetic fever and even death is the result. Of course, our first care must be to alleviate the constitutional symptoms. I generally give in the first place a dose of purgative medicine, and then administer three or four times a day the fever mixture, as mentioned in the early part of this paper. I have the sole thinned till it gives to pressure, and apply warm fomentations and soothing applications to the wound, as solution of Liq. Plumbi, or covering the wound with powdered camphor or Ext. Belladonnæ, and put the foot into a good warm bran poultice. It too often happens in these cases that the nail has perforated either into the joint or so near that, from the amount of inflammation set up, the joint becomes opened. When the injury is of such a character as this the case generally terminates fatally. I have had very many such cases, and with varying success in treatment. I have tried almost everything in its turn. Should the coffin-joint be open and a large discharge of synovia, I have sometimes used a single injection of solution of Hy. Chlor. ℥j to ℥j, or tincture of iron, just within the wound. At other times, and, I think, with the most success, have injected Liq. Plumbi pure, then applied externally on a large pledget of tow a powder consisting of Pulv. Alum., Pulv. Aloes, and flour, and leave it for a day or two, keeping the foot as perfectly at rest as is possible, and have cold wet flannel bandages applied to the coronet. In other cases I have applied a good smart blister to the coronet, but it too often happens when the injury is of the serious nature I have described that do what we will the animal succumbs. Should, however, the discharge of synovia be arrested, the animal not suffering so much pain, and making a little use of the foot, then we have good ground for hope. I should now commence to dress the wound with Ung. Zinci Sulph., applied on good pledgets of tow, and stimulate the coronet with repeated mild blisters, and after a short time has elapsed turn the animal out to grass, the walking about and using the foot often being of great service.

And now, gentlemen, in conclusion I must thank you for the patient hearing you have given me. Very imperfectly I have endeavoured to place before you a brief outline of some few of the various injuries to the feet which are daily brought under our notice. I am not presumptuous enough to suppose that I have told you anything but what you were already acquainted with, but I do hope that the observations I have made, crude though I know they are, may be the means of eliciting the opinions of all here, and that the discussion which will ensue may tend to a further knowledge of the subject, remembering the words of the wise man, "In the multitude of counsellors there is wisdom."

A discussion followed the reading of this paper, in which all the members present took part, and the further discussion on it was postposed until next meeting.

G. R. Dudgeon,
Hon. Sec.

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of this Association was held on Wednesday the 10th December, in the London Hotel, Edinburgh. Mr. Rutherford, Edinburgh, presided, and the following gentlemen were present:—Professors Walley and Baird, Edinburgh Veterinary College; Professor McCall, Glasgow Veterinary College; Messrs. Aitken, sen., Edinburgh; Borthwick, Kirkliston; Young, East Calder; Balfour, Kircaldy; Kirk, Edinburgh; Connochie, Ayton; Brown, West Calder; A. Baird, Edinburgh; Reekie, Edinburgh; Reid, Leith; and the Secretary.

The office-bearers for the ensuing year were elected as follows:—Mr. Connochie, Selkirk, president; Messrs. Aitken, Borthwick, and Young, vice-presidents; the present secretary was re-elected.

The *President* gave notice that at next meeting he would move for the appointment of a visiting committee to wait personally on members of the Association and other veterinary surgeons, within reasonable distance of Edinburgh, with a view of inducing them to do all in their power, by regular attendance and otherwise, to contribute to the well-being of the Society.

The *Secretary* read a communication which he had received from the secretary of the Liverpool Veterinary Medical Association, requesting the members to consider a resolution passed at a recent meeting of that society. The resolution was to the effect—"That the members of the Liverpool Veterinary Medical Association were not prepared to submit to the profession the name of any gentleman as a substitute for any of those gentlemen who retire by rotation in May, 1880, from the Council of the Royal College of Veterinary Surgeons."

Some discussion on this subject ensued, and the members were unanimously of the opinion that, while some of the gentlemen referred to in the above resolution deserved their support, the Association should take steps to secure the better representation of the Scottish section of the profession. The Secretary was desired to thank the secretary of the Liverpool Veterinary Association for his communication, and to reply to this effect.

Mr. Rutherford, Mr. Borthwick, and the Secretary were appointed a Committee to issue circulars to the holders of the veterinary certificate of the Highland and Agricultural Society, pointing out the advisability of at once obtaining the diploma of the Royal College of Veterinary Surgeons, as a means of qualifying themselves to vote at the next election of members of Council.

Mr. Rutherford exhibited a patent composite horseshoe. The shoe was of a material which somewhat resembled in appearance and properties gutta percha. It had been made and patented at considerable expense, and was stated to be very durable, besides having other advantages. It was fixed to the hoof, not in the ordinary manner, but by means of screw nails. He had caused the shoes to be worn on horses doing only halt work, and found that they did not last more than three days.

Professor Walley showed the œsophagus of a three-year-old cart colt, which was immensely dilated. The case occurred in the practice of Messrs. Corbett and Pringle, Newcastle, the animal having been purchased by the owners the day prior to death, and turned into a grass park for the night. When seen by Messrs. Corbett and Pringle he was in a desperate condition, breathing with great difficulty, coughing violently,

and discharging large quantities of saliva from the mouth. These gentlemen diagnosed dilatation and impaction of the œsophagus, and prognosticated a speedy fatal termination of the case. The prognosis was shortly verified. The œsophagus, trachea, larynx, and a small portion of lung, were sent to Professor Walley for inspection. The gullet was immensely dilated throughout. At the most dilated part its circumference was fourteen inches. The muscular layer was hypertrophied to the extent of half an inch, but otherwise it was healthy. No stricture or organic disease existed either in the gullet or cardiac orifice of the stomach. The left laryngeal muscles were atrophied; the laryngeal and tracheal mucous membranes inflamed. Both larynx and trachea were filled with a frothy fluid, mixed with ingesta. The small portion of attached lung showed considerable carnification. The difficult question to solve in the case was the cause of the dilatation, as no mechanical obstruction to the passage of ingesta existed. Death had evidently been caused by asphyxia, as the result of the passage of ingesta into the bronchial tubes, probably in the act of vomition.

Professor Walley also exhibited the bones of the hock and fetlock of a cow, showing the results of diffuse metatarsal periostitis.

Subject.—A small Ayrshire cow; aged.

History.—His attention had been directed to the animal during his course of inspection of dairies, about six weeks prior to death, when she was in slings, and under the care of Mr. Rutherford. He had then observed that the leg was enormously swollen, and that two or three fistulous openings existed in the fetlock and hock-joints respectively. A discharge similar to that usually found in sinuses issued from the openings, and there was evidence, in the shape of cicatrices, of others having existed.

The animal was in low condition, but was eating, and giving a tolerable quantity of milk. There was no sign of organic disease of internal organs, nevertheless he had a strong suspicion that the disease might have had a tuberculous origin.

After the death of the animal Mr. Rutherford afforded him the opportunity of examining the leg.

The skin and subcutaneous tissues were thickened to the extent of from one to two or three inches. The external fistulous opening of the hock corresponded to cloacæ in the joints, from the orifices of which, masses of degenerated ligamentous structure protruded. The whole of the soft structure of the fetlock-joint had undergone molecular degeneration, and large portions had been cast off through the fistulous opening, the extremities of the bones entering into its composition being eroded from absorption, entirely deprived of periosteum, and absolutely dead. The ligaments of the corono-suffraginal and corono-pedal articulations, with the tendons clothing them, were undergoing gelatinous degeneration. After removal of the soft structures by boiling, extensive destruction by caries of the articular surfaces of all the tarsal bones was seen to have taken place, large quantities of new ossific matter having been thrown out round the joint and all round the upper three fourths of the metatarsal bone, the latter being completely encased. No trace of tubercle existed in any of the diseased tissues, and he was of opinion that the affection was local in its origin.

A short discussion afterwards ensued on the subject of the paper read by Professor Walley at the previous meeting.

JOHN MCFADYEAN, *Secretary.*

MONTREAL VETERINARY MEDICAL ASSOCIATION.

This association held its first meeting for the session 1879-80 on Thursday evening last, October 9th, in the lecture room of the college. Principal D. McEachran was in the chair, with a full attendance of members.

In his opening address the *President* briefly reviewed the past history of the association since its formation in 1875. It was very gratifying to notice the continued and increasing interest evinced by the members in the meetings. He directed the attention of the younger members to the great benefit they would derive from their connection with the association.

The papers read being always most interesting, and frequently on subjects not fully treated upon in the regular curriculum, were of great advantage to them all.

The library, containing as it did nearly 300 volumes, and many of them rare and valuable works, was always at their disposal. It afforded him great pleasure to be able to inform them that its numbers were constantly being increased by donations from friends of the association. Several volumes had recently been received from Dr. Fenwick, Dr. Lieutard and Dr. C. C. Lyford.

In conclusion, he would state that the success of the association had exceeded his most sanguine expectations, and he would urge upon the members the necessity of continued exertion to maintain its reputation.

The officers of the association are—Dr. McEachran, F.R.C.V.S., Honorary President; William Osler, M.D., L.R.C.P.L., President; C. J. Alloway, V.S., first Vice-President; James Bell, M.D., second Vice-President; M. S. Brown, Secretary and Treasurer; and William Jakeman, Librarian.

A vote of thanks was proposed and carried unanimously to Drs. Fenwick, Lieutard, and Lyford, for their kind donations to the library.

The following gentlemen were proposed for membership:—F. Torrance, Compton, P.Q.; A. J. Chandler, Coaticook, P.Q.; Messrs. Thomas and Skully, Boston, Mass.; Mr. Dunden, Salem, N.Y.; A. Glass, Philadelphia, Penn.; W. Wardle, Montreal, Quebec.

At the next meeting (Oct. 23rd) Principal McEachran read a paper on "Contagious Pleuro-pneumonia," a subject that, at the present time, is one of especial interest, not only to the members of the profession, but to all that are connected with the breeding and exportation of cattle, and Mr. M. S. Brown communicated a case.

The fortnightly meeting of the Montreal Veterinary Medical Associa- was held in the lecture room of the college on Thursday evening, November the 20th, Professor McEachran in the chair.

After business of association was finished the chairman called upon Mr. Peter Cummings to read his communication on "Superficial Necrosis of the Os Pedis."

Mr. Cummings described the case in full detail. The reading of the same was listened to with great interest by those present.

Mr. Charles Ormond, of Milwaukee, read a very interesting paper on

"Bone Spavin," in which he evinced a more than common knowledge of the nature of this disease, the causes on which it depends, and the changes that take place in the joint. In his treatment he described a method much practised by his father, Mr. W. M. Ormond, of Milwaukee, by which he claimed to be more than ordinarily successful in restoring the animal to usefulness, viz. cauterisation of the joint by a pointed hot iron, inserted between the bones, by which anchylosis was produced.

A most animated discussion followed, in which the whole question was fully and intelligently discussed, the majority favouring, as more rational, the plan taught by the President, of firing and blistering completely around the joint.

The notorious prevalence of spavin in horses in Canada, especially in the poorer parishes, where proper attention is not paid to the selection of breeding stock, was fully commented upon. Where spavined horses or mares are used for breeding, this disease is very common, and the losses entailed by rearing worthless animals were incalculable. Too much cannot be said to urge farmers to stop breeding from unsound animals.

The meeting was one of unusual interest.

The next papers were read on December 3rd on "Tuberculosis in Cattle," by Mr. William McEachran, and one on "Veterinary Dentistry," by Mr. J. B. Green, Ohio.

ARMY APPOINTMENTS.

The Gazette, Dec. 16th, announces that Veterinary Surgeon William James Masters, Royal Artillery, is placed on temporary half-pay.

The *Cape Town Gazette*, of Aug. 18th, states that Mr. Thomas Butcher Scott Dawkins, M.R.C.V.S., has been appointed Veterinary Surgeon to the Cape Town Riflemen.

We also learn that Mr. Edmund Woods Goldsmith, M.R.C.V.S., has received an appointment to a Native Indian Cavalry Regiment.

OBITUARY.

We have to record the death of Mr. Wm. Heaps, M.R.C.V.S., who died Dec. 6th, at Fulwood, Preston, aged 42. His Diploma bears date April 28th, 1859.

Also of Mr. J. Mason, M.R.C.V.S., London. Diploma dated May 14th, 1851.

And of Mr. Harry Low, M.R.C.V.S., who died on December 17th, at the residence of his brother at Norwich, in the twenty-fifth year of his age. His diploma bears date July 18th, 1878.

MISCELLANEA.

From Punch's *Happy-thought Guide to London.*

Veterinary College.—Qualification—to be able to pronounce and write the name correctly—after dinner. Open Vet or fine.

THE

VETERINARIAN.

VOL. LIII. No. 626. FEBRUARY, 1880. Fourth Series, No. 302.

Communications and Cases.

SYNOPSIS OF CONTINENTAL VETERINARY JOURNALS.

By John Henry Steel, M.R.C.V.S., F.Z.S., Demonstrator of Anatomy at the Royal Veterinary College.

Summary.—Recent Researches on "Charbon," by MM. Pasteur, Colin, Arloing, Feser, Cornevin, Chamberland, and Roux, from the *Recueil de Médecine Vétérinaire,* and the *Journal de Médecine Vétérinaire et de Zootechnie.*

The activity of experimental observers abroad is manifesting itself in numerous researches on the various questions which the diseases comprised under the term charbon present. These are of the highest interest to us at the present time in this country, for, thanks to Dr. Greenfield and his colleague at the Brown Institution, England has not been behindhand. We shall endeavour to briefly summarise the new facts which recent foreign investigations have added to our store of knowledge of this subject. *M. Chauveau's* paper, "On the influence of management or race on the liability of Sheep to become affected with Splenic Fever," takes precedence in time, and in its general importance, as tending to materially alter our theories on the general nature of infectious maladies and their prevention. We are aware that while animals of some kinds are suscep-

tible of charbon on inoculation under almost any conditions of surrounding circumstances, others remain unaffected, unless the conditions are of a highly special character, as witness MM. Pasteur and Joubert's experiments with fowls. Also some species with difficulty receive the disease, be the surrounding conditions favorable or otherwise. The author asserts that these differences exist also between animals of the same species but of different rearing and parentage. When occupied during last spring in experimentally elucidating the general theory of infectious diseases at his course of practical medicine, he inoculated among others certain Algerian sheep, and all these resisted the disease. He had previously observed immunity in certain sheep, but attributed it either to defective material or unsatisfactory inoculation, but among other facts he observes two cases. In the first, a sheep was inoculated with matter from a cow, but exhibited no signs of disorder, though death resulted in two rabbits similarly treated. In the second case, the inoculation matter was taken from a goat which died from spontaneous charbon; this was introduced into a merino sheep which it killed in thirty-six hours. A portion of the spleen of that sheep, extremely rich in Bacteria, was pressed in a mortar with a little water, and supplied, after filtration, a liquid abounding in the agents of charbon infection. Of this eighteen drops were injected into the jugular of a merino ram. A quantity of the same material was injected subcutaneously on the left thigh of a sheep of the same breed, also six inoculation punctures with a lancet charged with blood from the spleen were made on the right thigh. The ram died of charbon on the ninth day at 5 a.m. As for the sheep, it resisted the inoculation, manifesting no ill results except an abscess at the seat of puncture of the left thigh, which opened on the sixth day and healed readily. The author concludes that the former may have been an imported African sheep, and that the latter illustrates the fact that animals may, on French soil, acquire an inaptitude for the reception of charbon. Around Lyons now are found many sheep imported from Algeria, either of the pure Barbary breed or more or less crossed with the large-tailed Syrian sheep. "I have had bought, in different lots, nine of these animals of clearly ascertained rearing (with one exception) and of undoubted origin. All of them proved absolutely refractory to the culture of *Bacillus anthracis*. The attempts to convey charbon to these by inoculation were repeated in one case as many as five, generally three times, and in one case only twice. The

matter used was most carefully selected from various sources and introduced by various methods, and it destroyed indigenous sheep and rabbits on first trial. If immunity is the attribute of Algerian sheep as imported it is essential to examine whether it is a congenital character, or acquired either from the native soil or during the journey necessary to their arrival in France. If this is a congenital character it will be important to accurately establish what beneficial results may be derived from it, as well with regard to the special bearing of this one point as to its general scientific applications. If it has been acquired it is of great importance to learn how it has been acquired, for by determining its causes we may be able to experimentally realise them, and thus confer immunity on our flocks." The paper in the *Journal de Médecine Vétérinaire* for October and November, 1879, gives the series of experiments, on which the learned professor bases his conclusions, in detail, and then continues: "Except in the experiment of introduction of 8,000,000,000 of Bacilli into the jugular, the subjects showed no appreciable disturbance of their general health; nevertheless, those inoculated by punctures through the skin presented as local phenomena a more or less marked tumefaction of those lymphatic glands nearest to the seat of inoculation; besides, as a general phenomenon, *especially after the first inoculation*, there was a certain elevation of the internal temperature taken at the rectum. In the experiment where a cubic centimètre of the charbonaceous blood was introduced into the veins the subjects exhibited marked disorder, which commenced immediately on injection, and lasted about twenty hours. This was of a febrile character, the temperature rising from 40·6° to 43°. During the height of the fever not a single bacterium could be seen in the blood; probably the disorder was due to a true toxic agent existing in the blood *with the Bacilli*. The fever may, however, have been due to the Bacteria becoming temporarily entangled in some of the capillaries before undergoing disintegration." The author next discusses the question—Why Algerian sheep are so unfitted for culture of *Bacillus anthracis?* MM. Pasteur and Joubert have shown that by reducing the high temperature of fowls they may be rendered susceptible of reception of the charbon, but a sheep was kept in cold water and did not become affected after inoculation. Again, the temperature of sheep dying of charbon falls below 40°, the normal of the Algerian breed. The cause of immunity must, therefore, be sought in some other condition than high temperature.

Professor FESER, of Munich, had been accustomed to test doubtful cases of charbon by inoculation of white rats, which multiply rapidly, and are therefore generally available. But he observed that sometimes his rats exhibited a marked immunity from the ill effects of inoculation. Further observation assured him that this was the case with those fed on meat, but not with those kept on a vegetable diet. He determined to prove this by special experimentation. His methods and results occur in the *Wochenschrift f. Thierheilkunde und Thierzucht*, Nos. 24 and 25, 1879. He placed his rats in two sets, and for several weeks fed one lot on flesh alone, the other only on bread. With the same virus he afterwards inoculated animals from each set, and found that while those of the first set resisted the disease those of the last rapidly succumbed to it. (1) A rat fed on bread: injected subcutaneously inside the left thigh three drops of anthrax blood. Died after eight days, and the tissues abounded with Bacteria. The serous fluid of this animal killed a rabbit in three days. (2) Four rats fed essentially on meat inoculated subcutaneously inside left thigh with blood and pulp of the kidney of a goat which died the night before. All remained healthy, though a rabbit similarly inoculated died of charbon five days after. (3) Two of these rats again similarly inoculated, though the fluid used sufficed to destroy a rabbit and a goose, suffered no harm. (4) A rat previously unsuccessfully inoculated was again subjected to the action of a drop of blood from the heart of a calf which died from anthrax the evening before. A negative result. After five weeks' exclusively bread diet the same animal was similarly inoculated, and died of charbon in thirty-two hours. (5) A female rat, previously unsuccessfully inoculated, having been fed on flesh only, brought forth nine young ones. The family was fed on thirty grammes of anthrax meat, and again the same, with bread steeped in anthrax blood. No harm ensued. But the mother's diet was changed to bread. She was then fed on the flesh of a rabbit suffering from charbon for two days. She was found dead in her cage three days after. Of the nine young ones, three were placed with three of the progeny of another mother, and fed only on cooked beef and horse flesh, while the remaining six were fed on bread. All of them were inoculated with the same quantity of charbon blood from the heart of a rabbit; all those fed on bread died rapidly between the twenty-second and thirty-second hours; the six fed on flesh remained perfectly healthy. (6) Three rats were kept in the same

cage; one was kept in a different compartment from the other two, and fed only on bread for six months. Each was inoculated with anthrax blood; only the one fed on bread died, the others remained in perfect health. From these experiments it may be concluded that the state of nutrition dependent on a certain diet exercises a considerable influence on the liability to become affected with anthrax. Feser concludes that the immunity of birds is not dependent upon their high internal temperature, as Pasteur supposes, but upon their alimentation.

M. Pasteur, at the sitting of the Academy of Medicine of 17th September, 1879, presented the account of his researches on the etiology of anthrax. His previous researches, which we have already presented to our readers, reduced the matter to one question—whether it is possible to detect on the surface of the soil of the locality under examination the germs of Bacteria, particularly in those numerous spots where animals affected with charbon have scattered the germs either before death or after death, especially at the place of burial. The experiments undertaken to throw light on this question, with the aid of MM. Roux and Chamberland, consisted of two distinct series. In the first an inquiry was made as to whether, when charbon blood is added to earth, the Bacillus is preserved and undergoes multiplication in the mixture, especially when the earth is watered with urine and like fluids. These experiments all gave positive results. Under these influences the bacterium multiplies in the earth; it undergoes its developmental changes, so that its germs can be detected after months of alternate dryness and moisture. The second series of experiments is decisive in another matter. The carcase of a lamb which succumbed to charbon was buried. Ten months afterwards soil was collected from the surface of the ground where the animal was buried; this was found to contain germs of Bacteria, which gave rise to charbon when introduced by inoculation into guinea-pigs. Soil collected from the deep layers gave rise to septicæmia of a special kind. M. Colin's negative results of experiments of a similar character Pasteur attributes to the difficulties which impede detection of the germs in the soil, resulting from the multiplicity of germs of various microscopic species, which occur in all natural earths. Pasteur's positive results overbalance Colin's negative conclusions, urges M. Bouley in the *Recueil de Médecine Vétérinaire*, 15th November, 1879. Also they agree very markedly with clinical observations of these diseases. They show clearly that what is true within the

laboratory is also true beyond its walls; and we do not despair of seeing M. Colin adopt M. Pasteur's views, as we did once before, when irrefutable experiments showed him that fowls may be rendered susceptible of charbon by placing them in determined conditions. From a practical point of view, the positive results of M. Pasteur and his colleagues on the etiology of charbon cannot and ought not to fail in leading to rigorous measures of sanitary police to prevent that which is now appropriately termed culture of the disease. Thus, the cutting up of carcases, except in knackers' yards, should not be allowed; for wherever it is performed it sows the soil with germs in the blood shed, and also the blood which remains in the skin or on its surface makes it a receptacle for germs. "Again, burying must be supplanted by some more complete and rapid means of destruction, as, for example, cremation of the entire carcase by means of ordinary kilns, which could be constructed and supported by general subscription. In the neighbourhood where charbon is rife these should be so near to one another as not to leave a too great distance between them. Preferably we might make use of the movable kilns suggested by M. Kuchborn, which we shall describe in some of our early *chroniques*." Wanting these means, breaking up the carcase should be preferred to simple burial, but *faute de mieux*, the remains should be buried in some substance capable of destroying organic matters in a very short time, and the superficial layers of the earth covering the graves should for some time receive special attention in the form of lime dressings, or watering with some germ-destroying liquid.

In a letter to the editor of the *Recueil* for the 20th November, 1879, MM. Arloing and Cornevin discuss the question, "Does a symptomatic charbon occur?" Feser and Bollinger's researches, they consider, have not completely resolved the question, for their inoculations, when they proved fatal, probably did so as a result of septicæmia, judging from the quantity and quality of the inoculated matter. M. Arloing undertook experiments to settle this question, associating with himself MM. Cornevin and Thomas. Splenic fever and symptomatic charbon (Chabert) show themselves side by side in that part of Haute Marne watered by the Meuse termed Bassigny; the second disease occurs, especially at the commencement and end of the winter, in young cattle from six months to four years old. It appears suddenly; the animal is dull and has no appetite, and often there is lameness, at first obscure, but later it is

found to be attributable to the development of a swelling on one of the limbs. This usually occupies the upper part of the limb, but in some cases it appears on the trunk, as in the jugular channel, the intermaxillary space, or the lumbar region. Wherever it occurs the tumour is irregular in form and without defined limits, and spreads with striking rapidity. In eight or ten hours it has attained a great size. At first homogeneous and extremely painful all over, it gradually loses its sensibility from the centre, and becomes crepitant and sonorous, like a bladder filled with air. All its parts are black and pulpy. When incisions are made they give exit in the early stages to bright coloured blood, later to a liquid resembling venous blood, and later still to a frothy serosity. Meanwhile the fever increases, the pulse is hard (90 to 110 per minute), the respiration becomes painful and accelerated, the temperature of the skin very much elevated. The patient becomes feeble, listless, and staggers in his gait. The loss of power increases until the animal falls, where he remains stretched on the ground. The skin becomes cold, convulsions set in, and the case terminates in death, generally from thirty-six to forty-eight hours after the first appearance of the symptoms. If the jugular be opened during the course of the attack it will be found that the blood is thick and black, and coagulates rapidly, and does not separate its serum from its clot sooner than healthy blood. Of course our readers will recognise this description of "black quarter." The question under discussion, therefore, is of great interest to us, for Dr. Greenfield, in his recent lectures, has reminded us that we are by no means thoroughly acquainted with the pathology of this affection and its relations to splenic apoplexy. Attempts were made to reproduce this disease by means of inoculation. The recent investigations on splenic fever had suggested the proper course to follow in the research—1. To examine minutely, under the microscope, blood from the heart and large blood-vessels, also the pulps and liquids obtained from local lesions and lymphatic glands. 2. To cultivate the diseased products, either in the organism by inoculations varying in methods of different healthy animals, or in a moist chamber, or in Pasteur's tubes, with aqueous humour or urine as a medium. "Our experiments may be grouped in five series, according to the source of the inoculation material used:—(1) From a charbon tumour before death, (2) or after death. (3) From a diseased lymphatic gland after death. (4) From the circulating blood. (5) From the blood-circulating system after death. Whatever the source of the matters

which we have examined, either at the infected locality or at Lyons, we have never been able to determine the presence of Bacteria. We only have found a more or less marked presence of corpuscles, refractive at their centres, but with dark peripheries, the nature of which we could only decide by culture or by inoculations. Besides, as we could not say absolutely that no Bacteria were present, it was necessary to prove this by inoculation or cultivation. Cultures in a moist chamber with aqueous humour and in Pasteur's tubes with acid or alkaline human urine gave no *Bacilli anthracis*. As for our inoculations, numbering now thirty-four in all, they have been made by different methods, and on animals of various races and species, in order to neutralise the chance of any deficiency in receptive power of the organism, or of the animal inoculated. Sometimes inoculation was performed by incision through the skin with a lancet, sometimes by hypodermic injection, and sometimes by injection into the veins. The animals inoculated were three young oxen, three sheep (one a cross-bred merino of Bassigny, the others of an Auvergne breed), two horses, and twenty-six rabbits and mice. All these gave negative results, not one of the animals succumbing to the effects of *Bacillus anthracis*. Hence we believe we are in a position to conclude that neither the blood nor the fluids from the swellings and the lymphatic glands of oxen affected with the disease known as 'symptomatic charbon' by Chabert contains the charbon bacterium nor its germs. We must, then, no longer consider this affection as a superficial and local indication of systemic anthrax, and we must no longer think that the tumour indicates the seat of entry of the anthrax Bacillus. In the true malignant pustule of man we always find Bacilli present in abundance. These experiments acquire the more importance, since simultaneously nineteen inoculations were made with blood from animals which, in the same neighbourhood, had died of splenic fever. These invariably led to the death of the subject. Simultaneously M. Thomas made parallel experiments with perfectly fresh fluids—in all cases negative. Having proved thus much, M. Arloing and his collaborators express a hope of some day being in a position to determine whether there is any Bacterial organism characteristic of this affection." The *Recueil* of December last gives us some further particulars with regard to the discussion which took place at the Academy des Sciences on the 4th of November between M. Colin and M. Pasteur. The former read a very long *mémoire*, "On the Persistence of Virulent Properties in Carcases and Cadaveric

Débris of Anthrax Animals." From his ten to twelve years' research on this subject result the following conclusions:

1. Virulence persists in anthrax blood after two, three, four, or five days, at most, and until this blood, having undergone decomposition, has become fetid. The rapidity of loss of virulence is proportional to the elevation of the surrounding atmosphere, and the time since the animal's death.

2. After eight days it is the exception, even under the most favorable circumstances, for virulence to remain in the carcase. In general it persists no longer than from four to five days in summer and a week in winter.

3. All products from the living animal agree in this respect. Thus, blood, lymph, serous fluids, and pulp from internal organs putrefying lose their virulence at the commencement of the putrefaction.

4. So thoroughly does removal of the virulence depend on the phenomena of putrid decomposition that all circumstances tending to promote this also hasten the loss of contagion-bearing properties.

5. Conversely, by preventing decomposition without chemical action (as by inducing cold, rigidity, for instance), virulence may be retained for a long time.

6. The charbon virus is destroyed by the action of various chemical agents, alcohol, and astringent salts, even by a temperature of boiling water. Blood simply dried in the open air or in a confined space, and at various temperatures, loses its virulence.

7. The virus is evanescent in excretory products, as dejections of anthrax patients.

Still, while stating these points so absolutely, Colin hesitates to accept a challenge from Pasteur to lay the matter before a special committee of members of the academy. He divided with his opponent once before on the question of the transmissibility of charbon to fowls, and is hardly yet prepared to again acknowledge himself in error. The arguments he adduces are all negative, and of no avail against the positive results of the experiments of M. Pasteur. The latter during the course of the discussion says, "I can without much difficulty explain the confused criticism to which my work has been subjected, since medicine and surgery are now, as it seemed to me, in a state of crisis and transition. Two currents involve them. One doctrine is becoming worn out with age, while another has just been born. The former, with still numerous partisans, is based on the belief in the spontaneous origin of transmissible diseases. The latter is

the theory of germs, of contagium vivum, with all its legitimate deductions. When I hear mentioned this birth of a charbon virus without any serious basis of proof to support it, when in our minutes I read the account of experiments on the subjects with which I deal made without precision, when I see negative results abounding in all sorts of errors brought forward in opposition to positive and demonstrated facts, I say with grief, 'Here is still an example of the methods and dogmas of the recent past,' and I feel myself encouraged to pay to your science, which I love well for its own sake as well as for its wide and beneficent applications, a new tribute of scientific efforts." The zeal of a provincial veterinary society, in acknowledgment of the valuable bearings of M. Pasteur's recent work in the advancement of veterinary science, led it, through its president, to write to the *savant* in question, offering to him the diploma of veterinarian. He accepted the offer most cordially, but the Society could do no more in the matter than write to the Société Centrale requesting co-operation. But to the more important society it seemed inadvisable that such an irregularity should be permitted even in the case of M. Pasteur, so it was resolved that the proposal could not be adopted; but to prove the absence of any personal feeling in the matter, by unanimous vote the Société Centrale de Médecine Vétérinaire elected M. Pasteur a titular member of their body. We rather wonder that, with the admirable organisation and unification of veterinary societies recently adopted in France, such an awkward contingency could arise. M. Pasteur has also recently been added to the Consulting Committee on Epizootics. His presence at the meetings of this important sanitary body will prove of advantage to his country. Also we note that the same honour has been conferred on a distinguished veterinarian, M. Boutet, of Chartres.

M. Bouley shows us how "history repeats itself" in tracing the position of the charbon question as discussed in the present day by MM. Colin and Pasteur. He recalls the discussion in 1857 on the communicability of glanders of the horse to man. *Rayer* brought the matter forward in reference to a case of glanders in man which he had under treatment, but Elliotson, a countryman of ours, had preceded him in the discovery. Medical authorities, and notably veterinary pathologists, rallied themselves in a vast phalanx, which threatened to utterly overthrow M. Rayer's single efforts. M. Barthelemey (Senior), Professor at Alfort, was their eloquent and able leader. An "enormous mass"

of negative facts was brought forward by them. The Alfort students had never become affected with glanders, though running risk in every form of inoculation from their patients and dissection subjects. However, a medical man of Charenton stated that the mortality of the students from a disease which he had hitherto considered a peculiar form of putrid fever, but the symptoms were those exhibited by M. Reynal's patient, was considerable. Here, again, a momentous question was settled by experimentation, for Urbain Leblanc inserted some pus from the human patient beneath the skin of a horse, which died from acute glanders. We can imagine this history will not be very palatable to anti-vivisectionists. The dispute might have been carried on in theoretical argumentation for years; but one scratch with a lancet, and the death of one horse, saved the lives of, *inter alios*, numbers of veterinarian students by indicating to them a source of terrible danger. During the past year careful examination of the blood and tissues of men who have died from "wool-sorters' disease" has shown the presence of *Bacillus anthracis*. The disease is taken from the skins of sheep who have died from some form of anthrax—another proof of the value of the study of comparative pathology.

ABSTRACT OF LECTURES, BY DR. W. S. GREENFIELD, Professor Superintendent of the Brown Institution, ON "RECENT INVESTIGATIONS IN THE PATHOLOGY OF INFECTIVE AND CONTAGIOUS DISEASES."

SPECIALLY REPORTED.

(*Continued from p.* 28.)

Lecture IV commenced with an enumeration of the synonyms and symptoms of the disease commonly known as "quarter evil." For these the lecturer expressed his indebtedness to Mr. Banham, M.R.C.V.S. He then commenced to discuss the question whether this disease is the same as splenic fever. It assumes two forms, one affecting the quarter, the other being of the nature of mycosis, and affecting the intestines. The disease occurs especially in young stock, is most prevalent in the early part of the summer, is more localised, seldom more than one or two animals are attacked, and its communicability by contagion is questionable. Also the *post-mortem* appearances are some-

what different, the principal being a dark-red, frothy, tenacious fluid in the subcutaneous tissue of the affected parts, also blood-exudation, resulting in a disorganised condition of the muscular tissues, which are of a dark-red colour and gangrenous. In serum from the diseased parts are few rods and spores. Very large spores, resembling those of *Bacillus anthracis*, were obtained from the heart. The spleen also contained spores, many of them with portions of their filaments still attached. Some of the fluid from the spleen was introduced by inoculation into a guinea-pig. In twenty hours paralysis of the hind extremities occurred, and, later, emphysema of the subcutaneous tissues. On autopsy the subcutaneous serum from the diseased parts was found to contain ordinary Bacteria in a free motile condition; some were also obtained from the spleen. These displayed none of the characters of the anthrax Bacillus; the blood from the heart contained neither Bacilli nor micrococci. Thus, though the clinical features of the original disease were reproduced, these differ from the results of inoculation either with anthrax or septic matter, for the conditions in this case are marked by putrefaction during life, while examination with the microscope shows *Bacterium termo*, and not *Bacillus anthracis*. This is the disease sometimes known as "emphysema infectiosum." We are not yet in a position to decide its true position in relation to splenic fever. The lecturer drew particular attention to the following observation made by him :—A white mouse was inoculated with quarter-evil matter; apparently it recovered from the immediate effects, but a week after swelling of the tail occurred, which assumed a gangrenous character, and extended to the trunk; swelling of the abdomen occurred, with tumefaction and infiltration of the abdominal walls from accumulation of an opalescent fluid. Death resulted, and on examination, a few hours after, peculiar flagellated organisms (illustrated in a diagram), were noted in the peritoneal fluid. They were actively motile, and, with their flagella, not more than ten micro-millimètres in length, with bodies balloon-shaped, changing to a more elongated form, a central (probably contractile) vacuole, with four flagella anteriorly extending from a dark spot (probably an oral aperture), and two posteriorly placed. Dr. Lewis has described fusiform organisms with a cilium at each extremity, which he observed in the blood of rats. These, however, have more numerous processes, and it was thought they may have some pathological value, especially as careful examination of other fluids of the body and of the contents of the stomach and intestines failed to disclose any organisms of a like kind which might have gained accidental entry into the peritoneal fluid.

The lecturer next passed to the *Cape horse sickness* and

Loodiana fever. It is known that splenic apoplexy affects horses, and some forms of anthrax in other animals to a certain extent resemble those in the horse. But the exact relation of these disorders to common anthrax is still *sub judice.* The Cape sickness is enzootic in Natal and Zululand, prevailing especially in hot, damp weather; it disappears during the dry season; it is somewhat generally attributed to animals feeding *on wet grass.* [Mr. Fleming supplied material with which the lecturer experimented on mice.]

The principal symptoms are great swelling of the tongue and of the throat; elevation of temperature to 105° or 108°. The disease is extremely fatal, and decomposition sets in very soon after death.

The following *post-mortem* appearances were noted:—Some bronchial catarrh and subpleural exudation (these conditions of the lungs constitute a marked and constant feature of the affection), inflammation following the course of the bronchi, Bacilli in the exuded matters, blood-vessels of the bronchi sometimes plugged with leucocytes, their submucous tissue thickened, often surrounded by inflammatory or hæmorrhagic exudative material; matter similar to this caused thickening of the pleura. It was observed that the Bacilli occur in numbers only at the seat of commencing inflammation. Some long Bacilli were found in the peritoneal fluid and in the blood. Sometimes the Bacilli seemed to be in the act of passing through the walls of the vessels in all parts; they seemed to disappear as inflammation became more marked. Thus, though they closely resemble those of splenic fever, they are distinguishable as being not so abundant, more localised, and more slender. They were cultivated to several generations (the various phases being illustrated by diagrams), but no inoculations after culture were tried. These culture forms exhibited the long slender character of the Bacillus, also they gave evidence that the organism is a true Bacillus. Spiral chains with great loops were found, but not the masses of filaments, as seen in the farcy Bacillus. It is observable that in all these cases of blood poisoning death often occurs when the lesions are practically inappreciable; in this disease in none of the organs have Bacilli been observed plugging the capillaries. Probably it is not identical with anthrax, but only allied to it; the mere presence of Bacilli is not conclusive on the matter of identity, for there are various forms of Bacilli associated with various diseases. With regard to the "Loodiana fever" the lecturer's observations have failed for want of properly preserved material. It may be either septicæmia or due to a Bacillus resembling that of anthrax. It may be noted that it occurs under conditions similar to those which originate Splenic and Cape fevers, for Loodianah is a pro-

verbially malarial place on the Sutlej, one of the originating tributaries of the Indus.

In reference to the organism figured as having occurred in a case of glanders, or rather farcy, the lecturer obtained it from one of the "farcy buds" of a man. There could be but little doubt as to the nature of his disease, for one of his fellow-horsekeepers died from acute glanders, and he himself exhibited the symptoms of farcy. The swellings on his arm contained an opaque, chyle-like fluid, containing many oil globules and minute spore-like bodies. The spores were cultivated in six cells; of these, two spoiled, while the other four were successful. In the latter, after a few hours, filaments, united into bands, in consequence of their being arranged side by side, appeared; these were looped at their extremities. A few hours later the masses were broken down and replaced by accumulations of fine granules, with only remnants of the original filaments; from these, long rods ran in various directions, which afterwards broke up into short rods or directly formed spores, the latter separating into pairs, as has been observed in the anthrax Bacillus. By following these spores through several generations they were found sometimes to break up each into four sporules. (Ewart has observed a similar breaking up of spores in anthrax Bacillus, while Toussaint describes the conversion of anthrax Bacillus spores into bulbous joints, from which sporules are formed, which are discharged, and develop into the ordinary rod-like form. These he observed during culture in the serum of a dog.)

The professor then stated his opinion that the thorough and elaborate researches of Klein on contagious pneumo-enteritis ("typhoid fever of pigs") have given us the first and, at present, the only admissible instance besides anthrax in which Bacteria have been proved to be actual contagia (see 1877, 'Report of the Medical Officer of the Local Government Board'). Though Klein considers this disease analogous with anthrax, it must be considered as more closely allied to acute specific fevers; the Bacillus closely resembles that of anthrax, but is smaller. The experiments of Klebs and Tommasi on the nature of the specific agent producing malarial fever may be found in *Klebs' Archiv*. They consisted in filtering the air of a malarial district, and thus obtaining organised particles; some were also obtained from the soil. With these they inoculated rabbits, and obtained their Bacillus malariæ (as figured in diagram). In rabbits inoculated with liquid containing Bacilli, procured from the soil by culture, a fever was produced of the typically intermittent character, the temperature rising to about 41·8° C. (complicated experiments were made to ascertain whether the materies morbi exists in the liquid or in the solid portion of the inoculated matter; thus it was

found that the material filtered, when introduced in four times the quantity only gave rise to slight fever). In all the animals inoculated with the mixed liquid and solid matter, swelling of the spleen with the peculiar production of pigment was found. (A summary of these researches has been published in the *Practitioner*.) From these researches two questions arise—Was the diseased condition identical with malarial poisoning? and, Are we justified in concluding that the organism described is specific? The observers answer the former question in the affirmative, for the disease, like malarial fever, has characteristic intermissions of temperature, but their temperature charts exhibit variation only ranging $1\frac{1}{2}^{\circ}$ C.—2° C., and the liability to accidental temperature variations in rabbits has already been noted. Also many of their patients died in thirty-six hours, or even in a shorter time, and therefore hardly gave any time for observations. Also they note the characteristic triangular form of the enlarged spleen, but this is often observed in chronic congestion, and the lecturer has remarked it in anthrax. With regard to the peculiar production of pigment, it is too complicated a matter to be discussed here. The only difference between *Bacillus anthracis* and *Bacillus malariæ* (Klebs and Tommasi) is that the spores are smaller. We cannot, therefore, allow the specificity of this malarial Bacillus, though undoubtedly the organisms produce the disease described in rabbits.

Professor Greenfield then regretted that want of time prevented him from dealing with many important aspects of his subject. He drew attention to the observations of Messrs. Downes and Blunt on the general nature of Bacteria and their life conditions; of Mr. Watson Cheyne on the occurrence of organisms beneath antiseptic dressings, and also in the tissues of healthy animals; of Klebs on syphilitic organisms (illustrated by diagrams); and several other recent contributions to our knowledge of these minute organisms. He then gave as a *résumé* of his conclusions—

1. That while studying Bacteria in relation to disease we must have regard to the life-history of Bacteria in general.

2. That we must allow that Bacteria are polymorphic, each individual being capable of variation in form in adaptation to surrounding conditions, &c.

3. That forms of Bacteria may be isomorphous, pathogenic forms, for instance, resembling innocent, or other disease-producing organisms.

4. That we are not in a position, by simple inspection, to distinguish disease-producing Bacteria from forms compatible with health. Also the potency of some Bacteria is acquired as a result of cultivation. Under certain conditions they acquire

the power of setting up changes in the economy constituting disease; this property they may transmit to their progeny.

3. That pathogenic Bacteria may be considered under three classes:

(*a*) Bacteria of animal decomposition; the activity of these varies in intensity at the various phases of their development.

(*b*) Bacteria of vegetable decomposition; perhaps *Bacillus anthracis* is one of these.

(*c*) Bacteria which are true contagia, as the form producing pneumo-enteritis. There is evidence which proves that some other forms are carriers of contagion, and of them some may act simultaneously with the virus which they convey.

6. That there are various forms of blood disease due to Bacteria. The organisms act mechanically or directly on the blood, causing cohesion of blood-corpuscles and thrombosis; also they may act directly as irritants on connective-tissue corpuscles and epithelial cells.

On the evening of Tuesday, 23rd December, Dr. GREENFIELD exhibited a numerous and very excellent series of microscopic preparations, illustrating the course of lectures just delivered by him, in a highly satisfactory manner. The lesions of Cape fever, anthrax, septicæmia, and pyæmia, together with the Bacteria of these diseases, were well shown by means of stained specimens. The most choice objects were on view in the Lecture Theatre. Here we particularly remarked the flagellated organisms mentioned in the fourth lecture in connection with "quarter evil," most of the flagella being perceptible on careful scrutiny. Also the "Bacillus from a farcy bud," of which there were several slides. *Bacillus anthracis* under cultivation was most attractive. This attendance was numerous and highly appreciative, and the intellectual treat was not a little enhanced by the courteous manner in which the professor explained the various objects.

ON PLANTS IN RELATION TO ANIMALS.

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

(*Continued from p.* 32.)

WE shall now conclude our notice of the order Ranunculaceæ, with the mention of facts connected with the following genera:

1. *Chelidonium.* Celandine.
2. *Corydalis.* Fumitory, a form of,
3. *Fumaria.* Fumitory, true.

1. *Chelidonium majus.*

The first of these is the well-known Celandine of the garden and about the homestead, and is one of those herbs known to most dwellers in the country, from the fact that the bright yellow juice which exudes from all parts of the plant when broken is employed as the favourite remedy for warts and other small excrescences. It is also used as an application to remove dimness of vision, which latter effect was doubtless caused in much the same way as that derived from preparations of opium, which is usually the oculist's remedy for opacity of the cornea, while the countryman's cure is the juice of the Celandine.

At one time it was a favourite medicine in jaundice. Dr. Johnston says of it: "The juice is very acrid and pungent, and acts as a purgative when given internally. It was highly commended by some of the old writers as a remedy in jaundice and other diseases of the liver; but its use in those disorders was probably chiefly due to its yellow colour, which in the days of signature medicine was supposed to indicate its value in such complaints. In later times it has been employed as an expectorant, given in very small quantity in wine or water. The dry root and an infusion of the same part are recommended for a like purpose, but the virtues of the plant are probably exaggerated, and its administration in quantity rather dangerous.

"In old times it was a favourite application to warts, and to remove opaque spots from the cornea, and was likewise applied to various cutaneous eruptions. For this purpose the juice was collected and made up into small cakes with honey, or simply dried and moistened with honey and water when used. The active principle of the Celandine is soluble in both water and alcohol; it is not volatile, though the herb loses much of its acridity in drying.

"This must not be confounded with the lesser Celandine of the herbalists, which was pilewort—*Ranunculus ficaria*—whose bright yellow many-leaved flowers ornament the hedge banks and moist places in the early spring, and which was applied by our forefathers as a topical remedy in hæmorrhoidal disease, but probably owed its reputation merely to the form of the tuberous root, as it has only the biting and pungent qualities of most Ranunculaceæ."*

The doctrine of signatures which has been so often dwelt on in these notes is one of peculiar interest, and although plants were on this principle often employed in the most empirical manner, yet there is reason to conclude that

* 'Useful Plants of Great Britain,' p. 17.

the uses of plants were often discovered, though by means we should now consider not altogether philosophical.

It is curious to note that the Chelidonium is found about the homesteads of North America, having been there introduced as with us. This plant was probably brought to us from Asia, but has doubtless been taken to the States from England. The common name of *Celandine*, given to our only species, belongs truly to the *Ranunculus ficaria*, in which we have another plant renowned for its uses by signature.

The Fumariaceæ are classed as a suborder, consisting of two genera, which may be described as follow:

2. Corydalis.—*Corydal or exotic Fumitories.*—Flowers spurred; fruit a narrow pod containing several seeds.
3. Fumaria.—*Fumitory, or Snakeherb.*—Flowers spurred. Fruit a small, roundish, green nut, with a single seed.

2. These are well known for three forms:

Corydalis solida, bulbous, corydal.
„ *lutea*, yellow ditto.
„ *claviculata*, white, climbing, ditto.

They are found only in gardens or about garden walls; are perfectly innocuous herbs. They seem to have been introduced for their curiously-shaped and prettily-coloured flowers; but in these days of carpet bedding they will only find a place in the garden wilderness.

3. Of these Dr. Syme has figured no less than seven forms, namely, *Fumaria paliidiflora, Boræi, confusa, muralis, micrantha, officinalis*, and *Vaillantii*. We, however, agree with Bentham, who classes them all under the head of *F. officinalis*, or common Fumitory, from whom we quote the following:

"Common in cultivated and waste places in Europe and Central Asia, disappearing at high northern latitudes, but carried out as a weed of cultivation to many parts of the globe. Abundant in England and southern Scotland, but decreases much in the north. *Fl. all summer and autumn.* It varies much in the form of the leaf segments, in the size and colour of the flowers (white or red), in the size and shape of the sepals, and in the precise shape of the nuts; and several distinct species are generally admitted, but they run so much one into another that there is every probability of their being mere varieties."*

* 'Handbook of the British Flora,' p. 75.

All the forms that we meet with appear to be wholly agrarian, growing in every bit of cultivated ground, whether in the field or in the garden; it is, therefore, highly probable that they have been introduced with foreign seeds, and, therefore, that they may partake of those slight variations which they possess from being natives of different countries and climates.

The following notes convey much that is interesting with regard to the genus:

Common Fumitory, Common Earth Smoke.

In Kent this is often called wax dolls, from the doll-like appearance of the little flowers. This plant is found more or less wherever corn is cultivated. Though a persevering and troublesome weed, it is one the appearance of which every farmer may regard as an indication of good, deep, and rich land—a circumstance not unnoticed by England's greatest poet when speaking of the rich but unproductive soil of France, laid bare and left uncultivated by the horrors of war. He makes the Duke of Burgundy, in the play of "King Henry V," to say:

"Why that the naked, poor, and mangled peace,
Dear nurse of arts, plenties, and joyful births,
Should not, in this best garden of the world,
Our fertile France, put up her lovely visage?
Alas! she hath from France too long been chased,
And all her husbandry doth lie on heaps,
Corrupting in its own fertility.
Her vine, the merry cheerer of the heart,
Unpruned dies; her hedges even pleach'd,
Like prisoners wildly overgrown with hair,
Put forth disordered twigs; her fallow leas
The darnel, hemlock, and rank *fumitory*,
Doth root upon."

And, again, in "King Lear," Cordelia says:

"Alack! 'tis he; why, he was met even now,
As mad as the vex'd sea,—singing aloud,
Crowned with rank fumiter and furrow weeds,
With harlocks, hemlock, nettles, cuckoo-flowers,
Darnel and all the idle weeds that grow
In our sustaining corn."

The expressed juice of this plant was at one time a favourite remedy with herbalists for skin diseases, and had a reputation as an anti-scorbutic.

Mr. T. J. Pettigew has secured an old medical manuscript from the Royal Library at Stockholm, which is traced back to the fourteenth century, and is supposed to be a poetical "system of health," composed by the celebrated

physician John of Milan, in which is an account of the manifold virtues of the fumitory, commencing thus:

"*Furmiter* is erbe, I say,
Yt springyth April et in May,
In feld, in town, in yard, et gate,
Where lond is fat and good in state,
Dun red is his flour.
Ye erbe smoke lik in colour,
Azeyn feuerys cotidian,
And azeyn feurys tertyen,
And azeyn feurys quarteyn,
It is medicyn soueryn."

Burnett, in his 'Anatomy of Melancholy,' speaks of it as a plant "not to be omitted by those who are misaffected with melancholy, because it will much help and ease the spleen." Sir John Hill, in his 'Herbal,' recommends the leaves of the fumitory to be smoked as a remedy "for disorders of the head;' and in more modern days Dr. Cullen, who paid great attention to the qualities of our native plants, recommended it to be used in diseases of the liver, and says—"its remarkable virtues, however, are those of clearing the skin of many disorders."

Since his day the use of the fumitory in medicine has been generally abandoned, lingering only among the "simples" of the herbalist in this country, and in the Japanese Pharmacopœia, if there be one. Clare, one of our old pastoral poets, alludes to its use as a cosmetic thus:—

"And *Fumitory*, too, a name
Which superstition holds to fame,
Whose red and purple-mottled flowers
Are cropped by maids in weeding hours,
To boil in water, milk, and whey,
For washes on a holiday;
To make their beauty fair and sleek,
And scare the tan from summer's cheek;
And oft the dame will feel inclined,
As childhood's memory comes to mind,
To turn her hook away, and spare
The blooms it loved to gather there."

Since that time other and, perhaps, more injurious applications have taken the place of this herb in the mysteries of the toilet, for we can scarcely believe that the words of old John Ray the naturalist would be better received now by the votaries of fashion than they were in his own day, when he said—"No better cosmetics than a strict temperance and purity, modesty, and humility, a gracious temper and calmness of spirit; no true beauty without the signatures of these graces in the very countenance."

The use of fumitory as a cosmetic was doubtless founded upon the doctrine of signatures. The smoky hue of the plant was supposed to indicate a disposition to get rid of dulness, and hence the adoption of fumitory as a remedy for spleen and as a clearer of the countenance.

The seeds of the fumitory very unexpectedly yielded to us some curious information. We had a crop of early Warwick peas, which was so visited by the turtle dove—*Calumba turtur*—that it was deemed expedient to have the birds shot, as it was thought that otherwise the pea crop would grievously suffer. In this dilemma we deemed it advisable to have the crops and gizzards carefully examined, when lo, and behold, instead of our finding them full of peas, as was expected they would be, *not a single pea was found in a dozen of them; on the contrary, they were all full of the seeds of different forms of fumitory unmixed with any other food.*

We were very much interested in this discovery, and more especially when we had ascertained from counting that these weed seeds were found in some birds to be over 800. Let no one therefore, in future, glory in the good they do in killing what they have ever deemed the pea-eating dove, for though the dove is by no means bad food, it may be well to consider whether the beauty of the bird, and the good it does, ought not to entitle it to protection.

PRACTICAL HINTS ON STABLE MANAGEMENT IN INDIA.

A Second Edition, revised and enlarged, of a Lecture written by J. B. W. Skoulding, Veterinary Surgeon First Class, Royal Horse Artillery, the prototype having been written and delivered by him when in charge of B. F. R. H. A. at Campbellpore, in November, 1875. Meerut, 1878.

Introductory Remarks.

The majority of those persons who interest themselves in the welfare of the horse will agree that stable management is a subject to every detail of which all who may be trusted with the care of horses should give the strictest attention, and with which owners should make themselves thoroughly acquainted, since it plays such an important part in preserving the health, and

thereby ensuring the efficiency, of those useful and willing labourers for man.

The wild horse.—Many quote the wild horse, or, as they designate him, the horse in a state of nature, as the most to be envied, and as the healthiest of the equine race; with these hypothetical assertions I venture to differ, for imagine that wild horses, in common with those tamed, have their full share of discomfort, lameness, deformity, and disease, and, accepting the coarse, under-bred Waler as the specimen or sample of the untamed class, with which we are most familiar, should not be surprised to find the home-bred animal to be the superior of the two in every particular, and maintain that the life of a horse in a state of domestication, if he be well tended and judiciously managed, will be as enjoyable and his health as perfect as the health of any member of the animal world.

Use of the domestic horse.—When we reflect on the number of individuals who live in constant dependence on the horse, some to keep them in health, others for their amusement, while very many are still further indebted to him, he being the actual bread winner for their families and themselves, and bearing in mind also that without him and the rest of his species our armies would become comparatively useless, it should stimulate one and all who have charge of horses, either directly or indirectly, to exert themselves to the utmost to promote the welfare of such invaluable and profitable animals, especially as they are known to be, when stabled, so entirely dependent on their attendants and masters for every necessary and comfort of life.

Health essential.—The prime essential for the maintenance of life and for the preservation of health in man are equally necessary for the well-being of animals; they comprise—pure air, cleanliness, good food, pure water, warmth, and exercise; and the provision of these principles individually with a judicious combination of them as a whole will be found to be of material benefit to the horses or other stock under our care, and to constitute the acme of stable management.

A. *Pure air—ventilation.*—In bringing these requisitions to notice I shall commence with the first enumerated, "pure air."

The numerous contrivances for providing this most important requisite for the preservation of life and health are well known, and belong to the art of ventilation.

The supply of air in every stable should range from 2000 to 4000 cubic feet per horse, for a deficiency in this particular is one of the most formidable of the foes to successful stable management, but at the same time the ingress of it to the building should be perfectly under control.

Plan of stables.—In England the plan on which the majority

of stables are built ensures this, but in this country it is usual to erect ranges of stabling for troop horses open on both sides, through which the wind rushes without let or hindrance; and in addition to this mischievous error we find these buildings, as a rule, facing to the east and to the west with each side and end entirely unprotected. Private stables also usually have an eastern or a northern aspect, but these are generally provided with shamps or chicks, wherewith to check any undue influx of winds.

Plan of stables—evil effects.—Building stables on this erroneous plan, coupled with the injudicious method of ventilation resulting therefrom, are, in my opinion, active agents in bringing to maturity those outbreaks amongst horses of the virulent type of fevers met with in India; for daily experience proves that no great number of animals can possibly preserve their health if constantly exposed to sudden changes of temperature, accompanied by the action of a draught, as the occupants of such stables necessarily are whenever a wind may arise. It appears to me that horses properly clothed and cared for would keep their health much better if in the open air during the prevalence of a cold wind than when stabled in such buildings; for, though it is true they would be more fully exposed to all changes of weather, still, unless picketed under trees, they would escape the draughts to which they are subjected in this class of building.

Action of cold.—It is a well-known fact that while a certain degree of cold acts as a tonic, and is exhilarating to the system, an excess of that agent, if its action be long continued, especially when in the form of a draught, becomes a most powerful and dangerous depressant, lowering the vital energies to a fearful extent, and by checking the action of that vast and important organ in the economy of life, "the skin," it deranges the working of the agents of the circulatory and digestive systems, gives rise to morbid formation in the thoracic and abdominal viscera, and paves the way for attacks of those dire diseases which cause such havoc by death at certain periods of the year amongst animals in this as well as in other parts of the globe.

Double stables.—A knowledge of this induces me to point out that stables, if double, *i.e.* open, and with stalls or standing places for horses on both sides, should most certainly be located on high ground, on a gravelly soil if possible, and in such a position as to secure to them a southern and northern aspect; they should be lofty and spacious, having thatched roofs, with very deep verandahs, running the entire length, on each side of, and round the ends of the buildings.

These verandahs, and the roof of the stable, should be sup-

ported on iron pillars, by means of which the stables would be rendered less draughty, for the circular iron pillar would offer a more limited surface to oppose any gust of wind that might perchance gain entrance to the stable, and thus the piercing draughts occasioned by the square piles of bricks on which the present erections are supported would be avoided. With this object still in view, viz., the annihilation of the draughts, each opening into the verandahs should be furnished with a purdah, made with a reed or cane framework, and this covered with tât or sacking, since this article will be found far more durable, and infinitely less cumbersome, than the ordinary shamp of matting and bamboo; nor is it so liable to fall on and frighten a horse when the animal may be taken from or brought into the stable.

In hanging these purdahs a small space should be left between the upper part of the purdah and the edge of the verandah roof, to allow the passage of a certain volume of air, and they should be dropped, as a rule, only on the windward side and end of the building, leaving one side of the stable generally open.

Ridge ventilation with movable louvre boards, should be attached to the roof of the stables, and with these aids the ingress of the air could be regulated, and draughts of either hot, cold, or damp winds avoided, while the spacious verandahs would protect the inmates from the danger and discomfort of prolonged exposure to the action of the sun or rain.

Single stables.—The above precaution effectively carried out in double stables would, I affirm, sensibly diminish the annual mortality amongst the horses in this country; but I consider stables with stands on one side only, if properly situated, of ample height and width, having a southern aspect, ventilated and protected in the manner already described, with the addition of windows, or air-holes, cut high in the walls over each horse, would be far more healthy than those built on the double plan.

Loose boxes.—It would be advisable to allow each quiet troop horse a roomy loose box to live in, instead of tethering him by the head and heels, as troopers, and very many private horses, too, unnecessarily are at the present time; and in this country, where there is usually ample space to build upon, the cost of these boxes would be very little, if any, in excess of the outlay for the ordinary stables, while the comfort, at least, of the inmates would be secured.

Want of protection.—I have for many years been deeply impressed with, and astonished at, the fact that although in India man's ingenuity is highly taxed, and all his skill brought to bear, to invent and carry into effect schemes and methods for the protection of man and horse against the ills which may possibly

arise through the agency of the intense heat of the climate during those months of the year known as the hot season, yet, strange to relate, those maladies which will inevitably follow sooner or later from undue exposure to cold are either treated as matters devoid of import, or are ignored as completely as if this climate were invariable, and there were no cold season to succeed the hot weather.

Change of temperature.—Nor does it seem to be borne in mind that the influence of the extreme heat will have been sufficient to render those within its range more susceptible to the change of temperature when the cold weather sets in; while all efforts to bring these effects effectively to notice meet with a sure rebuff. Surely this must be an error fraught with danger to all, for one would imagine the climate of India to be, from its changeability, such as would demand extra care on our parts to protect ourselves and our animals against the baneful effects of cold chills, even during the hot season, when the changes of temperature are so marked and sudden, that although an individual may have been perspiring profusely, and on the verge of suffocation through the intensity of the heat, he may within a very short lapse of time be shivering from the effects of a northerly, or under the deadly blast of that generally acknowledged enemy of man and beast, the "east wind." I say "generally acknowledged," because some people profess to believe the action of an easterly wind to have a highly beneficial effect on horses exposed to it in this country. This, however, is a mischievous fallacy, for the baneful influence such a wind exercises over the health of horses is so marked that during my service I have been able to tell from which quarter the wind came by the character of the sores affecting patients in hospital, since, if from the east, these sores would be torpid and unhealthy, while the advent of a westerly breeze seemed to revivify and stimulate the most obstinate to healthy action; nor did the phenomenon escape the notice of others, for the salootrie invariably replied to the inquiry, "How are the sores this morning?" "Doing well, sir, of course, as of a necessity they should, the wind being in the west;" or *vice versâ*. And with this fresh in my memory I write to expose so dangerous and foolish a dogma as faith in the virtue of the east wind certainly is.

(*To be continued.*)

LIFE PHENOMENA: SOME NOTES ON NITELLA, &c.

By W. Hastie Kennedy, M.R.C.V.S., Wrexham.

If we would examine the phenomena occurring amongst the very low forms of animal and vegetable life, our ideas and views concerning such deeply interesting matter would be materially enriched thereby. We have in such observations a royal road, which appears to be leading on and on, and which, in the not far distant future, bids fair to become of vital importance in aiding us to arrive at some very practical solution of what at present remains a deeply profound mystery—the mystery of the *cause,* which produces, and regulates, and controls vital phenomena. By no means should we be blindly dragged—as I fear too many are—into too implicit confidence in accepting so-called "modern views" of the cause of these life phenomena—views these which would refer all vital phenomena, whether of animal or vegetable life, simply and alone, to an unintelligent and unconscious force agency—to a force agency which has correlations, which is identical with the ordinary physical and chemical forces of our universe—to a force agency which is incompetent to guide and govern itself! which cannot determine results for itself! which cannot determine conscientious and intelligent results! for it itself is not possessed of these qualities! and which would refer such complicated phenomena to some stray chance, or to some blind and undiscerning fatality!! such would be solutions; but surely perfectly unintelligible solutions of the vital question, which, with much vaunted enthusiasm, we find held up to us as truthful facts and realities, would, I feel surely confident, if we would but lay hold of opportunities for ourselves—if we would but deduce observations and opinions for ourselves—be accepted by us as simply resolving themselves into nothing of any greater importance than a heaped mass of extravagant, unfounded views, and conjectural hypotheses, which may suit for the time the assumptive proclivities and Utopian conceptions of their certain philosophic propounders, but which, in so far as modern research—in so far as truthful fact—observation, and experiment has yet favoured us—can be seen by the unbiassed scientist to have no real firm basis of ground whereon to support such conclusions. They would have you reject a truism, that which truthful scientific observation can alone give you, and they would have you

blindly receive in its stead nothing of any greater importance than an exhumed Lucretian fable—a fabulous hypothesis, which itself once lay buried in the miserable dust of oblivion, as a fallen star, but which now has arisen again, clothed in far greater grandeur and attractiveness, and offered for acceptance as a "modern treasure-trove," but surely a doctrine which tells you "that the mechanical shock of atoms has been the all-sufficient cause of all things," and which asks you to accept "that only dead, lifeless, inorganic atoms, and blind unconscious atomic forces have been and are concerned in the formation of all things living as well as dead," and that would reject a determining cause or power to determine results, believing rather that unconscious force and unconscious atoms have determined their own destiny, and have made, and moulded, and fashioned themselves, and that they have brought themselves into existence, and have built up by chance circumstances, organic nature in all its ever-resplendent grandeur, with all its order and arrangement, with all its unity of plan and purpose, with all its adaptation of means to end—I say a doctrine which would ask acceptance to such imaginative statements as these, must be one which every student of nature should reject implicitly as not by any means commendable to his views, as a truthful *exposé* of the scientific facts of our time. Ordinary chemical or physical force never surely created life or imparted life. Life surely never emanated from inorganic stuff. Organisms were surely never generated out of chemical materials by the simple action of physical force. Life surely never came into existence, under any circumstances whatever, unless from pre-existing life; and how any one can ignore or doubt a needed agency or power to determine that results should occur in the precise way that they do occur in organic nature apart from and superior to the ordinary correlative physical and chemical force agencies, I am at a loss to know. These assuredly by themselves cannot have the power to do this, for they themselves are dead. They themselves are lifeless. They are themselves governed, and controlled, and directed, and by some power and by some agency surely of much superior worth to themselves, and which can have no co-relations with themselves.

Those who may not have had the opportunity of directing their attention to Professor Allman's address, which he delivered at the August meeting of the British Association, may permit me here to direct their attention to so very able and exhaustive an address; it bears largely upon the subject matter of this paper, and will be found very fully given in

the August 25th number of *Nature*. To those interested in biological research his remarks must be of the first interest, for they give so clear and so eminently modernised an *exposé* of those more recent remarkable observations which have been deduced from the study of protoplasm, as seen in the animal and vegetable kingdoms; and to those who have not as yet taken much interest in these life observations, may I be permitted to state I feel surely confident his observations, if read, would stir up a deep incentive in their minds to become fully acquainted with the remarkable literature of so interesting a subject. The phenomena which may be here noticed lie, undoubtedly, at the very root basis of all biological research, and to be able to observe these phenomena, and to make their intimate acquaintance, will amply repay any time spent in so doing, and will give such healthful and lucid views of "what constitutes life," which it would be otherwise, by any other means at our hands, impossible to obtain.

Professor Allman, in the course of his remarks, refers to Nitella, among others, as a lower vegetable form, where some rather interesting life phenomena may be observed; the whole history of cell life may be observed here, nutrition, and growth, and movement, and reproduction, and those other characteristic life changes which are always present where life is present, may all be observed here. These may not always—indeed, rarely are—to be observed in animal or vegetable cell life. The phenomena may be present, but not always visible to the eye. Here, in Nitella, they may all be observed, and with much marked clearness, showing, simply, yet very decidedly, how needful it is that the animal and vegetable kingdoms alike should both equally demand our careful and earnest study.

Nitella belongs to the Characeæ group of plants—the Chara order; it is a simple, flowerless, leafless water plant, a frequenter of our ponds and running streams, composed of a distinct stem, branching off in a whorled manner, sending off at definite points probably eight or ten branches, more or less, these different branchings themselves repeating or not repeating this same process. Nitella is thus a very simple plant, consisting simply of a distinct stem, which gives off similar stem-like branches itself. The stem stalks of Nitella, if examined under a $\frac{1}{4}$ microscopic objective, will be found to be composed simply of very large, long, tubular-looking cells, arranged singly, not placed side by side, but one following the other, a concave end of one cell meeting a convex end of another. It encloses within its cellulose wall certain

bodies, these all circulating and moving with much freeness in a transparent and colourless liquid. The cellulose wall has entering into its composition, on its inner side, a number of small, oval-looking cells, some more ovally lengthened than others, closely arranged side by side; and if I am correct in this observation you may detect other larger, irregular sided, cell-looking bodies, these apparently interspersed on the outer side of the wall. The cell wall has a green appearance (due to its contained chlorophyll), and is perfectly transparent, for you may see, and with much marked distinctness, circulating within, the cell contents as they are propelled along by the liquid moving protoplasm. The protoplasm in Nitella is not free, it does not emit pseudopodia, but is closely confined within its resisting cell wall, composed of cellulose, completely shutting it up from all direct contact with any external medium. The firm resisting cellulose membrane or wall is a secretion from the active protoplasmic mass within, and may contain a more or less interspersion of limy or siliceous matter; but this latter condition is more particularly noticeable in Chara than in Nitella. Having now noticed the cellulose wall, permit me to direct attention to the contents of the cell, as seen under a $\frac{1}{4}$ objective. These will be found to consist of large oil globules, free chlorophyll masses, presenting a cell-like appearance, smaller protoplasmic cell masses, and other granular and solid looking matter, each and all circulating with remarkable freeness; the circulating matter of one cell does not pass into another, but is confined to that in which it originated. This circulatory process is not due to any inherent property resident within these bodies themselves, but to the active movements of the transparent, and at present scarcely observable, liquid living protoplasm which fills each cell, and which itself carries these bodies with its current. The circulatory movements (although these may not be seen with easy distinctness), sometimes appear to be doubly performed, you may observe an upper and a lower current, to enable you to detect this, careful observation is required; each current in the main, however, is seen, running up one side of the cell and returning by the opposite side; the central portion is not wholly without movement, but it is scarcely observable here; and some of the masses occasionally may be seen to pass from side to side in their course from one end of the cell to the other. This circulatory process normally is performed and carried out with the utmost regularity, but bring some abnormal circumstance into existence, cause the dissecting needle to

press firmly upon the cell, and the current, which was flowing so actively and with such regularity, will at once be partially, or it may be wholly, suspended; remove now again the needle, and gradually the current will be seen to resume its former activity, and circulate freely; this mechanical pressure does not produce any irritable movements. Bring now the scalpel to bear upon it, cut the delicate cell into two halves, and you will have an observation brought to view of exceeding worth and value—an observation which will enable you to fully realise and see this fact (which has before been alluded to), that the circulatory phenomena in Nitella is in reality and without doubt effected alone by the active transparent protoplasm, although its movements may not have been before demonstrable to you by your microscope. To the uninitiated prior to this division of the cell, the cell masses must have been themselves accepted as the only moving contents; now, however, these masses or cell bodies will be noticed to be stationary, and devoid of active life movement, while the liquid mass of living protoplasm is distinctly to be observed as active and possessing movement.

Immediately upon cutting through the cell a sudden rush of the protoplasm will be observed, and along with it a goodly host of the cell masses and granular contents. These latter are jutted or shot out to a tolerably good distance, whilst the transparent, glairy, tenacious fluid, appearing absolutely homogeneous and entirely devoid of structure—the protoplasm—will be found more generally encircling and protruding a short distance from the cut surface. Freed from its cellulose imprisonment we might naturally expect an extensive rush and protrusion, but this is not so; only some small portion of what the cell must contain may be seen to be protruded, and in some instances I find you may only get the protrusion from the one cut surface, the protrusion probably coming away from the most heavily charged portion. The protoplasm gushes out with active, jerky movements, flows in rather a broad stream, and presents a slightly rippled surface; these irritable, rippling, jerky movements may continue for the space of one minute, less or more, and then they cease. The filmy-looking mass becomes now quite stationary, and takes on a coagulated appearance. Coagulation may set in almost immediately on protrusion in some instances. The other escaped bodies consist of large circular masses of protoplasm, and other smaller circular portions of the same. These showed no signs of movement. The chlorophyll masses are to be seen

very abundantly. These are masses of protoplasm, permeated by a colouring matter, which under the influence of light presents a green appearance. These chlorophyll cells, immediately on gaining their exit, become changed in appearance. You may detect very numerous alterations in shape which these cell masses have assumed. Some have jutted-out processes; some retain their circular appearance; others lengthen considerably; others, again, remain circular, and shoot out several very long, delicate, filmy processes; others may unite; and others, again, may lose entirely their circular appearance, and all their contents may be seen to be thrown out into one long fibre-looking process, and several of these green chlorophyll cells become transformed into complete oil globules. Very many of them showed a marked similarity to the multi- or bi-polar nerve cells, whose nucleus was absent. Oil globules are also to be seen particularly numerous, and several of these exceedingly large. The majority, immediately upon gaining their exit, take on a roughened, shaggy, dark appearance, and lose their characteristic brightness. They were not noticed to possess this appearance during their confined circulation, and when a drop of water was placed upon the slide this appearance quickly disappeared, and the distinct oil globule again came into view. There were numerous other granular-looking particles noticed, both during circulation and after division of the cell wall. Neither the large globular cell masses of protoplasm nor the smaller portions after their exit seemed to alter their form or position in the least, or evince the slightest signs of movement.

Similar observations to these may be noticed in numerous other plant forms, in Chara, in Vallisneria, in Anacharis, and in the hairs of certain other plants—notably in the hairs from the flower of *Tradescantia virginica*, a very common garden plant. The movements of the protoplasm may be noticed here to very great advantage, and the nucleus of the large cells composing these hairs may also be noticed. And in advanced stages of the cell's existence, where the cell is not now filled with protoplasm, but where only a small quantity is seen to exist, you may notice that several filmy, fibrinous-looking bands of protoplasm proceed from the nucleus here to different parts of the cell wall. The circulatory fluid and contents traversing these routes of protoplasm in a variety of directions, and all, as a rule, tending towards the nucleus, in whatever part of the cell this may be placed. This, again, is a very beautiful and instructive observation. We may thus, you see, obtain

illustrations of life from even such lowly conditions as these, without it being deemed needful or at all necessary to refer to those higher and more complicated conditions where states of consciousness, and intellect, and reason reign supreme; and we may find even here ample sufficiency of ground whereby we may support ourselves against the current, and, to the minds of some, the seemingly fascinating opinions of "modern thought."

There is a something intricate and grand in all life phenomena, and, withal, there is a "something" in such phenomena which has baffled the wisdom and conceptions of all bygone ages, and which still remains enshrouded with the profoundest mystery. The question still remains unanswered. What is the cause? What is it that could give to that first germ—that nucule of Nitella—which was to reproduce its exact simile, the power to commence its first life activity, and to do so according to a fixed and definite plan? It must have been directed and guided in this; it must surely have been controlled and regulated in these activities, or we could never expect to get produced the exact simile. There surely must be no chance agency at work here! What is it, then, that commences and causes this process to proceed thus, and to proceed thus according to a determined plan, and for a definite purpose, and for the obtainment of definitely defined results? The process must be carefully, continuously, and cautiously maintained, or our exact required simile would not be produced. And what is the cause of all this? Must it still be chance? Or will we give the benefit of the doubt to some blind physical or chemical force to accomplish it all thus? Or must there be a force or power at work, superior to and apart from these? which could thus guide, and control, and govern for the precise obtainment of precise and definite ends? The nucule, you know, must develop into the full cell, perfect in size, perfect in conditions, perfect in construction, and perfect in appearance; it must have a similar circulatory phenomenon to that of the parent cell enclosed within a similar delicate cellulose wall. No other conditions but these can be accepted. Then cell after cell must be further produced, placed each in their proper situations, and each and all possessing the same required properties. One cell must only produce one cell for a certain limited time; then, at a definite spot, a whorl of cells must be produced, all proceeding from one cell-stem, which, previous to this, had only produced one cell, but which now is caused to produce a whorl. What could cause this change? These cell-

forming stems must continue on their course, following the example of their parent cell. They must continue on singly for a time, and then change, and must now produce a whorl of cells; and so on, repeating and repeating, until a complete specimen of Nitella is to view, suiting exactly and precisely the simile of its parent producer. And what is it that has thus arranged and brought about this exceedingly well-planned and perfectly carried-out process? and what is it that can always, without any exception whatever, cause the germ or nucule of Nitella to always produce Nitella, and no other plant form. There must surely be a something superior and above mere blind physical or chemical force, guiding, and controlling, and directing the carrying out of this definite plan and purpose. It may appear a very simple phenomenon, to watch and notice the egg development of some lower animal organism, and the egg development of a nematode worm may be accepted as a very familiar example. You may well say here that it is apparently nothing more than a blind chance aggregation of molecule to molecule, and granule to granule, that initiates the commencement process of this simple development. To the naked eye this may appear so, but there is more than this necessary to enable the senses to explain such simple and yet complicated phenomena; there is more than this surely necessary to satisfy the senses that such is a correct observation. There is this seemingly heedless chance aggregation of particle to particle. Then the careful accumulation still further of these, then the aggregation and development of a delicate external filmy cell or egg membrane, then the further advancement of these existent conditions, and all those other important necessary conditions which must necessarily exist until the egg development is completed. Then the seemingly heedless change in form, and position, and character of the granular contents within. Granule here, granule there, some required here, others there; then the change of these into cell elements; then the taking of these latter to themselves of certain defined characters and certain defined functions; then the placing and arranging of these in their proper position for definite ends, and for the further development of the different component parts of the embryo organism. And then, and lastly, the further increase and development of all these varied processes to all complete maturity. I have, as will be seen, casually hurried over these points, but, I say again, that even in these lowly organisms there are life phenomena which themselves require more than a heedless chance of aggregation to bring them

about. There is a something working for a stated and defined purpose, and with a stated and defined object in view, or those varied phenomena would never be regulated in the precise way that they are, or made to accomplish, without any exception, the precise ends which they do accomplish, and which, we must bear in mind, must also have been in view from the very commencement. If the process is not commenced according to a definite plan, if any flaw happen during the varied changes, if throughout from beginning to end there be any removal from a definite line of action, hour after hour, and day after day, all through the tedious complicated and lengthened process—why, the definite object in view could never be accomplished. It is accomplished! And I ask intelligent reason if we are still to accept with any truthful correctness of conclusion, that all that is necessary is but some blind chance circumstance! or but some blind fortuitous acting and interacting of atom upon atom! dead, lifeless, inorganic atom upon atom, aided, if you like, by some one or other of the ordinary unconscious and unintelligent force agencies, and all or any of those intricate life phenomena will be accomplished.

"Know ye! how opens up the seed! and how the plant up grows!
How soft and green in sweet spring tide, 'tis ripe ere summer's close!—
How in the downy covert of the swift-winged swallow's nest,
Instinct! to mother love, expands the gentle creature's breast!
And how, beneath the shelter of the fragile ovate shell,
A winged germ takes *life!* one day! and quits its narrow cell!
Know ye how!"—DESCHAMP.

Will the blind acting of molecule upon molecule do this? Can these ordain that this shall occur and it does occur? Can these determine that this precise result is to be obtained and it is obtained? Or will the assistance of physical or chemical force, acting even in unison, bring these things about, that such and such results shall occur, in the precise way they do occur, and accomplish the precise plan and purpose and fulfilment, that we know is always accomplished, and which is ever needful for the correct building up and maintaining of all vegetable and animal life. We say no! We say that these forces can never do this in themselves, because we see that they have never been known to be capable of controlling, and guiding, and directing their ownselves, or of determining themselves in any manner whatever, according to plan, or for any definite purpose, or for the accomplishment of any definite object in view. No where in the inorganic world do we find such results as these accomplished. Life must ever come from pre-existing life!

and life must ever first act upon matter before matter can take part in life. Surely, you will not give adherence to "the all sufficient potency" of inorganic matter and inorganic force! Surely, you will not now see in dull dead dust "the promise and potency of all life," and accept these with blinded implicitness as your only creators of all nature's worthiest products. Then, if you do not accept these as your creative agencies you must reject the "modern tendencies of thought," and accept another agency as being required, and which we believe to be neither physical nor chemical, and which can have no co-relations with these, but which we believe is infinitely superior, governing, and guiding, and controlling these, and whose mysterious innate power, although still lying hidden from our view (so far as modern scientific research has yet favoured us), is yet ever recognisable in those actions and results which are clearly to be seen around us in all those wonderful and mysterious animal and vegetable life phenomena.

I am fully alive to the fact that these views may not be accepted by those who have already given their implicit adherence to so-called "modern advanced thought," and I am also fully aware that they will be accepted by such as exceedingly antiquated views, and that their exponent must be lagging far behind "the scientific spirit of the age." But I am, nevertheless, fully alive to this other fact, that the acceptance of a mysterious, hidden, secret power—a something superior to dull, unintelligent, inorganic dust—as the accomplisher of all vital phenomena, is in complete accordance with the views of a very goodly host of eminently truthful scientific observers. And until we have given to us as taking the place of flighty, ever-changing hypothesis, theory, and speculative philosophic conception, I say, never, never let us be tied into acceptance of such views as these, which are verily and in truth crushing the very brain and heart alive of all science and all theology. And let me ask you, in conclusion, still to hold that we are acting more in accordance with reason and real truthful scientific spirit if we accept belief in what we see to be an indisputable necessity, and in what we feel confident must have an existence—"belief in a power which is eminently superior to any known physical or chemical force with which we are acquainted."

These remarks, I fear, have been enlarged to far too great a length, but the subject is one which cannot well be exhausted, and on this ground I may seek a pardon; and, in hurriedly concluding, I may be permitted to state, that

however faulty these humble efforts of mine may prove to be, they have been brought forward with one simple, earnest desire—that they may prove a stimulus, inciting onward progress by all in this beautiful open field of biological research, which is ever, and without any apparent exhaustion, holding out so much for all those who will but dive into nature's hidden recesses—recesses which are replete with treasures of unlimited worth and munificent grandeur.

HOMŒOPATHIC TREATMENT OF DISEASE.

Reply from Mr. S. Gill, M.R.C.V.S., Hastings, to Dr. Bowler, V.S., Cincinatti, Ohio.

Gentlemen,—In January month's issue of the *Veterinarian* I find a letter, principally on castration, by a Dr. Bowler, styling himself also a Veterinary Surgeon, although I do not find his name in our College register, in which he attacks my system of cure by homœopathy in such a manner that I must, by your kind permission, repeat that the dog *was cured*, and, as such, it might be asked, What need is there of further testimony?

Dr. Bowler, however, seems to need more than this evidence; therefore, allow me to say allopathic doses of tincture aconite are from three to ten minims, prepared according to Professor Tuson's 'Pharmacopœia.' The homœopathic doses are tinctures of the ninth strength, three to five drops, according to the size of the animal, prepared by one of the best homœopathic chemists in London. The mother tincture being of great strength, one drop to two would be a sufficient dose.

I am (unfortunately for the doctor's notions of my habits) a *total abstainer*, therefore do not require either "allopathic" or homœopathic doses of whiskey and water, which he as a medical man should know is poison to the human frame and destructive of tissue. Besides which it and such like stimulants often lead men blindly on to speak glibly "in Heaven's name" of persons and things they know nothing about.

Yours, &c.

To the Editors of the 'Veterinarian.'

Pathological Contributions.

CATTLE PLAGUE.

No extension of the disease has taken place in the neighbourhood of Warsaw; but it continues in the district of Berdiausk, in Poland, where it is said to be confined to one village. Cattle plague also prevails in the Provinces of Bessarabia, Volhynia, Ekaterinoslav, Podolia, Taurida, and Kherson.

In Austria the disease still exists in the military frontier; but Dalmatia, Hungary, Croatia, Slavonia and Carniola are declared to be free.

Cattle plague has broken out in a village in the Island of Rhodes, and 7 oxen have died. Necessary measures have been taken.

The disease still continues in the Mauritius, and since the 5th of November, 3409 head of cattle and 141 deer have died of the disease.

The latest intelligence from Cyprus, relative to the cattle plague, comes down to January 26th, when it was stated that the disease was still spreading, and had attacked the cattle of the peasants leading to most serious losses throughout the island.

PLEURO-PNEUMONIA.

From the United States, reports have been received of the existence of this disease in Putnam country, in the State of New York, also in the State of New Jersey; besides which a few cases have occurred in the State of Pennsylvania.

Facts and Observations.

Feeding Horses with Fleshmeal. By Dünkelberg (*Bied. Centr.*, 1879, 342—344).—At Dünkelberg's suggestion, Voigts-Rhetz introduced fleshmeal into the food of the horses of his regiment. The results were very satisfactory, the condition and appetite of the horses becoming much improved. Dünkelberg states that to every kilogram of dried fleshmeal must be added 5·25 grams chloride of potassium, 27·9 grams phosphate of potassium, and 2·9 grams

phosphate of magnesium, in order that the whole of the albumin may be assimilated.—J. K. C.—*Journal of the Chemical Society.*

Experiments on Creaming. By W. Kirchner and others (*Bied. Centr.*, 1879, 377—381).—As the result of numerous experiments, Kirchner comes to the conclusion that pans made of tin are better than wooden pans for the cream to rise in. The other authors have experimented on the cooling of the milk by various processes, before churning, and find that a larger yield of butter is usually obtained when the milk has been cooled by ice.—J. K. C.—*Ibid.*

Experiments on Churning. By Winkel (*Bied. Centr.*, 1879, 382).—The author sums up the results of his investigations as follows:—The more carefully the cream is skimmed off, that is, the less milk it contains, the lower the temperature of churning required, the number and swiftness of the turnings remaining the same; or, in other words, so much the more quickly will the butter separate at the same temperature and quickness of churning.—J. K. C.—*Ibid.*

Antiseptic Action of Acids. By N. Sieber (*J. pr. Chem.* [2], 19, 433—444).—The presence of so small a proportion as 0·5 per cent. of hydrochloric, sulphuric, phosphoric, acetic, or even of butyric acid, is sufficient for antiseptic purposes. Phenol is somewhat less active, whilst lactic and boric acids are much less active, 4 per cent. of boric acid being insufficient to prevent putrefaction.

The experiments were made simultaneously with meat and with the pancreas of the ox, in both cases suspended in water, and without exception decomposition occurred sooner in the case of the pancreas. There was fungoid growth but no Bacteria, when using 0·5 per cent. sulphuric acid, 1·0 per cent. phosphoric, 2 and even with 4 per cent. lactic acid.

The author discusses the question whether the acidity of the gastric juice is of itself sufficient to maintain the healthy action of the stomach, and he inclines to the affirmative opinion, as he found that 0·25 per cent. of hydrochloric acid, about the normal quantity in the stomach, was sufficient to prevent putrefaction for twenty-four hours in the tissues of meat and ox pancreas, and when putrefaction did occur, the solution was no longer acid, but neutral.

As antiseptics, dilute solutions of acid salts would be no doubt as active as the acids, for G. Glaser has lately shown that in this respect aluminic acetate is equal to acetic acid.—A. J. C.—*Ibid.*

THE VETERINARIAN, FEBRUARY 2, 1880.

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

"ROT" AMONG CATTLE AND SHEEP.

GENERALLY speaking writers, on the subject of the parasitic disease which is commonly known as "rot," confine their observations to the sheep as the subject of the malady, and when reference is made to periods of the extensive prevalence of rot it is usually understood that sheep are the universal victims. Practically this conclusion is correct, sheep suffer from the effects of the introductions of the fluke, *Distoma hepaticum*, into the liver ducts more severely and quickly than the larger herbivora do, but veterinary pathologists and many practical agriculturists have long been familiar with the fact that cattle when feeding in pastures which are contaminated with the larvæ of the fluke become infested with the parasites, which are easily discovered in *post-mortem* examination in the slaughter houses, although many of the infested animals may not to appearance suffer inconvenience from their presence.

Flukes, when they infest the livers of cattle, undoubtedly cause considerable local irritation, and we have frequently observed on inspecting the livers of cattle from various parts of the Continent that the bile ducts had undergone excessive dilatation, and in many cases induration as a consequence of the parasitic invasion, but even in these marked cases the carcase of the animal did not present those evidences of derangement which are common to sheep under similar conditions. "Rot" among cattle has been looked upon as a comparatively rare disease in this country. Most feeders of stock would, without fear, put bullocks to graze on lands which they knew would be fatal to sheep, and this course generally would be justified by the event.

During the past autumn many cases of genuine and fatal rot among cattle, especially young stock, have been alarmingly

frequent in some districts, and at present the disease both in cattle and sheep is unhappily becoming more prevalent; or more correctly we may say that we are now seeing the effects of previous infection. It takes some time for the ravages of the fluke to tell upon the system of the sheep, a longer period would certainly be required to produce the same effects on the hardier ox, so that it may be presumed, in every case among cattle, that the larvæ of the fluke were taken into the system some months back.

Naturally, under the circumstances referred to, stock-owners are asking what is to be done, and it has been suggested that the Veterinary Committee of the Royal Agricultural Society should do something in the emergency. We confess that we do not see exactly what any veterinary committee is to do in the way of combating a disease which is the outcome of a wet season. A hot, dry summer would stop the progress of rot; it would also help the farmer in various other ways; but must we meekly accept the taunt that veterinary science can do nothing under the climatic conditions which are essential causes of the disease? Most assuredly not.

Curative measures have been tested extensively here and abroad, and the uniform result has been failure; there are no known means of expelling the flukes from the bile ducts. Early removal of animals from the dangerous grounds—no easy matter when a whole district has been rained on till it has become a marsh—liberal diet, the free use of salt, and, in certain cases, the internal use of some of the salts of iron, constitute the essentials of a rational plan of preventive treatment, which, to be successful, must be promptly applied with the object of aiding the animal to resist the attack of the parasites. We regret to be obliged to add that, in the cases of the majority of the animals which are now suffering, the time has passed when any plan of treatment could be employed with a reasonable hope of success.

THE BROWN INSTITUTION LECTURES OF 1879.

The course of lectures which has recently been delivered at the University of London, in connection with the Brown Institution, is of very great interest to veterinary surgeons, in more senses than one. We have, therefore, reported them at some length in our Journal. Veterinary surgeons have assisted in the work upon which the course of lectures is based, and their aid has been most fully and justly acknowledged by Dr. Greenfield. Again, the matter touched upon by the lecturer has a direct value to members of our profession at home and abroad. Apart from the general interest with which we look upon the additions to comparative pathology and the general knowledge of infective processes, the question of unity or diversity of the diseases "*black quarter*" (*emphysema infectuosum*) and "*splenic apoplexy*" is most interesting, whether from a prophylactic or curative point of view. The detailed examination of *septicæmia* and *pyæmia*, in which the lecturer gave the results of the valuable report by himself and colleagues, as recently presented to the Pathological Society (see 'Pathological Transactions,' vol. xxx, 1879), was most instructive. The confusion in the minds of surgeons and pathologists concerning the true definitions of each of these diseases, as well as the question of whether they are distinct and separate pathological conditions, required much careful and laboured investigation, that some light might be thrown upon the matter. In this respect the conclusions of the above-mentioned Report are highly satisfactory. The specific organisms of these affections are now no longer to us the mystery they were, since we have seen them stained with methylaniline, and may still see them represented most faithfully in the 'Transactions.'

We see that in these diseases, as in anthrax according to M. Toussaint's researches, microphytes crowding the blood-vessels and the tissues may be the sole cause of formidable lesions, their power lying in their number and in their pene-

trating properties, which are dependent upon their extreme minuteness. Dr. GREENFIELD'S observation of accumulation of Bacterian organisms in the kidneys, and their passage from the body by the urine, is a matter which serves to draw our attention to a means of distribution of anthrax through pastures. He gives us some information on "*Loodianah fever*" and on the "*Cape horse sickness*," considering each of these diseases anthracoid. The former of these affections has not received very much attention from him, but the latter is found to be due to a Bacillus, whereby an observation of Mr. WILTSHIRE, M.R.C.V.S., Government Inspector to the Colony of Natal, is confirmed. This organism has now been cultivated, carefully examined, and found to give rise to disease when introduced into the systems of small animals. The observations of several foreign veterinarians have pointed to the existence of specific organisms in glanders, but we are not aware that any observer has, like Dr. Greenfield, cultivated the organism, examined it under very high powers, and accurately noted certain phases of its life-history. The organism in question is a Bacillus closely allied to *Bacillus anthracis*. The light thus thrown upon the nature of farcy-glanders ought to prove an incentive to veterinarians to resume careful investigation of this formidable disease. The observation that the organism of septicæmia is not *Bacterium termo*, though closely allied to it, will clear up many obscurities; this had been many times suggested from an examination of collateral conditions, but all such surmises must yield precedence to the *actual observation* of the committee on septicæmia and pyæmia. The remarkable "flagellate organisms" observed by the professor in the peritoneal fluid of an inoculated animal, and considered by him to have "some pathological importance," are highly interesting; the relations of Infusorians to the higher organisms are by no means well ascertained, and we learn that certain biologists are inclined to hold that their relations to Bacteria are of a very intimate character. Whatever view we may take of this we cannot but hope that Dr. Greenfield will again meet with some of these remarkable

beings, and so be enabled to give us more information about them. We venture also, in conclusion, to draw the attention of our readers to the allusions to the researches of Klebs and Tomasi on the nature of malaria, as also to the notices of the experiments of Feser and Pasteur on the persistence of anthrax germs. Dr. Greenfield's work has yielded good results hitherto. We are encouraged to hope that he will deliver, and that we shall be instructed by, many of such courses of lectures, and that he will continue to appreciate the fact that, as Professor-Superintendent of the Brown Institution, he may prove a most important means of giving comparative pathology its proper position in medical and veterinary studies.

Review.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

Parasites; a Treatise on the Entozoa of Man and Animals. By T. Spencer Cobbold, M.D., F.R.S., &c.

The relation which Dr. Cobbold holds to the Royal Veterinary College as an instructor of our pupils, and the assistance rendered by him in respect of the helminthological department of this Journal, precludes our writing anything critical concerning his last contribution to the science he represents. This circumstance need not, however, prevent our pointing out the general design of the volume before us; and as regards both the manner in which the work has been done and the spirit in which it has been executed, we shall content ourselves with drawing attention to the published statements of our medical and scientific contemporaries.

As stated in the preface, the design of the book—or rather books, for two volumes of equal size are really compressed into one—was to bring to a focus all the more important facts and conclusions which the recent rapid advances of the science have established. In doing this the author has dwelt with especial care on the development of particular parasites, more particularly on those species which give

rise to serious disease. We do not here speak of the contents of the first half or "book," which deals with human parasites, except so far to say that our author has paid the fullest possible attention to the "measles" or cysticerci which give rise to the beef, pork, and mutton tapeworms in man. In this connection Dr. Cobbold has given an account of the important researches of Professor Perroncito and other Italian investigators. The recent opinions of M. Mégnin respecting the polymorphism of the cestodes is not so much as touched upon; partly, we understand, because the eminent French veterinarian had not fully developed his extraordinary views when Dr. Cobbold was engaged on the work, and partly because our author has freely expressed the opinion that such views as M. Mégnin holds are altogether unworthy of serious consideration. We regret that our respected Vienna contemporary should give M. Mégnin's views the prominence assigned to them in recent numbers. (See M. Mégnin's *Neue Beobachtungen über die Entwicklung und die Metamorphosen der Taenia bei Säugethieren*, as translated from the French by the accomplished editor, Alois Koch, and given in the *Revue für Thierheilkunde und Thierzucht* for January, 1880.)

The work before us, whilst omitting all practically useless anatomical details, gives great attention to the internal parasites that occasion epidemics, such as those of rot, husk, trichinias, strongyle affections, the cestode helminthiasis affecting Welsh mountain ponies, olulaniasis, the tapeworm disorder of cats, gapes, grouse-disease, and so forth. In the matter of human and veterinary sanitary science the author has taken pains to explain the facts that have reference to the means of preventing the spread ot parasitic affections. In some cases he has shown how such diseases might be effectually stamped out.

As we said before, it is not for us to offer a direct opinion as to the merits of Dr. Cobbold's book, but as comparatively few of our readers have access to the medical journals, we invite attention to a selection of passages from their columns.

In an exhaustive leader (in which the *Lancet* for December 27th, 1879, reviewed the scientific advances of medicine and surgery during the last year) our leading medical journal remarks that the appearance of "the octavo volume on 'Parasites of Man and Animals' constitutes a notable event in the history alike of medicine and natural history, and is a noble monument to the devotion and enthusiasm of its

author." Later on, in a lengthy notice of Dr. Cobbold's work, the reviewer says (January 3rd, p. 16): "On laying it down, after perusal, the mind is oppressed with a sense of the prodigious and long-continued labour which must have been devoted to reducing the information it contains to the compendious form in which it is now given to the world. The work is, nevertheless, in the best sense, readable. It affects no literary artifice, but it fixes the reader by the complete mastery of the subject displayed by the author, and by the ever strange and increasing interest of its several details." Further on it is observed that, by means of this book, the author has put "vastly increased power into the hands of the sanitarian, human and veterinary, for accomplishing his functions."

The *Medical Times and Gazette* (September 6th, 1879) gives so brief a notice of the work that we may fairly quote it nearly as it stands, thus:—"Though the author has written much on this subject, the present may be looked upon as an entirely new treatise. And, in our view, it well entitles him to the title of the English Küchenmeister. Interesting in many ways, repulsive in others, the subject has never in this country been more ardently studied than by Spencer Cobbold, who well deserves the eminence these special studies have given him. The work is an Encyclopædia."

The *Dublin Journal of Medical Science* for August, 1879, which devotes no less than six pages to its review of the book, says: "One cannot help admiring the untiring zeal Dr. Cobbold has displayed, both in original investigation, experimentation, and in the collection of references to the literature of the subject on which he writes" (p. 130); subsequently remarking that "every page bears witness to the energy, originality, and learning of its author."

Outside the purely medical world a leading scientific journal has lent its powerful voice in support of the subject of helminthology. We allude to the periodical *Nature*, published by Macmillan and Co. Those only who have perused the preface of Dr Cobbold's work can realise the sentiments of an author who perfectly well knows in what prejudiced lights the subject of helminthology is regarded by most persons, professional or otherwise. We cannot quote the long concluding paragraph (introducing Mr. Faraday's name) of the preface itself. It is a strongly-worded passage, but its sentences are not one whit too strong, as the reviewer of *Nature* seems to agree when he says of them: "None but an honest and true worker will

write such sentences as these. Every well-meaning man of science must concur with Dr. Cobbold in the ideas he thus forcibly expresses. Upon an array of workers of Dr. Cobbold's stamp a nation may justly look with pride." The writer adds: "Altogether, we cannot speak too highly of Dr. Cobbold's book, and congratulate the author warmly upon having so efficiently filled a gap in zoological literature, the existence of which had long been felt by all working naturalists."

Lastly, to return to our medical contemporaries, the *Edinburgh Medical Journal*, for November, 1879, devotes considerable space to the work before us. After remarking, with dry humour, that the word "helminthology" is very apt to be "irreverently shortened into *worms*," the reviewer goes on to say that "no man has laboured more diligently and earnestly in a sphere, the importance of which even zoologists, not to speak of physicians, are often slow to recognise than Dr. Cobbold. Of British helminthology it is not too much to say he is the practical founder." Further on, in connection with the known prejudices everywhere exhibited on this subject, the writer says, "We have remarked upon the apparent *nonchalance* with which such a study is received by the medical world at large. Perchance Dr. Cobbold would go so far with us as to say that *downright discouragement* was the better term to apply to the treatment which the study (of parasites) has ofttimes had to fight against when treading the *via medica*." In the final paragraph of the review the following sentences occur at intervals. "The reader, zoologist, or physician, will find therein all necessary information concerning known parasites and their life-histories. The information is thoroughly up to date. The volume is essentially and really a new history of parasites, presenting itself as a standard work. We end as we began, by heartily recommending Dr. Cobbold's last production as a valuable contribution to the history of entozoa."

Here our review of the various reviewers' friendly writings must close, with the addition only of one or two special corrections at the author's request. Whilst there are several trifling mistakes of which no particular notice need be taken, the unfortunate spelling of Siedamgrotzky's well-known name (erroneously at p. 247 and p. 281) is an error for which the author wishes us to apologise on his account. A very obvious and serious mistake also occurs (at p. 118), where the group of echinococcus-heads is represented as magnified about 25 diameters, instead of 250 diameters.

Like several other authors, Dr. Cobbold has once or twice written Professor Bollinger's name with the vowel symbol over the first syllable. At p. 389 and elsewhere this error does not occur. On the whole, it may be said that the printer has executed his share in the work most creditably.

Extracts from British and Foreign Journals.

POISONING OF SHEEP BY LUPINES.

By H. C. E. Schulz, E. Wildt, and others (*Bied. Centr.*, 1879, 344—350).—The disease arises from blood poisoning, caused by paralysis of the urinary and gall-bladder muscles, whereby the constituents of the urine and bile pass into the blood. Schulz has investigated the alkaloids of the lupine, and from experiments on three of them, he finds that they differ very much in their physiological action. No great difference can be observed in the ash of wholesome and injurious lupines, but in some cases the latter contain more alkaloid than the former. There is less alkaloid present in the lupines when in bloom than when fully ripe.

Wildt finds two alkaloids in lupines, of which one is a white crystalline solid, and the other a yellow oily liquid; the latter, according to Schulz, consisting of two different bodies. The crystallised alkaloid appeared quite harmless, but the other had a very poisonous action, producing trembling, violent cramp, diarrhœa, and finally death; but in no case could the same appearances be observed after death as in the case when it has been caused by feeding on lupines. Reports from various sheep farmers go to show that lupines act differently on different sheep, and that when injurious they have generally been grown on a poor damp soil, or on one which has been sown with lupines for several years previously.—J. K. C.—*Journal of the Chemical Society.*

PERCHLORIC ACID AS A TEST FOR ALKALOIDS.

By G. Fraude (*Ber.* 12, 1558—1560).—Perchloric acid of sp. gr. 1·13—1·14 has no action on quinine, quinidine, cinchonine, cinchonidine, morphine, codeïne, papaverine, veratrine, caffeïne, atropine, nicotine, nor conine. When boiled

with brucine, it gives a dark sherry colour, with strychnine a reddish-yellow, and with aspidospermine an intense red. Iodic anhydride and sulphuric acid give with brucine an intense orange-yellow; morphine, deep violet, then orange brown; and curarine, pink. These reactions are suitable as lecture experiments,—W. R.—*Journal of the Chemical Society.*

CATTLE DISEASES IN AMERICA.

We extract the following from *Colman's Rural World,* St. Louis, January 7th, 1880:

Contagious Animal Diseases. — Petition of the United States Veterinary Medical Association.

To the Honorable the Congress of the United States.

Whereas, It has been shown that different animal plagues prevails to a disastrous extent among the live stock of the United States, and that many millions of dollars are annually lost to the nation from this cause—

Whereas, Several of the most redoubtable of these plagues are now restricted to circumscribed localities, but threaten to speedily extend over wide areas, where, from the mingling of herds on unfenced ranges, like the plains, they must become permanently domiciled, at an immense yearly loss that will steadily increase with the constant advance of agriculture and the increase of our live stock—

Whereas, The unfenced stock ranges of the west and south are at the source of the traffic in live stock, and their infection must determine the infection of all the channels of the traffic (cars, boats, yards, &c.), and of the middle and eastern States—

Whereas, Several of these animal plagues have already led different American and European countries to place embargoes on our live stock, which will be maintained so long as these pestilences are allowed to exist in our midst—

Whereas, The extinction of these animal contagia is of incomparably more importance to the western stock-raising States than to the eastern, even though they may be at present exclusively confined to the latter—

Whereas, It is not probable that all the infected States will of themselves go to the trouble and expense of stamping out these pests, in which they have so much less pecuniary interest than other States which are as yet unaffected—

Whereas, Certain of the most destructive of these pestilences are exotics to the stock-exporting States, and can be effectually and permanently eradicated from them—

Whereas, A large number of animal diseases are due to contagia or to parasites that are communicable to man with equally disastrous results—

Whereas, There is constant danger of the importation of the same and of other exotic animal plagues unless a proper inspection and quarantine of imports shall be inaugurated; and—

Whereas, The restriction and extinction of these diseases can be best accomplished under the direction of the veterinary profession, who alone have made a special study of these epizootics, and are acquainted with the laws of their propagation and development—

Resolved, That we, the undersigned, members of a committee appointed by the United States Veterinary Medical Association for that purpose, do hereby respectfully petition that the honorable the Congress of the United States shall establish a veterinary sanitary bureau, whose duty it shall be to advise Congress as to what measures shall be necessary to control, restrict, or eradicate any contagious or infectious disease affecting the domesticated animals; and—

Resolved, that in view of the urgent necessity for the eradication of the lung plague of cattle from the United States, the restriction of the Texas fever of cattle to those southern States in which it is already domiciled, and the protection of our flocks and herds against pestilences that may be imported with foreign stock, Congress is further respectfully requested to appropriate a sufficient sum of money to enable the veterinary sanitary organisation to deal at once, and effectually, with these three important matters.

A. Liautard, M.D., V.S.
S. Law, F.R.C.V.S.
J. L. Robertson, M.D., V.S.
E. F. Thayer, M.D., V.S.
N. H. Paaren, M.D., V.S.
A. Lockhart, M.R.C.V.S.
C. P. Lyman, V.S.
C. B. Michener, D.V.S.
A. A. Holcombe, D.V.S.

ANTHRAX AND ITS CAUSE.*

M. Paul Bert states that the blood of animals suffering from anthrax ("charbon"), when submitted to great pressure of oxygen, retains its mortal capabilities for ninety-nine hours, but no "bacteria" were seen; similar blood, treated with three to four times its volume of strong alcohol, gave just the same results; and he concludes that the bacteria are neither the cause nor the "necessary effect" of the disease, but that its virus is of the same nature as that of cow-pox or of glanders. He further states that the blood of the dog suffering from the disease is not poisonous to another dog or to the guinea-pig.

M. Leflaive, speaking at the same "séance," stated that he believed he had shown that in the Herbivora the poison resulted in a general affection of the whole system, while in man it only gave rise to a local affection, the blood not containing the virus, and being therefore incapable of propagating the disease. What obtains in man appears also to M. Leflaive to obtain in the Carnivora; in which case we get an explanation of Professor Bert's results. At a later meeting* M. Bert stated that the results of some experiments on a guinea-pig, which had been poisoned with the morphological element ("bacterium") of anthrax poisoning, and whose blood lost completely its toxic effects after a week's treatment with compressed oxygen or concentrated alcohol, had led him to believe that there were two maladies confounded under the name of the "charbon;" that one is *virulent* and owes its origin to the matter precipitated by alcohol, while the other is merely *micro-parasitic;* it is possible that the two states may coexist in the same animal, but where the poisoning has been of the virulent type, Bert found but few bacteria; in the guinea-pig it was noticed that the "virulent blood" killed in ten to twelve hours, and the blood-corpuscles were crenulated, while with the "bacterian blood" death occurred after thirty to thirty-six hours, and the corpuscles retained their original character.

The volume already cited also contains (p. 442) an account of a pathological investigation on the human subject; the patient was a carrier of meat who had cut his chin with a razor; during life a drop of blood revealed the presence of long "bacteridia" ($\frac{1}{5\,6}$ mm. in length). The patient exhibiting a very low temperature (33° C.), the respiratory gases were examined, and it was found that he, a man weighing

* 'CR. Soc. Biol.,' for 1877 (1879), pp. 12, 20.

† Ibid., p. 317.

80 kilogrammes, absorbed 7·924 litres of oxygen, and gave off 6·300 litres of carbonic acid in an hour; in other words, only about one third of the healthy quantity of oxygen was inspired. In pursuance of the subject (p. 465), M. Regnard gives an account of the investigations which, with the aid of another colleague, he had made on a dog; here again the results of anthrax poisoning were a diminution in the amount of oxygen absorbed and of carbonic acid exhaled, together with a great fall in temperature, and the presence of a quantity of bacteria in the blood. Previous to inoculation with the anthrax poison, the blood of the dog absorbed 20·4 c.c. of oxygen per 100 grammes, while after poisoning the same quantity of blood absorbed 26 c.c.

TRICHINOSIS ON BOARD THE SCHOOL-SHIP CORNWALL.

Referring to this case the *Lancet* of January 8th says: "We learn that a somewhat considerable outbreak of trichinosis has occurred on board the reformatory school-ship Cornwall, lying off Purfleet, on the Thames. The disease first manifested itself several weeks ago, and was at first believed to be enteric fever, for which disease trichinosis is, in the beginning, very apt to be mistaken. The persistence of the malady among the boys, and certain anomalies, as it seemed, in its progress, induced the committee of the ship to apply to the Home Secretary for additional skilled assistance in investigating the outbreak. He applied to the Local Government Board for the help of one of their medical inspectors, and Mr. W. H. Power was directed to visit the ship. This gentleman, after careful inquiry, became suspicious that the disease among the boys was trichinosis, and application was made to the Home Secretary for permission to exhume the body of the only youth who had died of the malady. Permission was granted, and it was ascertained beyond a doubt that the lad had died from the disease named; and Mr. Power's suspicion was thus confirmed."

"It is understood that the malady was caused by the consumption of certain American pork. Mr. Power's inquiry is, we believe, not yet fully completed, and until his report appears the details of the outbreak will not be accessible. We trust that the report will be issued as early as practicable to the public, for it cannot fail to give much and most valuable information concerning a disease from which the people in this country have hitherto had a remarkable immunity in its acute form, an immunity which, it is to be

feared, since the large and increasing importation of foreign pork, is becoming a thing of the past."

[We, too, are looking forward with much interest to Mr. Power's official report on this important subject. Cases of trichinosis undoubtedly have occurred in this country, but our own researches, which have now been going on for several years, do not lead to the conclusion that the malady has gained any serious footing here. Only a few American pigs, out of the number which have been examined, have been found affected with Trichinæ; and although we have propagated the parasites from this source of origin, nevertheless we see no ground for alarm if only common care be exercised in cooking the meat.

It may be said that the necessity for special precautions would cease if American pork in all forms were prohibited; but those who are familiar with the mysteries of the meat trade are well aware that nothing short of the prohibition of pork in all forms and from all foreign sources would meet the case. We shall return to this subject in order to make some observations on the other parasites—nematodes and cestodes—which we have frequently found infesting the muscular tissue.]

CONTRIBUTION TO THE GERM THEORY.*

Dr. Robert Koch has published an important monograph on the ætiology of infectious traumatic diseases (Wundinfectionskrankheiten). The paper opens with a definition of the diseases treated of, and a review of the present state of our knowledge with regard to *contagium vivum*, and of the arguments for and against the doctrine. Then follows a description of the author's method of research, and then the most important part of the work, a detailed description of his exact and laborious experiments on artificial traumatic diseases.

1. *Septicæmia in Mice.*—Putrid blood or infusion of meat was injected under the skin of the back. Characteristic symptoms showed themselves, and the animals died in four to eight hours. No bacteria were found beyond those injected, so that in this case the disease was evidently due to a soluble poison (sepsin), and not to the agency of microphytes. In correspondence with this no effect was produced by very small injections (1 to 2 drops), except in about one

* 'Untersuchungen über die Aetiologie der Wundinfectionskrankheiten,' Leipzig, 1878.

third of the cases. In these, different but equally characteristic symptoms supervened, death took place in about fifty hours, and a post-mortem examination showed the blood to be crowded with small bacilli about 1 μ in length, which occurred in the vessels of all organs of the body, surrounding the red corpuscles and absolutely filling the white. Even $\frac{1}{10}$ drop of the blood thus affected was able to communicate the disease to another mouse, and the disease was, in fact, carried through seventeen generations. There seems little doubt that the bacilli are the actual contagium of this form of traumatic septicæmia. It is a curious circumstance that field-mice and rabbits were not susceptible to the disease.

2. *Progressive Tissue-necrosis (Gangrene) in Mice.*—In mice injected with decomposing blood there were sometimes found at the place of injection (in the subcutaneous tissue) micrococci, as well as the regular bacilli of septicæmia. These micrococci had a diameter of 0·5 μ, multiplied rapidly, and showed a great tendency to the formation of "chains." Lymph from the subcutaneous tissue infested with these was injected into a mouse's ear. The micrococcus-chains soon multiplied so fast as to interpenetrate the whole ear, the tissue of which became so changed as to be hardly recognisable; cartilage cells looked pale, as if treated with potash, and blood and connective-tissue corpuscles were no longer to be seen. It seems clear that the septicæmia-bacillus is a necessary forerunner of the gangrene-micrococcus. An interesting pure-culture experiment was tried. Field-mice, which, as stated above, are not susceptible to septicæmia, were injected with fluid containing both bacilli and micrococci. The former had no effect, the latter multiplied and caused death, and from the animals so affected both field and house mice could now be inoculated, the result being always gangrene and never septicæmia.

3. *Progressive Abscess-formation in Rabbits.*—Rabbits were injected with putrid blood. A flat, hard, lenticular infiltration was gradually formed at the place of injection, producing at last a fatal abscess in the subcutaneous tissue. The abscess was covered by a thin layer of micrococcus-zoogloea; its cheesy contents were finely granular, and contained no bacteria, but were probably derived from the zoogloea and from the enclosed dead tissues. The individual micrococci were 0·15 μ in diameter. The blood of rabbits dying from this disease produced no infection, but the disease was communicated by injecting a little of the interior of the abscess rubbed up in water.

4. *Pyæmia in Rabbits.*—A rabbit was injected with fluid obtained by macerating mouse-skin in water. A purulent infiltration of the subcutaneous tissue resulted, accompanied by swelling of the spleen, morbid changes in lungs and liver, and peritonitis. Micrococci abounded in the affected places, occurring in the blood-vessels surrounding the corpuscles, and forming accumulations whieh sometimes quite obstructed the lumen. These micrococci are distinguished from those of gangrene and abscesses by not forming chains or zoogloœa, and by their size (0·25 μ). For inoculation $\frac{1}{10}$ of a drop was sufficient, but not $\frac{1}{1000}$.

5. *Septicæmia in Rabbits.*—The animals were injected with a putrid infusion of meat. A purulent accumulation (jauchige Vereiterung) took place, and the subcutaneous tissue in the neighbourhood became filled with a watery fluid, containing large oval micrococci (diameter 0·8 to 1 μ), which also occurred in the kidney and spleen. Injection of 5 to 10 drops of the œdema fluid communicated the fatal symptoms.

6. *Erysipelatous Process in Rabbits.*—The ear was injected with mouse's dung, softened in distilled water. The organ became red, swollen, and flabby, and was found to contain large numbers of bacilli 3 μ in length and 0·3 μ in diameter. The author failed to communicate the disease to other animals.

After the description of these experiments Koch devotes a few pages to splenic fever, and then sums up his results, and discusses their importance. For the first five cases there is complete, for the sixth partial evidence of parasitic nature. Infection is produced by so small a quantity of fluid that toxic effects are quite excluded. For each disease the bacterium form is distinct and unchangeable; this is the most important result of all. The living body is the best possible pure-culture apparatus.

Some former writers have stated that the virulence of the poison in these diseases increases constantly in successive generations; Koch considers that it increases up to the second, or latest the third generation, and then remains constant.—*Journal of the Royal Microscopical Society.*

ROYAL VETERINARY COLLEGE.

The usual Quarterly meeting of the General Purposes Committee was held in the board room of the College on Tuesday, January 13th.

Present: Sir Paul Hunter, Bart., Chairman, Gen. Sir F. Fitzwygram,

Bart., Colonel Kingscote, C.B., M.P., Lord A. Somerset, Mr. Newdegate, M.P., Mr. Harpley, and Mr. Collins.

The Accountant read the Quarterly statement of receipts and expenditure, showing a satisfactory balance in favour of the College.

The names of thirty-two new Subscribers were submitted to the meeting, and declared elected.

The Principal's Quarterly Report was read, from which it appeared that 159 horses and nineteen dogs had been admitted into the Infirmary since October 1st, showing a slight falling off as compared with the previous quarter, which the Principal attributed to the general good health of the horses in London, notwithstanding the remarkable changes of weather which had prevailed.

It was further reported that thirty-seven Students had joined the classes since October 1st, showing a diminution of four as compared with the corresponding period of last year; that at the recently held examination of the Royal College of Veterinary Surgeons, fifteen students in Class A passed their *first* examination; thirteen in Class B their *second*, and ten in Class C their *final* examination. Reference was made to the satisfactory result of the extended period of instruction, as shown by the examination for the diploma of the Royal College of Veterinary Surgeons. Thus, of the number—viz. twenty-six—who presented themselves during the year, only one was rejected, and this student passed satisfactorily on the next occasion.

The report concluded with a mention of the satisfactory nature of the arrangements existing between the Governors of the College and the Royal Agricultural Society.

A resolution was adopted appointing Gen. Sir F. Fitzwygram, Bart., Lord Arthur Somerset, and Mr. Harpley as a deputation to confer with the Veterinary Surgeons who complain of the system of examination of horses as conducted by the College.

The Chairman then left the chair, and the meeting closed.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY AND SPECIAL MEETINGS OF THE COUNCIL, HELD JANUARY 14TH, 1880.

The PRESIDENT in the Chair.

Present: — Professors Simonds, Williams, Walley, Pritchard, and Axe; Messrs. Anderton, Batt, Blakeway, Cartledge, Cartwright, Collins, Dray, Fleming, Freeman, Greaves, Harpley, Moon, Morgan, Reynolds, Taylor, Whittle, G. Williams, and the Secretary.

The *Secretary* read the notice convening the meeting.

The minutes of the last meeting were read and confirmed.

The *Secretary* intimated that the President had presented to the Library of the College one volume of each of his two works on the 'Principles and Practice of Veterinary Medicine' and 'Veterinary Surgery.'

On the motion of *Mr. Dray*, seconded by *Mr. Fleming*, a vote of thanks was passed to the President for his presentation.

Professor Walley also presented to the Library his work 'On the Four Bovine Scourges.'

Mr. Dray proposed, and *Mr. Fleming* seconded, a vote of thanks to Professor Walley, which was unanimously agreed to.

Correspondence.

Letters were received from Professor McCall and Mr. Cuthbert, of Leeds, regretting their inability to attend the meeting.

A letter was read from Mr. Hunt, junr., stating that his father, in consequence of a paralytic stroke, would never again be able to attend the examinations in London, and conveying to the Council his father's thanks for their sympathy and kindness.

The *President* regretted the cause of Mr. Hunt's resignation, but said there was nothing left but to accept it.

Mr. Dray moved that the resignation be accepted.

Mr. P. Taylor seconded the motion, which was carried.

Mr. Fleming hoped that the Council, in intimating their decision to Mr. Hunt, would feel itself in duty bound to express their great sympathy with him in his affliction, and to thank him for the various services he had rendered both to the Council and the profession; also to express the hope that he would be restored to health, and enabled to serve them as heretofore. He would make a motion to that effect.

Professor Walley seconded the motion.

Professor Simonds fully endorsed the sentiments of Mr. Fleming. Mr. Hunt had for many years acted conjointly with himself as Inspector to the Royal Agricultural Society at its annual shows, and he could say, from long experience, that a more efficient officer could not be found. He was desirous of recording, not only his sympathy with Mr. Hunt, but also his thanks for the valuable services he had rendered to the Council, and also to the profession, by holding important and responsible offices.

The *President* said he could endorse what had been said by Professor Simonds. He had known Mr. Hunt for many years as an Examiner, and had observed the kindness and urbanity he had always extended to the students. He had already expressed his sympathy to Mr. Parker (from whom he had received a letter in reference to Mr. Hunt), and how, individually, he felt his resignation, and he had thanked Mr. Hunt in the name of the Council for his services.

Election of Examiner.

On the motion of the *Secretary*, seconded by *Mr. Dray*, Mr. John Roalfe Cox was elected Examiner in room of Mr. Hunt, it being understood that the term of office was for five years.

The ballot on being taken showed that Mr. Cox was unanimously elected.

Resignation of the Secretary.

The *President* read a letter from the Secretary tendering his resignation.

Mr. Dray, as a very old friend of Mr. Coates's, and as one of the members who voted for his election, said he had endeavoured to prevail upon him to remain in office. He had been a most faithful and energetic servant to the Council, and, while regretting the cause of Mr. Coates's resignation, he was afraid that the Council would be under the painful necessity of accepting it.

Mr. Morgan seconded the motion.

Mr. Fleming spoke of the diligence and faithfulness with which Mr. Coates had always discharged his duties, and trusted that some means

would be found by which to convey to him the regret which the Council and the profession experienced at the severance of one who had so long been connected with the whole body of the profession.

Professor Simonds expressed his individual regret at Mr. Coates's resignation, and bore testimony to the efficiency and honesty with which he had performed the duties of his office. He suggested that their regret should take some tangible form, say, of an honorarium or a fixed sum per annum for a given length of time. He was only speaking on the broad principle of the case, and had no particular scheme to lay before the Council.

Mr. Harpley endorsed the opinions of the previous speakers, and referred to the services Mr. Coates had rendered to him in his year of office as President, a year the labours of which were rendered more arduous from the fact that the Juries Bill was before the House, entailing a great deal of correspondence on the part of Mr. Coates.

Mr. Fleming said the thanks of the Council were due to Mr. Coates for his offering to continue the duties of Secretary until another Secretary was appointed, and to instruct his successor in the duties of his office.

The *President*, in putting the motion to the meeting, expressed his regret that Mr. Coates's resignation had taken place during his year of office. He should support most cordially any scheme for a tangible recognition of Mr. Coates's services.

The motion was then carried.

Professor Simonds moved that the question of the amount to be awarded to Mr. Coates be postponed, on the understanding that it was placed on the agenda for the consideration of the Council at the next quarterly meeting.

Mr. Harpley seconded the motion, which was carried.

A Committee, consisting of Messrs. Collins, Dray, Fleming, Harpley, and Professor Simonds, was appointed for the purpose of selecting a new Secretary.

On the motion of *Mr. Whittle*, seconded by *Professor Walley*, it was resolved that the new secretary be not a member of the Council.

Mr. Collins proposed, as a further instruction to the Committee, that the future secretary be not a member of the profession.

Mr. Dray seconded the motion.

Professor Walley proposed as an amendment, "That the new secretary should either be a member of the College or not."

Mr. Reynolds seconded the amendment.

Mr. Blakeway supported Professor Walley's motion, on the ground that it would be an injustice to take the office entirely out of the hands of the profession.

On being put to the vote, fifteen members voted for Professor Walley's amendment and four for Mr. Collins's motion.

The amendment was therefore declared carried.

On the motion of *Mr. Reynolds*, seconded by *Professor Walley*, the Secretary's salary was fixed at £120, with the same allowance as the late Secretary.

Mr. Coates was then called in and informed of the Council's deliberations and decision.

Mr. Coates, in a few words, expressed his regret at being compelled to sever himself from the Council, and thanked them for their kindness and consideration.

The Proposed General Meeting.

The *Secretary* read a letter from Mr. Loch, enclosing the opinion of Mr.

Wolstenholme, Q.C., relative to the requisition for calling a general meeting of members of the Royal College of Veterinary Surgeons. The opinion of counsel was to the effect that a discussion raised in any ordinary meeting of the members of the Royal College of Veterinary Surgeons as to the course of practice of the Royal Veterinary College would not be wholly irregular; but he did not mean the inference to be drawn that any resolution come to at such meeting would have the least binding power over the Royal Veterinary College. The Chairman would perhaps be technically right in refusing to allow such discussion, or to enter into any resolution on the subject in the minutes; at the same time he did not see that to allow the discussion or to enter a resolution on the minutes, expressing the opinions of the members present on a matter personally affecting them, would be wrong. No further action would require to be taken except by communicating the resolution to the Veterinary College, and no opportunity would be given for questioning the regularity of the proceeding. It would, however, be right to state the resolution as passed by the members present, and not describe it as a resolution of the meeting.

Professor Axe said it occurred to him that the main point in question was whether it was not beyond the jurisdiction of the Council, as a political body presiding over veterinary science, to allow themselves to call a meeting to consider a subject which was quite beside the object for which the College was founded; and he thought the opinion of counsel stated that there was no such power.

Mr. Fleming said that, according to the latter portion of the opinion, the matter seemed to be left in the hands of the President, and there would be found there a very important "perhaps," which left it to a large extent optional. With regard to the question itself, he thought the instructions given to counsel had not been properly framed. Whether the petition was acceded to or not was a question more for the profession than the Council to decide, inasmuch as the object of the petition was as much for the protection of the profession now as was the movement lately made in the Council to modify the charter sought to be obtained by the Royal Veterinary College.

Mr. Harpley said that on the previous day there was a meeting of the General Purposes Committee of the Royal Veterinary College, and the subject of the petition was discussed. It was mainly pointed out to the Governors that counsel's opinion was adverse to the power of the President to call a general meeting of the body corporate to discuss the matter in question; but the Governors were perfectly willing to listen to any complaint the profession might have against them or their college. In the present instance it was suggested by the Chairman that a small sub-committee of the General Purposes Committee be deputed to communicate with a small section of the gentlemen, who, with Mr. Moore, raised the question, and that the matter be discussed at the Royal Veterinury College on any day they wished to name.

Mr. Fleming pointed out that the opinion of counsel did not state that the profession had any right to petition the President to hold a general meeting of the profession. Those who drew up the petition must, he thought, have been misled by the bye-laws, and if so, it was not their fault. They thought they had a grievance, which, on the face of it, was apparent at the time they drew up the petition.

Prof. Axe submitted that the gentlemen on whose behalf the petition was drawn up were very grievously wronged; but the Governors of the Royal Veterinary College were always accessible, and it was a very great pity that the Council had been called upon to do anything in the

matter. It was a matter for the profession, and the profession ought to approach the Governors in a proper manner.

After some further discussion,

Mr. Harpley moved that an answer be sent to Mr. Moore, to the effect that the Council are not able to comply with the petition of the memorialists.

Mr. Dray seconded the motion.

Mr. Greaves said that the resolution gave effect to the view he had all along held. He was of opinion that the grievance complained of was not nearly of the magnitude that the petitioners had set forth. He agreed with Mr. Harpley that the Governors of the Royal Veterinary College should receive a deputation from the town and country practitioners. It was unfortunate that counsel's opinion had not cleared up the point at issue.

The resolution was then put and carried.

Reports of Examiners.

The *Secretary* reported that at the meetings of the Court of Examiners, held January 5th and 6th, ten students from the Royal Veterinary College passed their examination and obtained the diploma of the College, and three were rejected; also that two students from the New Veterinary College, Edinburgh, and one from the Glasgow College, were rejected. At the meetings on the 7th and 8th January thirteen students from the Royal Veterinary College passed their "second examination," and one was rejected. At the meetings on the 9th and 10th fifteen students passed their "first examination," and six were rejected.

A letter was received from Dr. Dunsmure, enclosing certificates from the Edinburgh and Glasgow schools, and stating that the examinations would take place in Edinburgh on January 22nd. He also wished to know whether the Council would be willing to pay the expenses of three rejected students who had gone up to London for examination.

The *Secretary* explained that the students by thus coming to London had saved the Council considerable expense, which would have been incurred had they called a special Board of Examiners to meet in Edinburgh or Glasgow.

It was resolved, on the motion of *Mr. Taylor*, that the three students should have remitted to them their third-class return railway fares.

Letters were received from a number of rejected students, asking their case to be reconsidered, with a view to their coming up for another examination.

The *Secretary* was instructed to write in reply that the applications could not be entertained.

A letter was read from Mr. Green-Armytage, asking for another diploma in lieu of one lost in action at the Cape.

The Secretary was instructed to forward to Mr. Armytage the usual certificate stating that he was a member of the College,

A letter was received from Mr. Menzies, Secretary of the Highland and Agricultural Society, asking for two copies of the Supplemental Charter, which, the Secretary stated, had been forwarded.

The *Secretary* stated that upwards of forty applicants holding the Highland and Agricultural Society's certificate and who had paid their fees and been approved of by the Principals of the Scotch Veterinary Schools, desired to have a diploma.

The Secretary was instructed to send the diploma to each of the applicants.

The Matriculation Examination.

Prof. Simonds read an official communication from the Secretary of the Royal Veterinary College to the Secretary of the Royal College of Veterinary Surgeons, dated 14th January, 1880, which stated that the Governors approved of the scheme for the matriculation examination for *all* the schools, and were desirous of impressing upon each school the necessity of a full agreement in submitting to the same rule. Professor Simonds added that if they did this the Governors would put no difficulty in the way.

The *Secretary* stated that the following letter had been addressed to the Principals of the various schools:

ROYAL COLLEGE OF VETERINARY SURGEONS;
10, RED LION SQUARE, W.C.;
Dec. 6th, 1879.

SIR,—The committee, as per margin, appointed by the Council of the R.C.V.S. to draw out a scheme for the proposed matriculation examination to be held under the direction of the Council at all veterinary schools, beg to submit herewith the draft of an examination sheet, with two conditions relating to the examinations, for your favorable consideration.

Gen. Sir F. Fitzwygram, Bart.
Jas. Collins.
Geo. Fleming.

If you approve of the scheme will you be good enough to reply accordingly for the information of the Council.

I have the honour to be,
Sir,
Your obedient servant,
WM. HY. COATES,
Secretary.

Professor Simonds.
„ Williams.
„ Walley.
„ McCall.

1. No school shall be compelled to admit a candidate even though he may pass the required examination.
2. Any school may hold a higher examination.

The following letters were received in reply:—

NEW VETERINARY COLLEGE;
GAYFIELD, EDINBURGH.
Dec. 9th, 1879.

DEAR SIR,—I return "Educational Scheme" approved of. I, however, think that "Dictation" should be added to English Grammar.

Yours faithfully,
W. WILLIAMS.

ROYAL (DICK'S) VETERINARY COLLEGE;
CLYDE STREET (off St. Andrew's Square),
EDINBURGH.
December 8th, 1879.

W. H. COATES, ESQ.

SIR,—I am in receipt of your communication—with draft scheme of the New Matriculation Examination—which I have laid before the College Council.

We agree with the general scheme therein drawn out (but we think the first condition anomalous and unnecessary), providing the suggestions contained in my letter of the 20th ult. to Sir Frederick Fitzwygram are embodied in it.

I am,
Yours faithfully,
THOMAS WALLEY,
Principal.

Veterinary College.

MATRICULATION EXAMINATION.

PLACE. DATE.

No.	NAME.	ARITHMETIC, including DECIMALS AND FRACTIONS. Max. . . 150 Min. . . 50	READING ALOUD. Max. . 150 Min. . 50	DICTATION. Max. . 150 Min. . 50	ENGLISH GRAMMAR. Max. . 150 Min. . 50	RESULT. Min. to Pass. 200	OPTIONAL SUBJECTS.			
										Good. Indifferent. Bad.
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										

EXAMINERS {

Glasgow Veterinary College,
83 & 85, Buccleuch Street,
Garnethill, Glasgow.

W. H. Coates, Esq. *December 25th*, 1879.

Dear Sir,—I am in the receipt of your favour regarding the matriculatory examination of veterinary pupils, and after consulting with Principals Walley and Williams, I cannot see my way to approve of the scheme which you have submitted to me under the authority of the Council of the Royal College of Veterinary Surgeons. Some time ago I had the honour of a visit from Col. Fitzwygram, and in course of conversation he asked if I would be willing to come to an understanding with the other colleges as to the standard of qualification and other conditions upon which students would be admitted to the colleges, and to which I gladly replied in the affirmative; but it is something very different to desire me, as you have now done, to hand over the power which this College possesses of fixing the conditions upon which pupils will be admitted to the undisputed control and authority of the Council of the Royal College of Veterinary Surgeons.

That there is an urgent necessity for the colleges uniting and fixing a uniform educational test I freely grant, but the colleges, in my opinion, can carry through this reform without calling in the aid of the Council of the Royal College of Veterinary Surgeons, and a step in that direction has already been taken; but should it fail in accomplishing the objects sought, I shall be glad to submit the point or points in dispute to the decision of your Council. I am,

Yours truly,
James McCall,
Principal.

Prof. Simonds moved that the four letters now read be placed upon the minutes.

Mr. Dray seconded the motion, which was carried.

Prof. Walley said he wished to correct a mistake in the minutes. It had been stated that he had laid the matriculation scheme before the Trustees, but he had done no such thing. The matter had never been brought before the Trustees at all, but simply before the College Council, which usually dealt with these matters.

Mr. Greaves thought it would be an advantage to each college if the question of preliminary examination was left in the hands of the Royal College of Veterinary Surgeons. It would be a matter of much regret if the schools did not act in concert. He feared that if the matter was left to the colleges there would be a sort of feeling of rivalry and competition that would step in and prevent them acting in concert. Notwithstanding Professor McCall's letter he (Mr. Greaves) thought that gentleman might be induced to leave the matter in the hands of the Council, which would be a great advantage to the profession.

Mr. Fleming thought it was a matter of regret that Professor McCall had dissented from the arrangement. If there was one thing more necessary than another it was that there should be a uniform system of education. It was a mere elementary education which the Royal College asked for, and he was sure that no school having the welfare of the profession at heart would object to its students being submitted to an examination. He trusted Professor McCall would see his way to join the other schools in acceding to the proposal, which was made entirely for the good of the profession, and would, if carried out, do much for the benefit of the schools themselves.

On the motion of *Mr. Harpley*, seconded by *Mr. Taylor*, the scheme for matriculation was referred to the next Council meeting.

The obituary notice was read.

The following letter was read from the Secretary of the Royal Agricultural Society:

ROYAL AGRICULTURAL SOCIETY OF ENGLAND;
12, HANOVER SQUARE, LONDON, W.
Dec. 16*th*, 1879.

DEAR SIR,—I am instructed by the Veterinary Committee to ask you to be so good as to ascertain from the Council of the Royal College of Veterinary Surgeons whether they could undertake to nominate examiners for the Society's veterinary prizes and medals, so that identical examinations might be held simultaneously in Edinburgh, London, and, if necessary, in Dublin. The object in view is to promote a co-operation between the several agricultural societies, so that the prizes might be equally open to graduates of the Royal College of Veterinary Surgeons, whether they are resident in England, Scotland, or Ireland, and whether they have been educated at the Royal Veterinary College or at any other recognised veterinary school.

Your early attention to this matter will much oblige,

Yours very faithfully,

W. H. COATES, ESQ. H. M. JENKINS, *Secretary*.

Mr. Harpley explained that the letter was in consequence of a meeting of the Royal Agricultural Society a few weeks ago. The Society regretted they could only send up one or two candidates to compete for their prizes, and they were now in communication with the Highland and Agricultural Society in the hope that Scotland would unite with them in having the prizes made general among the students. He did not know if the Council could now deal with this question, but he should be glad if some instructions were laid before the General Purposes Committee at the next meeting.

Mr. Fleming moved that a letter be sent to the Secretary of the Royal Agricultural Society informing them that the College would be happy to assist the Society in every way, and would appoint examiners as soon as the Council had ascertained that an agreement had been arrived at between the Royal Agricultural Society and the Highland and Agricultural Society of Scotland.

Professor Walley seconded the motion, which was carried.

The examination for the Royal Agricultural Society's prizes and medals was fixed to take place at such time as would best suit the convenience of the examiners.

Messrs. Mayer, Gresswell, and Lepper were appointed examiners.

The consideration of the examinations to be held in Scotland was deferred.

It appeared from the report of the House Committee that the negotiations for the premises in Fitzroy Square had fallen through, the solicitor having expressed his doubts as to the genuineness of the title.

Finance Committee.

The report stated that the vouchers and receipts for payment during the past year had been examined and found correct. The present liabilities were £131 6s. 3d., which the committee recommended should be discharged. This would leave a balance at the bankers of £318 8s. 7d.

On the motion of *Mr. Whittle*, seconded by *Mr. Cartwright*, the report was received and adopted.

Cheques were ordered to be drawn for the current expenses.

Annual Dinner.

Professors Williams, McCall, and Walley, and Mr. Robertson, of Kelso, were appointed as a committee to make arrangements for the annual dinner at Edinburgh.

This concluded the business of the quarterly meeting.

A SPECIAL MEETING

was then held. The amended Bye-law No. 7 having been read,

On the motion of *Mr. Dray*, seconded by *Mr. Taylor*, the amended Bye-law No. 7 was adopted, to be confirmed within fourteen days, in accordance with the Charter.

The question of the alteration of Bye-law No. 4, previously moved by Mr. Collins, who had left the room, was postponed until the next quarterly meeting, as was also the consideration of the following notice of motion by Mr. Fleming:—"That no student receive the diploma of the Royal College of Veterinary Surgeons until he shall have attained the age of twenty-one years, and that previous to going up for his final examination he shall furnish the Secretary of the Royal College with the baptismal register of his birth, or a certified copy thereof."

The consideration of the alteration of Bye-laws Nos. 32, 33, and 47, by Professor Walley, was also postponed to next meeting.

Mr. Fleming gave notice that at the next quarterly meeting he should direct the attention of the Council to the importance of taking steps to "obtain an Act of Parliament for the protection of the title of veterinary surgeon, or other titles conferred by Royal Charter."

On the motion of *Mr. Dray*, seconded by *Mr. Taylor*, a vote of thanks was accorded to the President, and the proceedings terminated.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The usual quarterly meeting of the above Association was held at the Blackfriars Hotel, Manchester, on Wednesday, the 17th December, 1879. W. Dacre, Esq., President, in the chair.

The following members and friends were present:—Messrs. P. Taylor, T. Greaves, T. Taylor, John Lawson, T. Hopkin, Alex. Lawson, E. Faulkner, A. Prescot, J. B. Wolstenholme, and H. T. Hodgkinson, of Manchester; T. A. Dollar, London; Mr. Lambert, 17th Lancers; S. M. Wilson, 12th Lancers; J. B. Taylor, Ashton; W. Woods, Wigan; C. W. Elam, Liverpool; H. Fergusson, Warrington; W. Dacre, Altrincham, and the Secretary.

Letters of apology were received from Prof. Williams, Messrs. J. W. Moore, J. Marshall, R. Reynolds, J. Welsby, W. A. Taylor, W. Whittle, D. Hutcheon, and C. E. Challinor.

The minutes of the last meeting were read and duly confirmed, after which

Mr. E. Faulkner proposed as a member of this Association Mr. Litt, of Bolton. *Mr. Fergusson* seconded the proposition, which was carried. *Mr. Peter Taylor* proposed Mr. R. Roberts, of Kendal, as a member seconded by *Mr. Woods*, and carried.

After considerable discussion respecting the election of Lieut.-General Sir F. Fitzwygram, Bart., Prof. Williams, Messrs. Geo. Fleming, Peter Taylor, and Thomas Greaves, as Honorary Associates of this Society, it was decided by Rule XVII, Section 1, that members could not be made Honorary Associates, only strangers, or any other person who was not a member, and according to Section 2 of same Rule there must be three fourths of the members present before any person can be so elected.

Mr. T. Taylor therefore proposed that the names of Lieut.-General Sir F. Fitzwygram, Bart., Prof. Williams, and Mr. G. Fleming be left on the list, and brought forward whenever we have a quorum for such an election, seconded by Mr. T. Greaves, and carried.

Mr. James Lambert then opened the adjourned discussion of Mr. Geo. Fleming's paper, read before this Association at the last meeting, viz. "The Responsibility of the Veterinary Surgeon." He said, When I spoke on the above subject at the last meeting, I ventured to say that I thought an amount of responsibility was assumed in this paper which is out of proportion to the remuneration received by veterinary surgeons. The two subjects which appear to me to merit most attention are—the examination of horses as to soundness, and injuries inflicted in shoeing; as to the latter, I will only say that it appears to me most unjust for many reasons that veterinary surgeons should be liable; as to the former we can see that veterinary surgeons are becoming more and more in request for this duty, and as it is done for (considering its importance) a small fee, generally half a guinea, we must take care that we do not admit for mistakes a pecuniary liability absurdly out of proportion to the payment received. Many veterinary surgeons were alarmed by the apparently severe opinion expressed in Mr. Fleming's paper on the question, and began to think whether examining horses for soundness, and veterinary practice generally, was not a very risky business. In Ireland veterinary surgeons disclaim any pecuniary liability for their opinion, and their charge is one guinea, and examinations are of every day occurrence with them. He, Mr. Lambert, did not see why in England, and in fact everywhere, the charge should not also be a guinea. He believed, and said it advisably, that a veterinary surgeon has not much legal pecuniary liability in his practice; when he makes a mistake, what he has most to dread is loss of reputation, and consequently loss of profit.

Mr. Lambert next quoted the opinions of several barristers and solicitors. They had looked over causes in the law books, but found none; so you see cases are rare, and I think you will find they will continue to be so. They all concurred in the opinion that there must be proved gross ignorance or negligence, and you must decidedly outweigh your opponent by numbers, if you can, and, if possible, throw a professor or two into the scale. This is a nice state of things—outweigh your opponent by numbers. It shows what lawyers think of professional evidence, and the same applies to the medical profession. These opinions show us how urgently reform is needed, and that veterinary surgeons should be united, and never try to make money in the witness box at another's expense. Professional evidence should be selected by the court, and not by the advocate. Professors generally should never appear in order to secure a fee in cases where they have no concern, in fact, they should only appear in order to prevent gross injustice; if they appear for any other reason it is degrading to their teaching, office, and to the college to which they belong.

Mr. T. A. Dollar said he quite agreed with Mr. Lambert. If a veteri-

nary surgeon used ordinary diligence and sagacity in operations, and in giving opinions, using good instruments, being steady, and taking every possible care, then he could not be liable for any loss that may arise.

Mr. T. Taylor, A. Lawson, T. Hopkin, John Lawson, &c., all coincided with the opinions of the above gentlemen.

Mr. Peter Taylor thought the responsibility of the veterinary surgeon to be very great. Your clients do not bring forward a claim against you at the time; but when they find one or two experts whose opinion is against you, then they try what they can do. Mr. Lawson says—"Who can expect a young veterinary surgeon coming from the walls of a college to be able to do everything right?" I contend he is liable if he does not know, and if experts say he has made a gross mistake we have a great difficulty to contend with. All horses are different—no two alike, and men differ in opinion of them constantly, being perfectly honest. What we must endeavour to do is our duty honestly and straightforwardly, giving our opinion to the best of our ability, and then risk the consequences.

Mr. Greaves observed,—The discussion on this subject will have done our profession a great service if we only arrive at a clear, enlightened, and logical conclusion—a conclusion which will not only commend itself to our senses, but which will be at the same time legally sound, and a safe protection.

I have studied this subject as carefully and as earnestly—nay, perhaps more carefully and more earnestly than the majority of my professional brethren have done. At the time I compiled my paper upon this subject, which I read before the Liverpool Association in 1868, I read every passage in Oliphant's 'Law of Horses,' and every paper that I could find which had reference to a veterinary surgeon's responsibility. I was so anxious to make my paper worthy of my profession that I sought the opinion of Messrs. Loch and McLaren, of London, the solicitors to the college. They considered the whole matter carefully and fully, and gave me their opinion; they also advised me to get the highest counsel's opinion on the subject. I gave them authority to obtain this, which they did. These several opinions will be found recorded at p. 256 and following pages in the *Veterinarian* for 1868. A short time ago I received a letter from Mr. Tom Taylor. It contained a solicitor's opinion upon this subject, the pith of which was that we were bound to bring a sufficiency of skill and a sufficiency of care in the performance of every operation, and in the examination of every horse as to soundness. Where this is not exercised we deserve to be made to suffer. This inefficiency and negligence must be gross and evident to ordinary thinking men. But where proper skill and care are practised, and such opinion is disputed and contested, then he says we must get the opinion well supported by quantity and quality of veterinary evidence.

Since our last meeting I, in company with a solicitor of eminence, have carefully drawn up a form of certificate, which I now propose to this meeting, and through it to my profession.

Form of Certificate.

I hereby certify that I have this day, at the request of Mr. ————, of this city, examined a bay gelding in respect to soundness, and that I consider such horse to be five years old and sound.

This certificate is given, after careful examination, to the best of my judgment and belief, but subject to my not being held pecuniarily responsible for the opinion expressed in such certificate.

(Signed) THOMAS GREAVES.

I strongly commend this form of certificate, especially when it is a high-priced animal we are examining, or when we apprehend advantage may be taken of us. There may be some of my professional brethren who will pooh-pooh this form of certificate, and say it cannot be binding; they may say—"See the notice on the railway passenger's ticket: it is not legally binding;" but I am advised that there is not the slightest similarity between the two cases. Perhaps some may cavil who have never given five minutes' deep, earnest consideration to the subject in their lives. But I ask the more thoughtful, enlightened, and earnest men in my profession to ponder it over seriously, for we cannot conduct our daily avocation, such as it is, with a halter like a millstone round our necks, as is now the case, and be liable to be tripped up at every step we take by other eminent experts giving evidence in a court of law against us. *Something must be done.*

If the want of skill, or want of due care, is palpable, then neither this form of certificate nor any other form of certificate can protect us, nor is it right it should do; but if we have exercised proper care, and brought to bear sufficient skill, then the above form of certificate, "*it being a notice to the party of the terms and the only terms on which the certificate is given,*" will entirely remove our responsibility, and will prove a perfect and complete protection.

Mr. J. B. Wolstenholme placed upon the table a number of the capsules of the *Trichina spiralis*, and gave a short history of them, whch he saw some months ago. A male dissecting subject in the Owens College, Manchester, was found to contain Trichinæ; a portion of muscle was given to him in which he found a large number of the capsules of the *Trichina spiralis*. He said that of the specimens I exhibit one is an entire capsule, the other a section showing its positive relation to the muscular fibres. All the capsules have undergone calcareous degeneration (being the calcareous particles of the first discovery), and must in consequence have been in the subject for a long time.

The specimens were viewed with great interest by the members, and a cordial vote of thanks was accorded Mr. Wolstenholme.

The *Secretary* then read a communication which he had received from the secretary of the Liverpool Veterinary Medical Association, requesting the Members to consider a resolution passed at a recent meeting of that Society, with respect to the election of candidates to the Council of the Royal College of Veterinary Surgeons. After considerable discussion the matter was left in the hands of a committee, which was at once formed, viz. Messrs. W. A. Taylor, J. B. Wolstenholme, A. Lawson, E. Faulkner, the president and secretary, and a resolution was passed requesting the secretary to communicate with the secretary of the Liverpool Veterinary Medical Association, thanking him for his letter, and intimating to him the decision aimed at.

The following gentlemen were then unanimously re-elected officers of the Association for the ensuing year:

President.—Mr. W. Dacre.

Vice-Presidents. — Messrs. T. Hopkin, John Lawson, and W. A. Taylor.

Treasurer.—Mr. A. Lawson.

Secretary.—Mr. Sam. Locke.

A cordial vote of thanks to the office bearers for the past year, which was carried by acclamation, closed the proceedings.

SAM. LOCKE, *Hon. Sec.*

ONTARIO VETERINARY COLLEGE MEDICAL SOCIETY.

The above Society, which has been established for some time in connection with the College, held their first weekly meeting for the session of 1879 and 1880 on November 9th in the lecture room. Sixty-seven members were enrolled. The chairman, Professor A. Smith, President of the College, in his introductory remarks, dwelt chiefly upon the benefit to be derived from this Society, and the good feeling that had in previous sessions existed among the students in discussion of their various subjects. The following gentlemen were then elected officers for the session :—Mr. J. P. Whitehead, Delaware, Ont., Secretary ; Mr. B. B. Page, Chicago, Ill., Treasurer; Mr. R. Riddell, Cobourg, Ont., Librarian ; and Mr. G. Dumphy, Assistant Librarian. Since that time regular weekly meetings have been held, at which an essay and two communications on disease and treatment of domesticated animals have been read. Essays have been read upon sprains, indigestion, laminitis, tympanitis, injuries and diseases of the shoulder-joint, and azoturia. Among the communications may be noted cases of difficult parturition, nasal gleet, hernia, parasitic bronchitis, navicular arthritis, parturient apoplexy, embolism, &c., all of which gave rise to animated discussion, and from which the students derived great benefit, especially those of the junior class. Another feature of importance in connection with this Society, and one from which the students derive special benefit, is the remarks made by the President before the close of each meeting upon the subjects discussed.

J. P. Whitehead, *Secretary.*

Toronto, December, 1879.

NEW MEMBERS OF THE PROFESSION.

At the meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held January 5th and 6th, the following students from the Royal Veterinary College received their diploma, and were admitted members of the profession :

Mr. William Hastings Farrow .	London.
— Wm. John Payton Tibbetts .	Harborne, Birmingham,
— Frank Taylor . . .	Cradley Heath, Staffordshire.
— Wm. John Malvern . .	Cheltenham.
— Frederic Gowland Rugg .	Wye, Kent.
— Nicholson, Almond . .	Great Clacton, Colchester.
— Henry Augustus Rumboll .	Bristol.
— George Rees . . .	Llanboide, Carmarthenshire.
— Henry Heyes . . .	Neale, Co. Mayo.
— James Bayes . . .	Kettering, Northamptonshire.

Messrs. Malvern, Rugg, Almond, and Rumboll passed with *Great Credit.*

The following students of the Royal Veterinary College passed their *Second Examination* at a meeting of the Court of Examiners on January 7th and 8th :

Mr. Robert Joseph Dawson.
— Edward Harry Wand.
— Alfred John Down.
— Charles Samuel Hunting.
— Edward Charles Whisken.
— Ernest Emelius Bennett.
Mr. Edward Arthur Hollingham.
— Edward Langford.
— Francis William Sharp.
— Arthur John Blake.
— Arthur Rogerson.
— Stephen Edward Holmans.
Mr. John Kirby Pilkington.

Messrs. Dawson, Wand, Hunting, Bennett, Hollingham, Rogerson, and Pilkington passed with *Great Credit.*

The following students of the Royal Veterinary College passed their *First Examination* at a meeting of the Court of Examiners on January 9th and 10th:

Mr. David Martin Barry.
— Frank Joslen.
— Frederick Henry Pinkett.
— Frank James Peck.
— Edward James Sewell.
— William Henry Bartrum.
— William Thomson Yeates.
Mr. Phillip Turner.
— Edward James Mellett.
— Herbert Pollard.
— Thomas Down.
— Alexander Henry Waddell.
— Joseph Chaplin.
— Charles Hartley.
Mr. Francis Morton Wallis.

Messrs. Peck, Sewell, Bartrum, Down, and Hartley passed with *Great Credit.*

At a meeting of the Scottish section of the Court of Examiners of the Royal College of Veterinary Surgeons, held in Edinburgh, January 22nd, the following students passed their *First Examination:*

EDINBURGH VETERINARY COLLEGE.

Mr. James Pou
Mr. James Geo. O'Donel.

EDINBURGH NEW VETERINARY COLLEGE.

Mr. Wm. Malcolm Lyon
— Frederick Jones
Mr. Wm. Smith King.
— Peter Dalling.

GLASGOW VETERINARY CCLLEGE.

Mr. Robert Yates.

Messrs. O'Donel and Jones passed with *Great Credit.*

MEMBERS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.—SPECIALLY ADMITTED.

THE following candidates, holding the Highland and Agricultural Society's Certificate, have obtained the Diploma of the Royal College of Veterinary Surgeons:

Anderson, William	Alford, Aberdeenshire	1867
Beattie, Peter	Bogfern, Turriff, Aberdeenshire	1867
Breakell, George	Garstang, Lancashire	1854
Brown, John	Roxburgh, W. Calder, Edinburgh	1859
Cassie, John	Westerton, Fyvie, Aberdeenshire	1861
Cooper, John	Fordyce, Banffshire	1871
Connochie, Jn. Dixon	Selkirk	1858
Dalling, Thomas	Whiteside, Edinburgh	1874
Dollar, Thomas Aitken	London	1851
Dun, Finlay	Ditto	1849

Farquhar, William	Shawstonhead, Ayrshire	1848
Ferris, John	Brechin, S. Wales	1856
Finzzies, James	Lochgilly, Fifeshire	1860
Fraser, Alexander	Earlsfield, Kennethmont, Aberdeenshire	1856
Frater, William	Lesmahague, Lanarkshire	1864
Gibson, Alexander	Millbre, Fyvie, Aberdeen	1868
Gunn, Alexander	Balloan, Beauly, Invernesshire	1875
Hepburn, John	Milnathort, Kinrosshire	1850
Hutton, John	Kelso, Roxburghshire	1874
Ironside, Jn. Matthew	Milltown, Rothiemay	1872
Kay, Thomas	Ardwick Green, Manchester	1871
Lawton, Peter	Alderley, Chelford	1862
Macintosh, Robert	Falkirk	1855
McLean, Lachlan	Brooklyn, U.S.	1854
Margarson, Edward	Stoke Ferry, Norfolk	1874
Meiklam, Robert	Drumry, E., Kilpatrick	1866
Merry, Charles	Irvine	1863
Millar, David	Alyth, Perthshire	1877
Miller, William	Bradninch, Collumpton, Devon	1853
Mitchell, Robert	Glasgow	1859
Nimmo, Andrew	Linlithgow	1850
McEwen, John	Killin, Perthshire	1867
Perry, Edward	Ibstock, Leicestershire	1865
Philp, George	St. Andrew's, Fife	1872
Reid, Robert	Leith, Edinburgh	1860
Schofield, John	Pontefract	1857
Seed, Samuel	Keighley	1875
Simon, John	Forgue by Huntley	1866
Smith, William	Tranent, Haddingtonshire	1852
Summers, Wm.	Sidmouth, Devon	1866
Tait, George	Elgin	1848
Tait, Joseph	Turriff	1861
Tallontire, John	Skelton, Cumberland	1863
Wright, William	Tideswell, Derbyshire	1857
Young, John	East Calder	1870

Veterinary Jurisprudence.

SHEEP ROT.

WINTER ASSIZES, MAIDSTONE, JANUARY 14TH.

NISI PRIUS COURT.—(Before Mr. Justice DENMAN.)

LUDGATER *v.* LOVE.

THIS case, which was tried at the last Assizes here, and in which a new trial had been ordered, was one of some interest. It was an action on a sale of sheep in Maidstone market, which were alleged to have been sold on a representation by the defendant that they were "all right," whereas in truth they were rotten and diseased, having a diseaae called the "fluke."

Mr. F. J. Smith (with Mr. Kempe, Q.C.) was for the plaintiff; Mr. D. Kingsford was for the defendant.

It appeared from the evidence that the sheep—22 in number—had been bought by Mr. Love, the defendant, towards the end of 1878 (about a month before the sale to the plaintiff) at Ashford market for one Leeny, and had been sent to Leeny, at Wateringbury. A few days

afterwards Leeny saw that they were diseased, and complained to Love about it, making a claim upon him for compensation. The defendant employed his son to sell the sheep at Maidstone market on the 31st of December, 1878, and the day before the market he told his son that the sheep "did not suit" Mr. Leeny and that he wanted to get rid of them, saying that they were a "bad lot." When asked whether he told his son they were diseased his answer was "No; I should not be such a fool as to tell him that!" and he admitted that he knew from Leeny that they had the rot. While the sheep were in Maidstone market a Government contractor saw them, and perceived and pointed out to the defendant's son that they were diseased. However, they were sold there to the plaintiff, as he alleged, on the representation that they were Mr. Leeny's and sold by him because he had too many and that they were "all right"—he giving 38s. apiece for them. They were sent to the plaintiff's farm at Newington, near Sittingbourne, about nine miles from Maidstone, and on the very next day they began to die off from the disease, and ultimately all but seven died. The rest were sent to Rochester and sold at 8s. apiece as diseased; but being found to be bad, the plaintiff took them back at 1s. a head and brought this action to recover from the defendant the loss he had sustained. At the first trial here, at the last Assizes, before Lord Justice Baggallay, the case was put as one of warranty. The plaintiff got a verdict for £40, but the verdict was set aside by two Judges in the Court of Exchequer, on the ground that the Judge had failed to direct the jury on the question of authority of the son to bind the father by a warranty in the absence of fraud or express authority to give a warranty. On the present trial the question arose whether it was a case of warranty or false representation, and there was a good deal of discussion about it; the point arising, on the supposition that it was to be treated as a case of deceit or false representation, which equally divided the Court of Exchequer some years ago, when Baron Bramwell was a member of it—in a case of "Udall *v.* Atherton"—whether on a sale by an agent, who gives a false representation without express authority to do so, the principal is bound by it. After a good deal of discussion, the counsel for the plaintiff desiring to treat the case in the alternative as one of warranty or false representation, and contending that there was evidence of the defendant's complicity in the alleged deceit (from the very fact of his abstaining carefully from telling his son the sheep were diseased), it appeared to be the opinion of the learned Judge that the case was to be treated rather as one of false representation than warranty; but that it would be better to take the evidence, and leave it to the jury in such a way as, if possible, to prevent any further litigation in the case. Accordingly, at the close of the evidence, the contention on the part of the defendant being that there had been neither warranty nor representation to the effect alleged, and he and his witnesses denying it altogether,

The learned *Judge* left specific questions to the jury on all the material points, and they found for the plaintiff—Damages, £40.

SIR FREDERICK FITZWYGRAM'S ANNUAL PRIZES.

The examination is intended to take place in the week after the Easter examinations of the Royal College of Veterinary Surgeons, 1880.

The competition is open only to members of the Royal College of

Veterinary Surgeons, who have obtained their diploma within twenty-five months of the date of the examination, and who passed with great or very great credit.

The prizes are three in number. The first is of the value of £50; the second £30; the third £20.

The competition will consist—1st, of a written, and 2nd, of a practical and *vivâ-voce* examination, on subjects pertaining to veterinary science.

1200 marks will be assigned to the first part, and 600 marks to the second part.

In the first part the marks will be assigned as under:

Anatomy, 300; Physiology, 300; Pathology, 300; Chemistry, 100; Botany, 75; and Materia Medica, 125.

The time allowed for the written examination will be as under:

Anatomy, 3 hours; Physiology, 3 hours; Pathology, 3 hours; Chemistry, 1½ hours; Materia Medica, 1½ hours; Botany, 1½ hours.

In the second part the marks will be assigned as under:

Diagnosis of Disease, 200; Shoeing, 100; Examination for Soundness, 200; Selection of Horses for specific purposes, 100.

A competitor failing to obtain *two thirds* of marks assigned to *any* of the papers in the written examination will be excluded from the second or *vivâ-voce* examination. Two thirds of the marks assigned to each subject in the second part must also be obtained.

The names of intending competitors are to be forwarded to the Secretary of the Royal College of Veterinary Surgeons, 10, Red Lion Square, at least three days before the date of competition.

The first portion of the examination will take place in London and in Edinburgh simultaneously.

The five best competitors in the first or written examination will be selected for further competition in the practical or *vivâ-voce* test.

This further competition will be held in Edinburgh this year, or in such other place as may be most convenient to the majority of the selected competitors, and at such time as may be hereafter notified.

The donor will pay the railway fares of each of the selected competitors, to and from the place at which the practical examination is held.

The exact date will be notified as soon as the Scotch examinations are fixed.

Further particulars can be obtained from the Secretary of the Royal College of Veterinary Surgeons.

ARMY APPOINTMENTS.

War Office, *January 23rd.*

Veterinary Department.—Frederick John Short, Gent., to be veterinary surgeon on probation.

Harry Arthur Woodroffe, Gent., to be veterinary surgeon on probation.

OBITUARY.

Mr. J. Jonathan Bagley, M.R.C.V.S., Bridgenorth, Salop. His diploma bears date April 17th, 1869.

THE

VETERINARIAN.

VOL. LIII. No. 627. MARCH, 1880. Fourth Series, No. 303.

Communications and Cases.

SYNOPSIS OF CONTINENTAL VETERINARY JOURNALS.

By John Henry Steel, M.R.C.V.S., F.Z.S., Demonstrator of Anatomy at the Royal Veterinary College.

Summary.—From the *Révue Vétérinaire*, December, 1879: "Extracts and Analyses of Journals," by M. Labat, November, 1879: "German Veterinary Review," by M. Neumann.

Professor Perroncito on "Typhus of Fowls and Trichina," from *Recueil de Médecine Vétérinaire*, 15th January, 1880.

Serious Accidents following Vaccination, from M. Labat's "Review of Journals."

Dr. Vallein, in the *Revue d'Hygiène et de Police Sanitaire*, states that the Roman Committee removes with scissors, from the teats of the vaccine-bearing cow, the small layer of skin in connection with the pustule. These fragments of tissue are sent to those doctors of the neighbouring towns who require vaccine. For San Quirice d'Orcia the pustules were forwarded from Rome on 22nd April, and received on the 24th. Their use for vaccination commenced on the 26th, and was continued until the 29th of April, when they gave off an odour due to commencing putrefaction. Probably this generated septic fluids, which were introduced

with the vaccine. The rapid appearance of red spots, fever, erysipelas, suppurative boils, and, in one case, death of a vaccinated child, may be explained as due to septicæmia. We can understand that in Italy, during the month of April, at the end of seven days decomposition would have commenced. It is evidently unsatisfactory to send the entire vaccine pustules any considerable distance.

On Amylaceous Degeneration of the Liver of the Horse, by Dr. PRANA.—The author made a microscopical study of the liver of a horse which died from rupture of that organ. The portion examined, having been preserved in very good alcohol, exhibited no signs of putrefaction, but was extremely friable, giving way readily under pressure of the finger. The general coloration was paler than that normal to liver substance which has been for a long time in alcohol. On one of its surfaces the piece of liver seemed formed of a broken-down substance, with its granules united by delicate threads. Sections from this part treated with glycerin showed the hepatic cells, not polygonal, as normally, but with hollowed margins and prolongations, their protoplasm granular,and sometimes infiltrated with fat, the nuclei distinct, and generally one to each cellule. In contact with these altered cells were observed nodulated masses, colourless, highly refractive, and about thirty micro-millimètres in diameter, as well as cylindrical bodies formed of a similar substance, nodulated on their surfaces, and often seeming as though made up of juxtaposed portions.

It was suspected that these cylinders were only degenerated capillaries. To assure himself of this, the author made sections of those parts where the liver did not seem broken up. These sections exhibited, from several points of view, the capillary network made up of cylinders similar to those already described. All the vessels had thickened walls. Methylaniline and tincture of iodine, by their reactions, proved accurately that the nodulated masses and the cylinders had undergone amylaceous degeneration. This is important from a histological and pathological point of view, for it shows that amyloid degeneration originates from the constituents of the vessels, the liver cells being only deformed, whilst it is said that this disease in man generally originates in the hepatic cells. It may be that degeneration of the vessels can cause spontaneous rupture of the liver, but this single case hardly suffices to prove that such is the case (*Giornale de Anatomia Fisiologia e Patologia di Animale,* Pisa, 1879).

How Displacement of the Third Phalanx is produced in

Chronic Laminitis, and also Rational Treatment based on this Theory, by M. G. Fogliata.—The author considers as erroneous the prevalent idea that the gradual displacement of os pedis is produced by a mass of newly-formed horn interposed between horny and sensitive laminæ. He thinks that this is not the order of things. It is not that the horny tumour forces os pedis out of place, but the reverse. Inflammation has destroyed, to a certain degree, the intimate union of horny and sensitive laminæ, and os pedis, not being soundly supported, alters its position, and consequently new horn forms between the tissues. The horny tumour is the *effect* not the cause of separation. But why does the bone alter its position? M. Fogliata insists that the bone does not descend; strictly, it simply undergoes rotation on its transverse axis; the toe of the bone only descends, while the basilar and retrossal processes rise. This being allowed, we can see that a certain rearrangement of the bony rays of the limb (phalanges and metacarpals or metatarsals, as the case may be) tends to bring the weight of the body on the coronal process to a considerable degree, correspondingly relieving the remainder of the articular surface of the third phalanx. Os pedis being unsupported, therefore, yields to this tendency to rotatory movement. The next question is, What could prevent this? Extensor pedis could do so, but that muscle, powerful as it is, cannot be compared with the flexor perforans, which is of greater volume and singularly favorably inserted. While these conditions are combining to bring about displacement, the inflammation which has led to separation of the horny and sensitive laminæ ensures a secondary and serious condition—the formation of the horn tumour.

The author thus attributes the greater number of these effects to the action of the perforans, and suggests a remedy, *plantar tenotomy.* He has made some experiments which confirm the value of this method, and recommends it to his brother professionals as well worth a trial, considering the uselessness of other means (*ibid*).

On Tetanus, by Dr. Möller.—Billroth having expressed an opinion that tetanus is perhaps a blood disease, Dr. Möller determined to try some transfusion experiments with the blood of a tetanic animal. These experiments, five in number, were made at the Berlin Veterinary School. Transfusion was made from horse to horse of defibrinated blood, in quantity varying from 300 to 500 grammes. This was done by means of a Pravaz syringe of large size, capable of containing 500 grammes of blood, with a strong, perforated, sharp nozzle, 1·5 mm. to 2·5 mm. in diameter, with an

equally large opening externally. The canula was introduced, without difficulty, into the jugular or other large vein, escape of blood through the needle serving to indicate that it had penetrated the vessel. This syringe is very useful for intra-venous injection of remedial agents, for which use Dr. Möller had it constructed. He considers it has great advantages over other methods proposed for the same purpose, and especially notices that Helper's apparatus is rather difficult to use in practice. In all cases, shortly after the transfusion of tetanic blood, the animal experimented upon exhibited a very marked rise in temperature, accompanied by violent muscular twitchings in all parts of the body. When the case of tetanus was a chronic one—that is to say unaccompanied by fever—the elevation of temperature was more gradual, less marked, and less persistent than when the tetanus was acute and accompanied by fever. In the former the elevation of temperature, on an average, was 2° or 3° C. at the end of seven or eight hours, and twenty-four hours after the operation the body had regained its normal temperature. Two horses before the operation gave readings of 38·8° and 38·4°; after receiving the blood of a patient suffering from acute tetanus in half an hour these had risen to 40·2° and 40·1° respectively; the maximum readings (41° and 41·2°) were attained after five or six hours, and the normal resumed only after forty-eight hours. It is as well to note that the former of these animals, before transfusion, had an amount of blood equal to that injected removed by bleeding. This precaution was not adopted with the other. Also, in neither of the cases was there any extension of the first symptoms, showing a true tetanus. The same syringe was used for injection of chloral hydrate into the veins of tetanic horses, but the results were generally unsatisfactory. With doses of 100 to 125 grammes relaxation of the muscles almost invariably occurred, but after a state of narcotism, which lasted about four or five hours, the spasms again appeared, often with increased intensity, and the animals, falling down, were generally most violently agitated. On the other hand, chloral hydrate given *en lavement* gave good results, as seems from the observations of M. G. Hartmannn (*Monatschrift des f. Ver der Th. in Oesterreich*, I, No. 4) on two cases of cure by this method, after persistence for twenty-one days in one case and fourteen in the other, the agent being given in daily doses of from three to twenty-four grammes (about ℈ij—℥vj) in 500 to 1500 grammes of water, and administered many times (*Archiv f. Wiss. und Prakt. Thierheilkunde*).

The Effects of Food devoid of Calcareous Matter on the Nutrition of Bones. By MM. G. & C. Voit. —In experiments undertaken to elucidate this important question the authors determined the amount of lime contained in the food and that expelled in the excrements. Also they experimented sometimes with young and still growing animals, and sometimes with adult fully-grown subjects. Two different conclusions were found to be possible :—(1) the organs and fluids requiring the quantity of lime salts necessary to them removed it from the bony tissue ; thus, while the rest of the economy remained in its physiologically efficient state the bones became diseased ; (2) or else the bony tissue retaining the calcareous matter with more energy than the other organs, death occurred before the skeleton had undergone any appreciable change. These being the possibilities, MM. Voit obtained the following results :—Young animals with imperfectly formed skeleton suffer more from deprivation of lime than adults, and directly in proportion to their size. Young dogs, fed exclusively on fat and flesh, became excessively rachitic, without any other modification of the general nutrition ; the muscles exhibited a normal development, and the fatty tissue was regularly distributed and abundant. The disease consisted in an inflammation of the parts of the bones in which growth occurs, and especially in the most freely movable rays of the lime. A similar process occurs, even though the aliment contains sufficient lime, when, from any cause, such as disturbance of digestion or use of too great quantities of principles tending to increase the amount of excrements, a small proportion only of the lime in the food is absorbed. Of two adult pigeons of the same age, one was fed with grains of washed wheat and distilled water, the other with wheat grains and ordinary water rich in lime salts. At the end of the year no difference, either in the nutritive state of the body or in the weight, was perceptible ; but some months afterwards the former had a fracture of the wing bone, without having wasted away nor presented the least sign of ill-health. Autopsy showed very advanced osteoporosis, but no rachitis. The bones in general were affected, but especially those almost or totally immovable. The same result has been obtained by Chossat in his celebrated experiments, he having found the bones of the cranium and the sternum in the condition of very thin layers, rendered sieve-like by openings. *Lehmann* has made certain researches on the same subject. He found that a young pig, fed for 126 days solely on potatoes, became affected with

rachitis, whilst other pigs of the same litter, who, besides potatoes, received powder of lye, meat, and phosphates, had a normally developed skeleton. Among these latter were some differences nevertheless. Those fed with potassic phosphate had bones more porous and less dense than those who received, besides potassic phosphate, phosphate and carbonate of lime (*Amth. Bericht d.* 50 *verslg. Deutsch Naturf.*, &c.).

On the Influence of the Fumes of Metallic Works on the Production of Tuberculosis and Rachitis in Cattle. By HAUBNER.—In the neighbourhood of the metal foundries of Freiberg cattle are affected with diseases of the osseous tissue—rachitis in growing stock, oteoporosis in older animals, especially in milch cows, from whom large quantities of lime and phosphoric acid pass in the milk. The herbage here is remarkable for an abnormal richness in acids, whilst in the ash acid sulphates replace basic carbonates. Besides sulphuric acid, the fumes of the foundries contain arsenic, lead, and zinc. The form of tuberculosis observed in the cattle is not the ordinary, it is confined to the lungs, and the author attributes it to the dust of arsenic, zinc, and lead, which, spread over the herbage, during feeding penetrates the respiratory passages. The diseases of bone result from insufficient consumption of lime, and from excessive loss of phosphate of lime resulting from an acid diet. In addition all the organism is acidified, the contents of the first three stomachs and of the intestine, the marrow of bones, the saliva, and the urine have an acid reaction; besides, the urine contains a very large amount of phosphate of lime. Since these facts have been proved measures have been taken to prevent dispersion of sulphuric acid in the air, and the above-mentioned disorders seldom claim victims (*Centralblatt für Agriculturchemie*, vi, 9).

On Pneumonia in the Bovine Species, by Dr. ANACKER.—The question whether cattle suffer from a non-contagious sporadic form of pneumonia having been recently raised, Anacker considers that after the number of cases cited in support of this possibility there can be no question of the matter. He cites the latest instance observed by him tending to support the observations which he has already collected upon this subject. Last spring he was officially informed of the opening of a cow slaughtered in the abattoir in which had been noted the characteristic marbled appearance of the lung of pleuro-pneumonic zymotica or peripneumonia. He visited the establishment of the seller of this beast, who had had her in his possession for more than a year,

but could not there observe the slightest trace of peripneumonia, all the cows being in a state of perfect health and remaining so. Before this, in 1865, in the *Magazin für Thierheilkunde*, Schmidt had described a disease affecting two cows in a shed, without any of the other beasts standing with them becoming in the slightest degree indisposed, when, except in this important peculiarity, the description given was that of epizootic pleuro-pneumonia. Similar facts were published afterwards by Eberhard, Schmetz, Harting, Pauli, &c. Thus Spinola's opinion that marble-like hepatisation of the lung is *not* a pathognomonic sign of epizootic pneumonia is confirmed. The differential diagnosis of these two disorders is surrounded with difficulties; very frequently they are confounded in spite of every care. Generally, however, in simple pneumonia only a single case occurs in an establishment, and the disease is not transmitted to the other head of cattle. The affection is an acute, pure, regular inflammation of the lungs, and at the end of some days the percussion and auscultation determine the presence of hepatisation. At autopsy, instead of thrombosis of the pulmonary arteries, such as we see in epizootic pleuro-pneumonia, and instead of copious infiltration of a yellow colour and gelatinous appearance of the interlobular areolar tissue, and often puckering of that tissue, and the marked variation in colour of the different consolidated portions, some days after the commencement we find in simple pneumonia hepatisation everywhere in the same stage, extending continuously through the lung tissue without the sharp demarcation between healthy parenchyma and that which has undergone morbid changes. Also, it is important to note the presence of cellular infiltration of the pulmonary air cells. Degeneration of pulmonary parenchyma and exudations never in this case attain the considerable bulk which they do in pleuro-pneumonia zymotica.

Gerlach considers the marbled hepatisation characteristic of epizootic pleuro-pneumonia, when it is accompanied by an exudate coagulated in the interlobular areolar tissue around the differently coloured pulmonary lobules, whether these contain air or not. The affected portion of lung is increased in volume and weight, and has lost its elasticity. Besides epizootic pleuro-pneumonia, Gerlach allows the occurrence in bovines of a metastatic pneumonia, a pneumonia due to foreign bodies, a traumatic pneumonia, and a tuberculous pneumonia. In none of them is marbled hepatisation to be met with. The following case, related by M. Saur in the *Repertorium der Thierheilkunde* (1878, 4me

fasc.), does not tend to support this opinion:—A cow has for some days been off her feed. She has a dull, painful cough; the respiration is laboured and abdominal; an abundant discharge collects around the nostrils; there is pain on pressure of the intercostal spaces. On percussion of the right side a dull, feeble sound is recognisable, with firm resistance of the parts; normal resonance in some parts of the lung. Auscultation confirms the results from percussion. Pulse, 50 per minute; temperature of the surface variable and irregularly diffused. *Diagnosis.*—Interstitial pneumonia involving a considerable portion of the lung. The cow is slaughtered, and, on autopsy, exhibits the same lesions as are found in pleuro-pneumonia contagiosa. Nevertheless of six other cows in the same stable none showed the slightest symptom of disease" (*Der Thierarzt*, No. 1).

We have lately received from Professor EDOARDO PERRONCITO, who occupies the chair of veterinary medicine at the University of Turin, copies of certain papers communicated by him to the *Annals of the Agricultural Academy of Turin*, as well as his 1879 introductory address on the Parasites of Man. These papers on "Tuberculosis in its Relations to Social and Rural Economy," on "Grandine or Panicatura (cestode tuberculosis) in Man and other Animals," "On Progressive Muscular Atrophy in a Calf," "Epizootic Typhoid of Fowls," and "*Tænia alba*," &c., serve to assure us of the good scientific work which is being done by the author. His observations of the typhoid disease of fowls are most interesting. His paper on this subject was read in 1878, and the remarkable results obtained by Perroncito are mentioned in the paper on "Typhoid Fever of the Pig and Typhus of Fowls," by M. Megnin, in the *Recueil de Médecine Vétérinaire* for 15th January, 1880. "Finally, since 1876 I have many times observed and studied typhus in the bodies of fowls which have been sent to one of my friends, director of the journal known as *L'Acclimation*, by the subscribers of the said journal, who are mostly agriculturists. I have been thus able to verify the exactness of the descriptions of Professor Perroncito, of Turin, and especially to confirm the discovery which he made in 1878 in his mémoire (the one before us), which for the first time describes and figures the micrococcus or microbium which is the intimate cause of typhus of fowls, and by multiplying in the blood of affected birds soon renders that fluid unfit to support life."

Megnin inserts the figure of the micrococcus after Perroncito, and contrasts it with the Bacteria of "charbon" and of "typhoid of the pig." In the same number of the same

journal, under the heading "Scientific Chat—Trichinosis in Italy and America," we learn some of the more recent doings of the Turin professor. The *Abeille Médicale*, 26th May, 1879, contained the translation of an article from the *Boston Journal of Medicine and Surgery* in which were related some experiments made at Chicago on trichinosis. The results are so remarkable that, if the names of medical professors had not been given in connection, we might well ask whether all the inquiry is serious. Thus, they conclude that men can periodically consume Trichinæ without inconvenience. This explains why, without compunction, the new world exports into Europe and Asia its poisonous products, which in our latitude have by no means the innocent characters which they have on the other side of the Atlantic Ocean. To prove his statements, Dr. Belfield, more courageous even than our undoubtedly bold colleague M. Decroix, consumed a dozen living Trichinæ, which three weeks after ingestion had not interfered with his health. It is right to add that the journal does not give the end of the trial; perhaps the Trichinæ began to manifest their effects when the bearer began to congratulate himself on having become accustomed to their presence. The Americans find it especially interesting to them, and this appears to be substantiated, that a very small quantity of sulphuric acid, mixed in the vessel in which the pork is kept, suffices to destroy the helminths without injuring the meat. The Yankees are so surprising that we must ask ourselves whether they imagine that because one of them has been pleased to infest himself with Trichinæ, and has seemed to suffer no inconvenience, it will make us forget what has occurred in Germany, and especially at Dresden and Madgebourg. M. Edward Perroncito, Professor of Veterinary Medicine at the Turin University, has been for several years occupied specially with this question. His first researches date from 1876, when he observed trichinosis in a dog under circumstances so singular as to deserve mention. During the session of the Medical Congress various amputations had been made on a dog by means of the galvanic wire, among others of the tongue and of the muscles of the thigh. M. Perroncito kept the subject alive for six days, and then destroyed it. He then remarked on the cut surfaces whitish points, which under the microscope proved to be encysted Trichinæ. In the month of January last a large number of hams was received in Turin from Cincinnati. M. Perroncito examined and found in them very numerous Trichinæ. The corporation was informed of

this, and on that very day ordered seizure of all meat of American production. We may well imagine what a sensation this gave rise to; thanks to the press, the news was so diffused that in all towns American meat was seized, and at Milan, Naples, Rome, Plaisance, Brescia, and Venice, the presence of the nematodes in question was verified. The Italian Government prohibited the introduction of all pork from America, Egypt, Turkey, and Syria; and a more recent decree prohibits the introduction of all meat of foreign raising. The Academy of Medicine of Turin, appreciating the importance of the matter, named a commission to inquire into it. This commission at its sittings proposed to call the attention of all competent men to the subject, and pointed out the direction into which researches in hospitals ought to be directed, whether concerning sick persons suffering from muscular disorders with fever, or in *post-mortem* examinations. It commanded also the rigorous visitation of all pork butchers' establishments by competent persons. M. Perroncito knowing, from his previous researches, that most of the helminths die when they are in a medium in which the thermometer rises to 50°, and remains at that height for five minutes, then undertook a series of experiments with a view of ascertaining the temperature which the interior of certain portions of meat submitted to a more or less prolonged boiling attains. These experiments were tried with fourteen pieces (veal, beef, ham, cheek, tongue, sausage, salt pork), which were allowed to boil for about two hours, sufficient to render them eatable, and the result was that ordinary cooking raises the temperature throughout the mass above the point essential for the destruction of the helminths which occur in it. That may be, but it is necessary to remember that all pork is not always sufficiently cooked. This must, therefore, be taken with reserve, and not viewed absolutely as a rule. Also certain foods are not boiled, but fried, roasted, or grilled. Also, we must remember, that Trichinæ remain alive in dried or even putrefying flesh. The undoubted value of M. Perroncito's researches, with regard to boiled flesh, must not make us forget those which Prof. Colin undertook in 1868, of which we were personal witnesses. Our learned master will not, perhaps, deem it bad taste in us to recall the fact that he let us, pupils of the first year, roast a piece of trichinosed flesh. It was a winter evening, and the fire was large and strong. A thermometer fixed in the middle of the mass gave it rather a fantastic aspect; the gravy trickled down and browned; we superintended the proceedings to the best of our ability,

but the fire and the odour combining, we were giving way to sleep and dreams of Pantagruelin dishes, when a bell reminded us of the reality, and the dinner which we found in the refectory, as compared with the meat which we had just left, made us imagine we had left the substance for the shadow. But it was only apparently that we had undergone the sufferings of Tantalus, for the following day, while still assisting M. Colin in his researches, it was with great satisfaction that we saw on the field of the microscope a *living* trichina, which he had obtained from the middle of the piece of pork which we had cooked, though this appeared from the colour of its surface fit to satisfy the most delicate palate without any danger. The superficial parts had been cooked, but the heat had spared the parasites of the deeper parts. M. Colin also cooked different joints and portions of flesh, and he constantly obtained the same results, the superficial layers being full of dead Trichinæ, but on cutting into the less cooked deeper layers he met the helminths in an active condition. A small quantity of this meat given to *moineaux* killed them, and on autopsy free Trichinæ were found in their intestines. The *Archives Vétérinaire* in last March announced the appearance of trichinosis in Seine-et-Oise. A Belgian journal recently announced that at Anvers Trichinæ have been found in American pork. The parasite, then, from day to day is invading France more and more, and attention should be drawn to this question, so important in its relations to public hygiene, for America exports these meats in large, and therefore disquieting, quantities (H. Benjamin).

On Leucæmia in Domesticated Animals, by Professor O. Siedamgrotzky, from *Pfluger's Vorträge für Thierarzte*.—Leucæmia consists in an increase in number of the plastic and colourless elements of the blood with a relative diminution in the number of red globules. It is due to a hyperplasia of the blood-making organs, that is to say, of the spleen, lymphatic glands, and marrow of bones. Also, according as the hyperplasia involves one or other of these organs, which are considered as the seat of production of the formed elements of the blood, we can distinguish a splenic, lymphatic, or myelitic form of the leucæmia. This distinction is rather based on autopsy than on diagnosis, for it is generally difficult to recognise the special form present in any case under observation. Comparison of our different domesticated animals with regard to their liability to become affected with this disorder, has shown that most cases occur in the dog and cat; that they are much less numerous in

horses, pigs, and cattle, that of the latter females are the most subject; that sheep and goats seem to be absolutely exempt from it; lastly, that it is in middle and advanced age that predisposition to it is most marked. The cause of the disease is profoundly obscure, and the relation which in some cases seems to exist between its appearance and a condition of injury, must be considered simply as one of coincidence. The pathological alterations consist, then, in augmentation of the number of white blood-corpuscles in proportion to the red, they being 1 to 10 or 20. All the blood-making organs are hypertrophied, especially the spleen, all of whose elements contribute to the increase in volume. The true hyperplasia of this organ is probably the result of a prolonged hyperæmia, and according to the stage of disease the organ is soft and distended with blood, or firmer, and containing less blood. This hypertrophied organ generally preserves its normal form, but its margins become rounded, and its surfaces rough from the thickening of its fibrous capsule. Its increased consistency makes it something like liver substance, and the splenic tissue on section appears granular. The cut surface is always dry, of a pale red or uniformly bluish tint, and sometimes the enlarged Malpighian corpuscles, having acquired the size of a pea, are projecting from the pulp substance. The stroma gradually contracts and forms thick trabeculæ extending from the equally thick spleen capsule; sometimes hæmorrhagic patches are present. The microscope enables us still to recognise the normal spleen elements, but the reticulated tissue is thickened and nodose near the hæmorrhagic patches. The fusiform cells which are often met with show also the presence of a cellular hyperplasia of the areolar stroma. The lymphatic glands sometimes, though rarely in domesticated animals, become by their hyperplasy the origin of leucæmia, and then either all or some of them become enlarged and rounded. Their substance appears against their smooth and distended envelopes, and becomes very prominent on sections. The marrow, as well of long as of spongy bones, is the seat of similar changes, and assumes the characters of embryonic tissue. In consequence of the invasion of leucæmic infiltration, other organs, as the kidneys and the liver, may have their connective tissue replaced by lymphoid tissue. The author has met with such infiltrations of the walls of the vessels and of the mucous canals. They commence in the submucous areolar tissue, and there form a soft layer, indefinitely extended, of reddish-grey embryonic tissue. The symptoms of the dis-

ease at its first appearance in domesticated animals are unknown; but later on leucæmia, in spite of retention of the full appetite, produces gradual wasting, palor of visible mucous membrane, slight acceleration of pulse, debility, in fact, all the symptoms of impoverishment of the blood. At the same time the spleen and lymphatic glands increase in size. But observation of the blood of the living animal proves the best means of diagnosis. Death occurs at a period varying from three weeks to five months. None of the therapeutic methods noticed by the author have been proved to be useful.

CASE OF TUMOUR OF SPLEEN.

By Harold Leeney, M.R.C.V.S., Brighton. Examined and reported on by John Henry Steel.

On Monday, January 26th, received from Harold Leeney, M.R.C.V.S., of Brighton, a tumour from the abdominal cavity of a bull-terrier bitch with the accompanying history:—"The patient was an aged animal, supposed to be pregnant, her abdomen being inconveniently large, and so causing her to appear 'rather disposed to a razor back,' though she was fairly fat. She was in good condition, having been accustomed to take a good deal of exercise on her own account, having been several times taken into custody when on a poaching expedition. She had never been observed to be out of health. There was no difficulty in detecting the tumour during life. At the time the animal came to me I observed an enlargement under the jaw, just such a one as we often see resulting from a fight, and on opening it I found genuine pus and nothing more. I had had a case of tuberculosis in a mastiff belonging to the same individual shortly before. I diagnosed the case as one of ovarian tumour."

The specimen was about five inches long by four wide, and three thick, and weighed a little over one pound and three quarters (with the appended portion of spleen), somewhat ovoid, apparently cystic and multilocular, having part of the great omentum appended to it, and a considerable portion of spleen directly continuous with its substance. On section it was found to consist of straw-coloured deposits in the parts nearest to the spleen substance, but on the farthest side of recent accumulations of coagulated blood. Evidently the tumour consists essentially of a number of blood-clots distending the natural venous sinuses and inter-

trabecular spaces of the spleen. The straw-coloured parts seem as if the result of extravasation some short time before, but the red parts are evidently quite recent and serve to illustrate the true nature of the mass. This seems to account for the fact that the appended portion of spleen is quite healthy, which also proves the absence of lymphadenomatous or tuberculous conditions. The submaxillary abscess is doubtless attributed to its true cause. The simple nature of the tumour also accounts for the general health of the animal, though we cannot help suspecting she had felt internal disorder without exhibiting any appreciable symptoms. With regard to Mr. Leeney's diagnosis, we think it as exact as most of us would be able to give under the circumstances. The abdominal tumour was present and such in old bitches are generally ovarian, besides which diseased conditions of the spleen are few and far between. We believe Mr. Leeney, therefore, has afforded us a specimen of the highest pathological interest.

NOTE ON THE RECENT ADMISSION OF MEMBERS HOLDING THE HIGHLAND AND AGRICULTURAL SOCIETY'S CERTIFICATE.

Royal Veterinary College.

Gentlemen,—Mr. McGillivray, of Banff, in the February number of the *Veterinary Journal*, is so good as to draw attention to the fact that, in my recent paper on "Veterinary Science in America," I have not acknowledged to Messrs. J. A. Going and E. P. Lyman their recent qualification of M.R.C.V.S. Will you allow me through your pages to express my apologies to those gentlemen, and to explain to them that my paper was contributed to your December number, but excluded for want of space. In that number we received the first official announcement that they have become members of the Royal College of Veterinary Surgeons. By inserting this you will oblige,

Yours sincerely,

John Henry Steel.

ON PLANTS IN RELATION TO ANIMALS.

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

(*Continued from p.* 97.)

The next family of plants to occupy our attention will be that to which the name of Crucifera has been given.

The Crucifera or cross-bearing order of plants is readily distinguished from all others by the peculiar arrangement of its floral envelopes united with a form of stamens which would appear to be confined to it.

Thus the sepals consist of four distinct leaves and alternating with these are four distinct petals arranged crosswise. The stamens are four longer and two shorter ones = 6.

According to Bentham* the "Crucifer Family" consists of herbs, or rarely undershrubs, with alternate leaves and no stipules; the flowers in terminal racemes, which are generally very short or reduced to a corymb when the flowering commences, but lengthen out as it advances. Sepals 4, petals 4, equal, or two on the outer side larger. Stamens 6, of which two are generally shorter or rarely deficient. Ovary solitary two-celled. Style single, often very short or almost none, with a thin partition, from which the valves generally separate at maturity; or, in a few genera, the pod is one-celled or indehiscent, or separates transversely into several joints. Seeds without albumen attached, in each cell, alternately, to the right and left edges of the partition.

An extensive and very natural family, widely spread over the globe, but chiefly in the northern hemisphere; scarce within the tropics, and in some districts entirely unknown. The number of sepals, petals, and stamens readily distinguish *Crucifers* from all other British plants, but the discrimination of the numerous genera into which they are distributed is a much more difficult task.

The characters are necessarily derived chiefly from the pod and the seed, and are often very minute. It is therefore absolutely necessary, in order to name a *crucifer* to have the specimen in fruit, and to examine the seed it must be ripe; it should then be soaked and the outer coating carefully taken off, in order to lay bare the embryo, and observe the position of the radicle on the cotyledons, which is now considered as the most essential among the generic characters.

* See 'Illustrated Handbook of the British Flora,' vol. i, p. 38.

A few terms specially made use of in describing plants of this family may require some explanation.

The calyx is said to be *bisaccate* when two of the sepals a little outside the two others, are broader at the base, forming little protuberances or pouches. The pod is termed *a siliqua* or *siliquose* when linear, at least three or four times as long as broad; and *a lomentum* or *lomentose* when it does not open in valves.

The nerves on the pod, often used as a generic character, can be best seen on dried specimens; they are even sometimes quite imperceptible on the fresh pod. The seeds are said to be *in one row* when, from the narrowness of the pod or the length of the seed-stalk, they occupy the centre of the cell, the two rows being, as it were, blended into one, or *in two rows*, when the two rows are distinct without overlapping each other.

In the embryo, the radicle is said to be *accumbent* when it is bent down on the edge of the cotyledons, *incumbent* when bent over the back of one of them; in the latter case the cotyledons are either flat or *conduplicate*, that is, folded longitudinally over the radicle.

It must be admitted, however, that, notwithstanding all these nice distinctions, the genera of *Crucifers*, as at present defined, are often as artificial as they are difficult.

Different authors divide the Crucifera into various groups but for our purpose it will be sufficient to adopt the old Linnæan divisions of *Siliquosa*—long-podded and *Siliqulosa*—with a short pod or a pouch. Of course the order in this system would be *tetradynamia* in reference to the arrangement of the stamens but we prefer the term Cruciferæ or cross bearers.

Upon these plants then we shall for the present confine our remarks to the following.

Genus—BRASSICA = Cabbage Tribe.

"Fruit a siliqua, usually four times as long as broad, sub-cylindrical or linear (except in some of the species of Nasturtium), not divided by transverse partitions, opening when ripe by two valves, which split away from the replum."*

It is now the custom to unite the mustards and cabbage in the same genus, adopting the plan of sub-genera thus:

Sub-genus I.—SINAPIS *Linn.*

Sepals spreading, glabrous. Seeds sub-globular, arranged in a single row down the middle of each cell of the pod.

* Sowerby's 'English Botany,' new edition, vol. i, p. 123.

Sub-genus II.—EU-BRASSICA.

Sepals erect, glabrous. Seeds sub-globular, arranged in a single row down the middle of the pod.

Of the mustard division we have the three following important species:

1. *Brassica Sinapistrum* (Sinapis arvensis, Linn.). Charlock mustard.
2. *B. alba* (Sinapis alba, Linn.). White mustard.
3. *B. nigra* (Sinapis nigra, Linn.). Black mustard.

1. The Charlock is well known as a disagreeable weed, which for the last two wet seasons the farmer has found it next to impossible to exterminate. It is, however, no bad pot-herb, and from our own experience with the young shoots of Charlock boiled and eaten as greens, we have found them to be very agreeable and wholesome. Whenever the heads are so taken off, it prevents the full seeding of the plants; and therefore the operation is very desirable, even if not used as food; and for this purpose we know of no better implement than the Norwegian "Koldmoos weeder," which we used last year with very marked effect.

When the plant seeds in a crop, the cavings should be very carefully looked after; it is better by far to burn the whole of them than to run the risk of a further propagation of the pest. There are, however, not wanting purchasers for the seed of the Charlock; but farmers should refuse to sell it, as the object of the purchasers is either to use the seed for the dilution of turnip seed, or to crush it with rapē or other seed cakes, in which state it is highly deleterious to the cattle which partake of it.

2. The white mustard is well known as a salad-herb. It is also grown for its seeds to form the condiment known as mustard. In some districts it is largely grown as a green food for sheep, and sometimes indeed it may be grown to a good size, to be ploughed in as a soiling manure. It is probably in this way that white mustard has got to track agrarian fields; for it is doubtful, though it is found here and there in arable districts, whether it is really a true native.

3. The black mustard has a differently formed siliqua from the others, as it is smallest and more or less quandrangular. It is a common form by rivers and water-courses, and it is supposed that the grand black mustard plants on the Severn yielded the seeds, which, mixed with other sorts, gave the peculiar pungency referred to in the Shakespearian line,

"As hot as Tewkesbury Mustard."

It is sometimes a common agrarian weed, but one that is liable to great changes; as an example, we would refer to the fact that some eighteen years since, when we entered upon our present farm, *S. nigra* was one of the commonest of weeds. Now, however, it would be difficult to find a specimen; not so the *S. arvensis*, which is to be met with everywhere.

Of the true cabbage division, we shall refer to the following:

1. *Brassica oleracea.*—Wild cabbage.
2. *Brassica napus, vel campestris.*—Rape, navew, coleseed.
3. *Brassica rapa.*—Turnip.

1. The wild cabbage is well known as a denizen of rocks and rough ground about our sea-coasts, whence its small heads were at one time obtained and cooked under the name of "colewort." This, doubtless, caused some experimenters to attempt their growth as a garden esculent, with what interest and success may be gathered from the now generally recognised fact that cauliflowers, different kinds of cabbages, such as the white and the extremely red sort used for pickling, greens, &c., are all derivatives from the common wild species. Our own experiments upon this subject prove conclusively that all sorts of cabbage heads, greens, and broccoli, are derived from the wild colewort; for, having procured seeds of the latter from the rocky sea-coast at Llandudno and subjected them to cultivation, we were surprised to find how quickly we were enabled to select examples for carrying on our amelioration or ennobling of the wild plant in various directions, resulting in several new forms; one of which, an exceedingly hardy curled green, the seed of which can be obtained of the Messrs. Sutton, of Reading, who speak of it as follows:

"Buckman's Hardy Winter Green.—A valuable variety, introduced by Professor Buckman. It is, perhaps, the hardiest of all kales, and stands through the severest winter; of excellent cooking qualities, and may be used quite late in the spring."*

Cabbages were no doubt at one time eaten raw and probably as a salad with oil and vinegar. It is not generally known that the different sorts of cabbage grown like mustard forms an agreeable and healthful small salad plant. It is thus that we use up parcels of old seeds, of course gathering the produce when it has fully expanded the cotyledon leaves, though in the different smooth-leaved sorts they are not bad if advanced to their secondary leaves.

* See Sutton's 'Amateur's Guide in Horticulture,' for 1880, in which this form is very well figured, p. 18, figured on page 6.

Cabbage leaves form a good poultice for which they are constantly used in the country. It is cultivated in the fields as food for cattle and sheep.

2. Rape is well known also as a cattle food and the seeds are used for the production of oil, the cake after the expression of the oil being used as a cattle-feeding product under the name of rape cake.

The Swedish turnip referred to under the name of *Brassica campestris* is, we feel convinced, a hybrid formed from the wild rape and the turnip in which its bulboid root may be looked upon as an induced result of cultivation and selection, just as the kohl-rabbi may be considered as a cabbage with an induced bulboid stem.

3. *The common turnip* is doubtless derived from some form or other of wild Brassica, but in its present shape it cannot be said to be a native of England; the wildest shape in which we meet with it is merely of a straggler about fields where the root has been cultivated, in which case the bulboid root portion is very small, nay sometimes nearly abrogated, which is very different from some of the huge roots derived from cultivation. This year we pulled some roots even after the unfavourable root growth of 1879, as much as thirty-six inches in circumference and weighing as much as thirty pounds.

Turnip greens are with some a most agreeable vegetable but being somewhat bitter are disliked by others, thus Kirke White says

> "Maxmillian's meal of turnip tops,
> Disgusting food for dainty chops."

The boiled roots are a favourite vegetable especially with boiled mutton, mashed turnips also may be very advantageously employed as a poultice especially to painful swellings.

We thus see that in the Brassica allies we have an endless series of plants which though undoubtedly dietetic can hardly be looked upon as of medicinal value, still we have no doubt that the endless variety which is made use of of these as food have very considerably aided in almost banishing from our midst those scorbutic complaints which at one time were so general, hence then the members of this family of plants are universally acknowledged to be as agreeable as they are useful and salutary.

COUNTER-IRRITATION.

By Thomas Greaves, F.R.C.V.S., Manchester.

Since this subject was so ably introduced by Mr. Peter Taylor, of Manchester, before the Liverpool Association, I have given it a good deal of consideration, and wish to record my thoughts while they are fresh in my mind. It is a subject I have always taken a deep interest in, and have written several papers upon it, which are recorded in the journals. During my apprenticeship of six years I clipped scores, probably hundreds, of horses' sides, about sixteen or eighteen inches square over each side, and blistered them well with fly-blister ointment, the blister repeated for two or three days; in those days bleeding, too, was always resorted to in pneumonia and in pleurisy. I have seen many horses recover and many die under this treatment. Since my apprenticeship, about 1840, we had a good deal of influenza prevailing, and some of the cases gravitated into pneumonia; many died. I observed that nearly every one that was severely blistered died; as a consequence, blistering ceased to be a favourite remedy, and got into disuse. Bleeding, too, about this time, was becoming discarded by many eminent practitioners, both in human and in veterinary medicine. I found my patients recovered in less time, the fever never was so high, and I am quite satisfied my per centage of dead ones was considerably less than it was when I resorted to blistering almost indiscriminately. I do not now use three pounds of mustard in twelve months to the sides. I am quite aware that blistering, or what is called counter-irritation, is still practised by some eminent practitioners. Some of my nearest and dearest friends—gentlemen whose judgment and intelligence I hold in the highest possible esteem—I am well assured that they hold their opinions conscientiously, and that they are the outcome of experience and habit; they have recourse to the application of mustard to the sides early in the attack, and estimate at a very high value the infiltration produced in the cellular membrane—the more the better. I once held these opinions, although I have always failed to see sound reason in them; but I have since then seen in hundreds, probably in thousands of instances, disease in the lungs accompanied with greatly accelerated breathing and quickened pulse subside without the slightest counter-irritation to the sides.

In some cases I do use a little stimulating liniment to the sides early in the complaint. I use it as the late Mr. John Lawson did, as a diffusible stimulant, to rouse the dormant vital powers into action, cause the horse to move about, and disperse the congestion which seemed to be threatening the lungs. I am a full believer in this treatment, administering, at the same time, a diffusible stimulant internally, and applying rugs wrung out of half-scalding water over the thorax.

I am of opinion—and I give this opinion deliberately as the result of pretty long and large experience—that where we have enormously swollen lobes of the lungs, heavy and consolidated, that counter-irritation, however severe and however often applied, cannot possibly have any beneficial effect whatever upon the disease, and in those cases where engorgement has not taken place, where there is simply a loss of resiliency in the lungs, counter-irritation is quite unnecessary; its tendency is to make a horse feel ill, and be ill, and cause an accelerated pulse, increase of fever, and prostration; it has a mysterious action on the nervous system, and through it disarranging the sensitive and delicate functions of every part of the organism.

I look upon a horse suffering under a painful disease just as the late Mr. John Lawson did when he said "The horse is a funky animal; he soon gives up; he cannot stand much suffering;" and I believe severe extensive blistering produces, in the first place, a shock to the whole system, especially to the nervous system; then the pain, suffering, and torture he endures reduces his vitality; it exhausts his physical energy and seems to rob him of his very life, and often contributes materially to increase the degree of fever and affect the whole system, produces a state of sinking, and often accelerates a fatal termination. I remember being called in by a friend of mine, a veterinary surgeon; he was laid up in bed with a severe cold; he said, "I have been up three days and nights with my horse; I do not think you can do him any good; I think he is sure to die, but do what you can for him; he is a high-priced horse." I found the counter-irritation had been employed extensively and severely; skin and hair all sloughing off to a considerable extent, on both sides; setons over ribs, on both sides, and breast. The horse was blowing; pulse 96; loathing all food, &c. The opinion I formed was that there was greater disease externally than internally. I at once removed the setons, gently cleaned off as much as possible of the blister; the patient was relieved, the pulse and every bad symptom

presently subsided, and the case recovered. I have no hesitation whatever in saying, had the former treatment been continued a little longer, the horse must inevitably have succumbed.

I am not for one moment questioning the fact that there are some unhealthy subjects with bad stamina in them, or some chronic disease on them. When they become attacked the disease will go on from bad to worse until they die, whether we use counter-irritation or not; nor need we be surprised at this, for are we not told that "Two men shall be labouring in the field—one shall be taken and the other left; two women shall be grinding at the mill—one shall be taken and the other left;" but what I maintain is this, that we give nature a much better chance to weather the storm and recruit her shattered energies if we save her the torture of adding to her suffering, which must inevitably accompany severe and extensive counter-irritation, never forgetting this great truth, that, in our struggle for life, the practitioner who has the least per centage of recoveries is likely to go to the wall, and *vice versâ*.

Cool Air or Warm Air for Pneumonia or Congestion of the Lungs.—Mr. Hopkins ably advocated warm, dry air in cases of pneumonia in the horse. No man living has greater reason to believe in warm, dry air than I have; it has saved my life over and over again in sudden attacks of extreme difficulty of breathing. When I could scarcely inhale a thimbleful of air into my lungs—when I have had to place my mouth close to the fire, so as to inhale the heated rarefied air—in a few minutes my lungs would relax, and in half an hour I could breathe with ease and freedom. I have thought, by parity of reasoning, that my horse patient must be benefited in like manner. I have, on more than one occasion, taken my patient, when suffering from an attack of congestion of the lungs in its earliest stage, into a saddle house, in which was a fire, and in which place a fire had been burning for weeks, day and night. The air, as dry as it could possibly be. I have tied my patient's head within three and a half yards from the fire for three days and nights. I carefully noted the number of respirations and pulsations before he went in, and several times a day while in this place; but he did not experience the slightest benefit from it. I have placed other patients suffering from confirmed pneumonia in the same place with the like results. The conclusion I have come to is that warm air is not suited to the constitution of the horse when affected with either congestion of the lungs, pneumonia, or bronchitis. I am in

favour of fires in stables during wet, damp seasons; it has a beneficial effect in keeping stables healthy; but my experience, in hundreds and hundreds of cases, is that cool air is natural to the horse, and when the air passages are in an irritable state, whether as result of congestion, spasmodic action, inability in the lung tissue, or loss of resiliency, or pneumonia, and that breathing cold air is the finest sedative we can employ; it goes direct to the tissues affected. Cold air contains more oxygen than warm air does; it oxygenates and revivifies the blood more effectually. The legs and whole system keeps warm. Yes, tie the horse's head to the door, instead of allowing him to get his head stuck in a corner, and breathing the same air over and over again. The practitioner that does not adopt this method is depriving his patient of that which is an influence for good greater than all his other remedies put together. On this point I have fully convinced myself, but on the question of counter-irritation I do not pretend to solve that problem. We see plenty of horses die when this system is adopted, and they die also when it is omitted. Are we not told that man is born to die? Yes, my friends, we must leave it—leave it to Him to whom "a thousand years are but as one day, and one day as a thousand years."

PRACTICAL HINTS ON STABLE MANAGEMENT IN INDIA.

A Second Edition, revised and enlarged, of a Lecture written by J. B. W. Skoulding, Veterinary Surgeon First Class, Royal Horse Artillery, the prototype having been written and delivered by him when in charge of B. F. R. H. A. at Campbellpore, in November, 1875. Meerut, 1878.

(*Continued from* p. 101.)

B. *Cleanliness.*—We will now suppose ourselves to be placed in charge of suitable and properly-ventilated stables, and at once determine to use every means in our power to keep them pure and healthy; to this end we employ the second agent on our list, viz. "cleanliness," knowing it to be a most powerful factor in the preservation of health, whether of man or animals, and that the want of it becomes the active coadjutor of

either excessive atmospheric heat, cold, or dampness in the production of disease. Nor do I fail to remember that numerous valuable animals are sacrificed yearly through inattention to, or blind neglect of, this powerful accessory for good or evil in stable management, and would therefore show that it is imperatively incumbent on all who are in charge of stables or lines to pay the strictest attention to this part of their duty, and equally so whether the occupants of these lines number one or a hundred.

Stable utensils.—The utensils required for the cleaning of stables and lines are:

I.—Some hand baskets in which to carry away the dung and to bring fresh earth. (Barrows for this purpose would be much more useful, and would save time and labour.)

II.—A small iron scraper, for scraping the floors when soiled only.

III.—A kodallie, a pick, or a shovel, with which to dig them up entirely when sufficiently dirty to require it, a state of things that should never be allowed to occur.

IV.—A taper, or wooden mallet, or a hammer, to level and beat down the floor with (such being the custom in troop stables), though a flooring of loose earth entirely, if not damp, is, I think, far better for horses to stand or lie on, but would prefer a properly constructed concrete floor to any.

V.—Some earthen or iron vessels to hold about a gallon, in which to catch the urine as it falls; this may seem superfluous, but it saves labour by assisting to keep the floor dry, and horses accustomed to their use will wait to stale till the syce brings the urine bucket to them.

VI.—A long broom (or a bamboo with matting at the end), wherewith to sweep the walls and ceilings.

With these implements for use no excuse should be accepted for dung, urine, soiled earth, or dirt of any kind being left in the stables or lines.

Perfect cleanliness in all stables, so far as applies to the interior of the buildings, will be ensured by strictly carrying out the following simple details:

Bedding.—Every morning (weather permitting) the bedding straw should be taken outside of the stables, and there spread out to enable it to dry and sweeten; and it is advisable during the rainy season to spread it in the verandahs rather than leave it dirty and moist with urine; but to obviate the necessity for this sheds should be erected at a short distance from each end of the stables in which to air and dry the bedding on wet days.

Floors.—After the removal of the bedding straw the floors of the stable should be thoroughly swept; every wet spot where

urine has fallen during the night well scraped, or even, if necessary, completely dug out; the moist, tainted earth carried away, and the hole, if any has been made, refilled with dry earth, which not only mends the breach in the flooring, but tends to keep the atmosphere in the stable pure, dry earth being a valuable disinfectant and powerful deodorizer.

Urine and dung.—During the day dung or urine dropped on the floor should be immediately lifted and taken outside the building; the fæces can be easily collected and removed, and there is little difficulty attached to collecting and removing the urine. This is to be done by covering the surface on which it falls with dry earth; that will absorb the fluid, which can then be gathered by scraping the mass together, and taken away in a basket. At the same time care should be exercised to scrape and dry the floor thoroughly before again sprinkling it with dry earth, and much supervision is called for on this point, as many syces will cover the urine with dry earth and there leave it. The above plan, therefore, should be strictly enforced, and though it may seem difficult to carry out, it will be found perfectly feasible and amenable to firmness and attention on the part of those in authority.

I would have drawn attention to the fact that almost every syce will, if it be left to his option, allow the fæces and urine to accumulate in the stables and boxes of the horses entrusted to his care; the dung he may possibly remove to a corner of the box or stall when dropped, and afterwards take it outside once during the day, but the urine he never dreams of removing, but will, if permitted, not only allow it to soak into the flooring, but sink a chattee or earthen vessel in the centre of the floor under the horse, in which the urine is allowed to collect for an indefinite period, till overflowing, it saturates the floor in its vicinity, poisons the atmosphere, and in all probability produces an outbreak of infectious and deadly disease. If, however, the general health of the animal exposed to the miasma arising from this state of things escapes derangement his feet will be almost certain to suffer from the effects of the excretions on them, and he may be utterly ruined (by thrush or canker resulting therefrom) as a saleable or useful horse—"No foot no horse" being an old and true axiom.

Flies.—In addition to the above dangers, dirt of any kind permitted to remain in the stables presents a great attraction to that inveterate, though apparently insignificant, enemy to the horse, "the fly;" and therefore the walls and ceilings also should be kept perfectly clean, and swept daily if necessary.

Manger.—The manger or receptacle from which he may be fed, let it be of what material it may (I prefer iron mangers, as they are

so easily cleaned), should be kept scrupulously clean and free from dust, dirt of any kind, or particles of stale food; and the trough or stable bucket, whether of stone, wood, zinc, or iron, from which he is compelled to drink, should be as clean and sweet as care can make them.

Exterior of stables.—Nor in having purified the interior of the stables, with the fittings and utensils, is our task completed, for it still remains for us to inspect the exterior of the building with its surroundings, and to be careful that no dung or refuse litter of any kind be left lying in the vicinity; that the syces do not empty the urine baskets in its propinquity (a practice that might be prevented entirely by making use of Crowley's filth carts. By means of these also gallons of urine might be preserved and utilised as manure which are now wasted); that no water be allowed to stagnate near it, and that any drains in the neighbourhood be kept sweet and clean; also to insist on the removal of all obstacles to the passage of salutary currents of fresh air into the building. On this account the branches of any adjacent trees should be kept lopped to the height of a clear twelve feet from the ground.

Grooming.—These details having been attended to, then follows the grooming or cleaning of the animals, and that will demand our strictest attention, as the execution of this office is highly necessary to preserve the skin (that great auxiliary of blood purification) in a fit condition to perform all the important functions allotted to it.

The instruments generally in use at home for the purpose of dressing horses are:

(*a*) Three brushes.

(1.) The horse brush.

(2.) The dandriff (or dandy) brush.

(3.) The water brush.

The two former are used for cleaning the surface of the body, with the limbs; the latter for washing the feet and to wet the mane with in order to make it lie properly, if inclined to remain erect, or to fall on the wrong side.

Here the horse brush is generally the only one of the three allowed, the dandriff and water brushes being seldom seen in India.

(*b*) The curry comb: the use of this article should be limited to the purpose for which it was originally intended, viz. to keep the horse brush clean and free from dust, for it is an instrument of torture to many horses, especially if roughly applied to their bodies, and the dandriff brush or a strong wisp makes an excellent substitute for it in cleaning the coat.

(*c*) The mane comb, now almost fallen into disuse.

(*d*) The dry and damp wisp.
(*e*) The sponge.
(*f*) The duster and wash-leather.
(*g*) The hoof-picker.

In addition to these appliances, it is well to encourage the process of rubbing or mulling the body with the hand and forearm as practised by good syces, for it improves and puts a gloss on the coat of the horse, and these men are accustomed to that mode of strapping him.

Having primarily thoroughly dressed the body and legs of the horses with the aid of any, or all of this gear, the head and ears should then be cleaned perfectly, and it is of the greatest importance that the corners of the eyes be kept cleared of mucus, since an accumulation of this secretion near them will prove a source of great annoyance to the animal, as it will attract the flies, and these insects will then, in spite of the eye-fringes, attack and worry the poor horse till, in trying to rid himself of such noxious and aggravating pests, he rubs his head, either on his knee or against the nearest object, often in this manner causing an abrasion of the skin in the facial region. This simple abrasion, very frequently, during the hot season, becomes an unhealthy and troublesome sore which is tardy in healing, and when healed leaves an ugly and indelible scar or cicatrix that reduces the market value of the animal considerably.

Protection for the eyes.—On dry windy days, and in those stations especially where the soil is sandy, the eyes require to be most carefully sponged with water two or three times a day, and to be covered with a wetted cloth if necessary, so as to free and protect them from particles of dust or sand, which if allowed to remain will most certainly irritate and produce swollen lids, with that condition known as conjunctival ophthalmia, a disease which some horses are peculiarly liable to contract during the hot months, but which is easily prevented.

Appendages.—The roots of the hair of the forelock, mane, and tail, with the dock and vent, require to be kept scrupulously clean, as scurf or dust lodging on or near them causes itching of those appendages. This incites the animal to rub himself whenever an opportunity occurs, and from this a chronic affection of the skin may be induced, which will be an ever recurring source of annoyance to the animal and his master. The prepuce or sheath too, with the penis, require more than ordinary care, for if the unctuous matter, secreted in the sheath for the purpose of lubrication, &c., be not constantly removed, itching will in many instances be the result, and to allay this the horse will gnaw the parts, causing an abrasion of the skin of the sheath, which may run into a troublesome sore. In other cases the penis becomes

affected, with an obstinate lesion, or, attracted by its presence, flies may strike and deposit their ova in the sheath, the larvæ from which will, if undisturbed, attack and devour the glans penis.

The feet should be kept in perfect order, for dung or litter saturated with urine, if allowed to lodge near the sole or about the wall of the foot, will prove an unfailing source of serious mischief to the horn that may render animals, otherwise sound and useful, temporarily, if not permanently, lame and useless, causing them also, in some instances, acute suffering. These untoward results may be prevented by picking out the feet two or three times or even more often daily, but these organs will be the more surely protected from ill by the prompt removal of all dirt from the stable, and I would here record my opinion that probably constructed concrete flooring, from the facility with which it can be kept clean, and from its imperviousness to damp, would aid extensively in preserving, not only the feet, but the general health of the horses. The adoption of it in the stables of a large brewery in England for the past two years or more, has, to my knowledge, been attended with the happiest results.

Washing horses.—The washing of horses is a very common practice in India, but one which does not meet with my unqualified approval. Instances, however, occur in which the operation becomes a necessity, and that being the case, it should be carried out on a still and fine day, under competent and trustworthy supervision, great care being taken to have the laved animal thoroughly dried as quickly as possible afterwards, and covered with a light blanket if in the summer, but carefully blanketed up in the cold season, to annul the liability to any after ill effects; with reference to the legs and feet, it will be better to clean them with a brush or wisp (and the former by hand rubbing also), in order to avoid the risk of inflamed or cracked heels, which will surely supervene if these parts be imperfectly dried after being constantly washed. On this account, if it be determined to wash the foot, the hoof only should be wetted, and this carefully dried. It is imperatively necessary that these precautions be observed, for while admitting that numbers of horses are most heedlessly washed day by day, and escape apparently scot free, I am certain very many suffer severely from diseases contracted in consequence of the careless manner in which they have been dried after being so repeatedly washed, this being particularly the case in damp districts.

(*To be continued.*)

LETTER FROM "FARMER MILES" IN REPLY TO MR. BOWLER.

GENTLEMEN,—At p. 36 of the January number of the *Veterinarian* for the current year. I find there is a letter from a G. W. Bowler, M.D.V.S., Cincinnati, Ohio, "On the Castrating Écraseur." In his letter he claims to know something about me, and also takes the liberty to endeavour to mislead the veterinarians of England by several direct misstatements, which I hope you will allow me to correct, or possibly some might be debarred from using the best instrument made for castration purposes, the écraseur. G. W. Bowler says, "A man calling himself Farmer Miles travels from this country to England, carrying in his coat pocket one of our old castrating écraseurs." This constitutes misstatement No. 1. Further, "that he imposes it upon the veterinarians over there as a new invention of his for castrating," misstatement No. 2. Lower down he continues, "From that date to the present, I and also Dr. Guinness have continued to use it, and have during all these years castrated thousands of animals of all ages, without an accident or the loss of a single one, &c.," misstatement No. 3. G. W. Bowler also states "in 1873, I called on Professors Axe and Pritchard, and endeavoured to explain to them the advantages to be derived from the use of the castrating écraseur," this may be true, for in 1879, Professor Pritchard had a castrating écraseur like our old fashioned écraseur, and did not use it, but he bought one of my improved écraseurs.

I never owned but one of the *old fashioned* écraseurs like those spoken of by G. W. Bowler, and that I was glad to part with at half its original cost. But had I known that any man or even a boy eight years old could have castrated thousands of stock, *without the loss of a single one* with such a tool, I should certainly have been tempted to keep it at any cost instead of wasting time and money to improve on it, and get a far more satisfactory instrument.

I am well known as a practical castrator (and more than that I do not pretend to) from Mexico to California, in the United States of America, and in Canada, England, Ireland, Scotland, and part of France, and think it strange in the whole of my travels I have never heard of such a good old écraseur as G. W. Bowler describes; nor even have I heard of the man himself, who apparently has done so much work for so many years.

Wilks, *Spirit of the Times*, New York City, through its veterinary editor, August 22nd, 1877, nicknamed me *Farmer Miles*, and there said "*there is no man on the Continent of America who is worthy of being compared to Mr. Miles in this respect*" (speaking of Rig Castration). I wonder whether he had ever heard of G. W. Bowler before that ! !

I have just received, unsought and very unexpectedly the highest compliment I have ever received as a castrator, in the form of a testimonial on parchment, bearing the signatures of fifteen of the leading veterinary surgeons in Lincolnshire ; two of whom are fellows and thirteen members of the Royal College, in the following words, "We the undersigned veterinary surgeons practising in the county of Lincolnshire, having witnessed Mr. T. C. Miles' operations on rigling horses, desire to bear witness to the humane, scientific, and perfectly satisfactory manner in which he attains his object. We also wish to express our approval of his method of casting and securing the animal, and of the instruments he uses in the performance of the operation." I thank the gentlemen who have signed that Testimonial from my heart, and I assure them I feel amply repaid now, for the troubles and anxieties I had to undergo in England, in my endeavours to enlighten the Veterinarians and stock owners of that country ; and I am sure many Americans will gladly join me in thanking them for such a token of respect to an American farmer and castrator. When I was in Ireland two veterinary surgeons presented me with a very handsome gold watch "in testimony of my ability as an operator upon horses, &c.," and in Scotland and Canada, I have received many testimonials and presents showing the appreciation in which I have ever been held by my many kind friends and employers. These compel me to trouble you with this letter in reply to Mr. G. W. Bowler, and to prove to the English public I am not the impostor he would appear to wish to prove me.

I remain, Gentlemen, &c.

To the Editors of the 'Veterinarian.'

Pathological Contributions.

CATTLE PLAGUE.

In Austria the cattle plague has been detected among a herd of animals in the quarantine station of Itzkany, in the

government of Bukowina, and entrance of cattle into that station has been prohibited; a few cases have been reported on the military frontier and in Dalmatia. The kingdom of Hungary appears to be still free.

The cattle plague is reported to exist in two counties of Servia.

The disease is said to have entirely ceased in the Island of Rhodes, but has broken out in the neighbouring Island of Symi. Cattle plague continues to prevail at Macri in Asia Minor.

CATTLE PLAGUE IN CYPRUS.

According to the accounts received from Cyprus down to the end of Feb., the cattle plague had not diminished. Up to the middle of the month considerable increase had taken place; and it was stated that the peasants refused to slaughter the diseased cattle, and that a special Ordinance had been issued by Major-General Biddulph, the High Commissioner, prescribing most comprehensive measures for dealing with the disease.

Dr. Heidenstein, District Medical Officer and Mayor of Larnaca, was appointed the Chief Inspector. There were no veterinary surgeons in the island.

PLEURO-PNEUMONIA.

The returns from the Netherlands in reference to this disease are still satisfactory, as only four cases were registered during the four weeks ending 24th of January, 1880.

Accounts of serious outbreaks are still received from different parts of the United States, the demand for national intervention for the extirpation of the disease is increasing; and the prompt attention of the United States to the importance of the subject relating to contagious diseases among animals in that vast country has been called for.

Pleuro-pneumonia has also broken out among the cattle of Eastern Switzerland, and the dairy farmers of the district are in a state of great alarm. All movements of cattle in the cantons of St. Gall, Thurgan, and the two Appenzells have been suspended by order of the Federal Council.

Pleuro-pneumonia in this country according to the returns, appears to have decreased. The disease still exists in the following counties in Great Britain: Cambridge (ex. Liberty of the Isle of Ely), Cumberland, Derby, Durham,

Essex, Hertford, Kent (ex. Metropolis), Lancaster, Leicester, Middlesex (ex. Metropolis), Monmouth, Norfolk, Northampton (ex. Soke of Peterborough), Northumberland, Notts, Salop, Stafford, Suffolk, Surrey (ex. Metropolis), Sussex, York, East Riding, York, North Riding, York, West Riding, Liberty of the Isle of Ely, The Metropolis, Montgomery, Aberdeen, Edinburgh, Fife, Kincardine, Lanark, Perth, Renfrew.

Facts and Observations.

Swine Plague.—According to a communication to the *Mark Lane Express* it appears that it is estimated that since July last as many as one thousand hogs died of swine plague in Lostant, La Salle county, Illinois, U.S.A. Swine plague is reported to have also broken out very extensively in Michigan, U.S.A.

Bacillus Ureæ. By P. Miquel (*Bull. Soc. Chim.* [2], 32, 126—127). — This ferment, which exists in sewage, belongs to the class named *Anœrobies* by Pasteur; it resists exposure for some hours to a temperature of 95—96°, and causes urea to disappear from urine. It also removes urea rapidly from a solution of pure urea to which a little gelatin has been added.—W. R.—*Journal of the Chemical Society.*

Prizes for Life-Histories of Entozoa. — The Council of the Entomological Society of London are authorised by Lord Walsingham and other gentlemen interested in the diseases of our native game-birds to offer to public competition the following prizes:—£50 for the best and most complete life-history of *Sclerostoma syngamus* Dies., supposed to produce the so-called "gapes" in poultry, game, and other birds; £50 for the best and most complete life-history of *Strongylus pergracilis* Cob., supposed to cause the grouse disease. No life-history will be considered satisfactory unless the different stages of development are observed and recorded. The competition is open to naturalists of all nationalities. The same observer may compete for both prizes. Essays in English, French, or German, to be sent in on or before Oct. 15th, 1882, addressed to the Secretary of the Society, Chandos Street, Cavendish Square.

THE VETERINARIAN, MARCH 1, 1880.

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

THE ANIMALS ORDER.

ON January 1st most of the Orders of Council having reference to inspection, transit, and diseases of animals ceased to be in force, and the Animals Order became operative in their stead. No very important change in the principle or practical working of the regulations was effected by the introduction of the Animals Order; the chief alteration was, in fact, the consolidation of the numerous single orders which had been passed from time to time during the period of little more than a year which has elapsed since the new Cattle Diseases Act became law.

Many of the members of our profession who are not acting as inspectors under the Act of 1878 will not have the opportunity of consulting the Order, and it may not be uninteresting to them to have a concise analysis of the instrument brought before their notice. First, it may be remarked that the Order is divided into six parts for the convenience of reference:

Part 1 is preliminary, and refers to the title of the Order, date of commencement, extent of application, and interpretation of certain terms which are used.

Part 2 deals with disease, viz. Cattle Plague, Pleuro-pneumonia, Foot-and-mouth Diseases, Sheep-pox, Sheep-scab, Glanders and Farcy, and Swine Fever.

Regulation of the movement of animals among which disease is detected in a market, railway station, grazing park, or other like place, or during transit.

Movement or Exposure of Diseased Animals, Horses, Asses, or Mules; Removal of Dung or other things which may carry infection.

Movement and Disposal of Carcases.

Circumstances relating to Diseased Animals in Slaughter-houses.

Regulation of fairs and markets by the local authorities.

Part 3 relates to cleansing and disinfection in connection with the transit of animals by water, railway, or road, and the exposure of them in fairs, markets, sale yards, place of exhibition, lairs, and other places.

Part 4 is concerned entirely with the rules which are applicable to Animals during transit, and to ships, trucks, vans, and other vehicles in which they are carried; to means of preventing unnecessary suffering, and to the supply of water and food to animals in transit.

Part 5 is directed to the trade in foreign animals, and includes all the regulations which are in force as to the prohibition of importation of animals from certain countries, rules as to slaughter and quarantine, and also as to the conditions which affect the landing of animals not subject to slaughter or to quarantine. Special rules are to be applied to animals from the Channel Islands and the Isle of Man, and also to cows and goats which are taken on board vessels for the purpose of supplying milk to the passengers or crew.

Part 6 is general, and refers chiefly to notice of disease, miscellaneous matters, and forms of licences to be used by officers of local authorities.

A minute acquaintance with the details of every section of the Contagious Diseases (Animals) Act and the articles of the Animals Order is not to be expected of a veterinary surgeon in active practice, but some knowledge of the scope and intention of existing legislation cannot be other than useful to those who may be called upon at any moment to advise in reference to the course which should be adopted in case of an outbreak of a contagious disease among stock.

Any veterinary surgeon, whether an appointed inspector or not, may, under the terms of the Act, be called upon to assist the local authority in an inquiry as to the nature of a disease; and it is much to be desired, in the interests of the public as much as in those of our profession, that veterinary surgeons of experience should be more often employed by local authorities than they are to aid in such inquiries. In one county, according to a report which we observed some time ago in a local paper, this very judicious course has

been adopted, to the manifest benefit of everybody concerned, inasmuch as it appeared from the account that the investigation of nearly fifty reputed cases of pleuro-pneumonia among cattle led to the discovery that only three or four of the suspected animals were really suffering from that malady.

It is still a matter of regret that the authorities all over the country are disposed, from motives of economy, to employ unskilled persons as inspectors for the purpose of carrying into effect the provisions of the Act and Order. A gradual improvement, however, appears to be taking place, and we are informed that two counties have selected none but members of the veterinary profession for the office of veterinary inspectors, and we cannot avoid suggesting that the more the members interest themselves in the working of sanitary legislation, the more highly are their services likely to be estimated.

Extracts from British and Foreign Journals.

HISTORY OF CONTAGIOUS PLEURO-PNEUMONIA IN NEW YORK.

By J. D. Hopkins, D.V.S. Read before the United States Veterinary Medical Association.

Mr. Chairman and Gentlemen,—From reliable information we learn that in the year 1843 the "Lung Plague" was introduced into Brooklyn by a cow purchased by Peter Dunn, milkman, and kept in a stable near South Ferry. This cow was imported from Holland. She sickened and died in this stable, and infected the other cattle which were kept there. From this point the disease was soon carried to the great distillery stables of John D. Winters, foot of 4th Street, and into the Skillman Street brewery stables. In these stables, as in similar cases in other countries, the disease continued to prevail, and nineteen years later was found in the Skillman Street stables by the Massachusetts Board of Cattle Commissioners, who, to satisfy themselves of the nature of the malady, verified their diagnosis by slaughtering an animal and making an autopsy. This occurred in 1862.

In the year 1849, Wm. Meakin, of Bushwick, kept a large dairy, and used a yoke of oxen to draw grains from the

breweries. One day while on the road he was induced to draw out a dead cow from a milkman's stable; from this the oxen became affected and the disease gained entrance into Mr. Meakin's dairy, resulting in the loss of forty head in three months. Here the malady prevailed for twenty years, or until Mr. Meakin left the business. This covers thirteen years of the period that the disease was known to exist in the Skillman stables and seven years subsequent to the visit of the Massachusetts Commissioners, and brings us down to 1869. In 1868, Prof. John Gamgee investigated this disease in the United States, and found it to exist in various parts of Long Island. In the year 1870, W. D. Sanger, of Bayside, L. I., by the purchase of a black cow from a dealer, had his herd infected with this pestilence and lost 90 animals out of 150 in one stable, and sixty out of 130 in another, within a period of twenty months.

The continuous existence of the disease is thus shown from 1843 to 1872, on Long Island; but it was not confined by any means to Long Island alone, for so long ago as 1850 Mr. Bathgate, of Morrisania had his Jersey herd infected, and all efforts to eradicate it failed until some years later, when the barns were burned down. And so prevalent was the disease in the vicinity, that for many years afterwards Mr. Bathgate was afraid to pasture his own lots adjoining the streets, lest his stock should again contract the plague from diseased cattle running on the commons.

Seven years ago the trouble was brought into the herd of Joseph Schwab, of 149th Street and Southern Boulevard, by a cow bought of a dealer; here twenty-three died and only seven recovered (?). Within the last seven years most of the large dairies in the suburbs of New York City have suffered from invasions of this disease. As notable instances of this, we might mention those of Patrick Green, Frank Divine, Emery Hill and his brother, Horace K. Hill, Geo. McKittrick, Mr. Trot and many others.

To explain the great extension of this disease within the last few years, it will be necessary to enter into some details regarding the peculiarities of the cow trade as carried on in this vicinity before Gen. Patrick's appointment.

The fresh cows arrived in New York by boats on the Hudson River from this State and from New Jersey, and by railroad from northern and western New York, New Jersey and Pennsylvania, and were sold on the docks and at the railroad yards by speculators to dealers and transferred to the stables of the latter. The business between the dealer and the dairyman is almost invariably done on credit, the frequent

losses of the dairies making it next to impossible to get sufficient means ahead to pay cash.

The dairyman in need of a fresh cow applied to his dealer and was furnished one on trial, represented to be in possession of all good qualities and a deep milker. A couple of weeks later this cow would be returned to the dealer, not proving such a milker as warranted, and she was placed once more on sale in the dealer's stable, mingling with his other stock. In many instances the dairy in which this cow had been tried had lost cows from *pleuro-pneumonia contagiosa*, and was consequently an infected place.

We have now an infected cow transferred from an infected place to cohabit in a dealer's stable with cows offered for sale, conveying the contagion both to them and the stable. Now this lot of infected animals was sent out, as opportunity occurred, to other dairymen on trial, contaminating all susceptible animals with which they came in contact. Disease and death followed the trail of this pernicious system.

Another phase of this business was the peddling of cows on the roads by dealers, and many a herdsman has bitterly repented the buying of such animals and placing them in their own healthy herds. An instance of this may be cited with profit. In 1872, Frank Divine, of Old Farm House Hotel, Westchester, N. Y., bought a cow from a peddler passing his farm, which soon sickened and died, the disease extending to the rest of the herd, and in seven months he lost thirty-six cows from pleuro-pneumonia. Many stories of a like nature have been told me by the sufferers in New York and Westchester counties within the last six months.

Another means of spreading the disease was the custom of small dairies of pasturing their cows on the commons. Here herds belonging to different individuals grazed innocently together, and it has been my lot to detect the disease and trace it to this source, and even to find the affected animals on the commons. The people, of course, wondered how their cows contracted the disease.

You can now fully understand, gentlemen, how easily this disease is transmitted from stable to stable in New York and Brooklyn—how from one or two original centres of contagion it has been disseminated until now it has assumed such proportions as to be almost a national calamity.

The authorities of New York State until quite recently took no notice of the existence of the disease in our midst, although repeatedly warned by veterinarians and the press.

Some years ago Frank Leslie, publisher of an illustrated newspaper, called the attention of the public to the diseased

condition of cows kept in swill stables, then located between 15th and 16th Streets, near North River, and also those in Brooklyn, influencing popular opinion to such an extent that many of these stables were abolished. His apt illustrations and the humour of his caricatures obtained for the vendors of milk from these stables the sobriquet of "stump tails," from the fact that most of the cows had lost a portion of their tails.

Later, Henry Bergh, President of the American Society for the Prevention of Cruelty to Animals, has since the organisation of his society waged war against the inhuman practices of cow owners. These gentlemen made public the condition in which cows were kept, and though powerless to remedy the evil, if indeed, they recognised the true root, viz. pleuro-pneumonia, did much to relieve the condition of the bovine family, and deserve the lasting gratitude of residents of New York and Brooklyn.

Many eminent pathologists wrote to our legislators at Albany and Washington without being able to enlist any action in the matter.

In the year 1868, Prof. John Gamgee, under an appointment of the General Government, made an official examination in the United States, and in the fall of 1869 made an exhaustive report to the Commissioner of Agriculture at Washington, in regard to the history of this disease in European countries and of its existence in Long Island, New Jersey, Pennsylvania, Maryland, District of Columbia and Virginia, advising strong measures for its extirpation, and in the same report prophesying what the result would be unless the Government took active steps to stamp it out.

Prof. Gamgee's report was printed and placed in the hands of our legislators at Washington, still nothing was done by the Government.

The disease continued to make havoc in this country till, coming to the knowledge of the English authorities through an article published in the New York 'Tribune' for Nov. 27th, 1878, from the pen of Prof. Law, and the subsequent discovery of diseased American cattle on board the Ontario, Prof. McEachran, of Montreal, was directed to investigate and report to Canada. You all, gentlemen, know the result of that report: American cattle were refused, not only by England but by other European countries. This is a matter of history.

The United States had a rude awakening—we could see Europe supplied with cattle from Canada, thereby diverting

from our own country millions of dollars, and New York City being the port from which most of the cattle are shipped, the authorities of this State at once took measures to relieve herself of this foul incubus.

Wise counsels and clear heads at Albany came to the rescue at this crisis. Governor Robinson called to the front Gen. M. R. Patrick, a gentleman of great experience in bovine matters, whose executive ability in 1868, while acting as Commissioner of Cattle, saved this State from being overspread by an epizootic of splenic fever (see report to Legislature, March 12, 1869).

At General Patrick's wish, James Law, Veterinary Professor at Cornell University, was appointed to direct the professional part of the work in stamping out this plague.

On the 13th day of February, 1879, the Commission met in Brooklyn, organised an efficient staff, and at once proceeded to the business at hand. Work was begun immediately in the Blissville distillery stables, containing 879 milch cows. Those that had the disease in the acute form were destroyed and sent to the offal dock, while the balance were sent to the butcher, not a hoof being left to carry the pestilence.

A great deal of opposition was raised by parties interested in the diseased animals, and at times but for the firmness of our executive, the lives of the veterinary staff would have been in danger.

To carry on the work effectually it was necessary to issue such regulations as would completely control the traffic in cows and store cattle, and lead to the discovery of all infected premises. To this end the introduction of such animals from infected districts, viz.: New Jersey, Eastern Pennsylvania, Delaware, Maryland, District of Columbia and Virginia, was prohibited, as well as the movement of the same from the infected to the healthy district within our own State.

Of course a critical examination of all stables in the infected districts was at once commenced; but this alone was not sufficient, for it was highly important to discover immediately the stables in which the disease already prevailed, that its spread from them might be at once prevented. For this purpose careful *post-mortem* examinations were made at the offal docks daily on all cows, so that no deaths from this disease escaped our knowledge, and the slaughter of fat cows at the butcher's was even done under the supervision of our inspectors.

Pasturing on the commons was strictly forbidden and the

law on the subject extensively advertised, and no cows allowed to move on the streets unless accompanied with a permit bearing the autograph of General Patrick, to obtain which a previous inspection was required.

By the generosity of the Union Stock Yard and Market Co., in their desire to encourage and protect the business, extensive yards and sheds were built at 59th Street and North River. A new era dawned on the cow trade. Gen. Patrick brought the lines closer and closer as he felt the traces drawing. Opposition from interested parties, those who rebelled through ignorance, or the authorities that failed to do their duty, were each met in his turn by our executive and shown their proper course. Railroads, steamboats, and barges, bringing store cattle to the New York markets, were compelled to land them at our yards for inspection and distribution.

Orders were promulgated prohibiting dealers from keeping cows on sale in their own stables or moving cows from one stable to another, effectually doing away with all peddling. The great step was now attained, and movement of cows simplified to going from the yards to the stables, and from the stables to the slaughter-houses. Gentlemen, you can easily imagine that New York and Brooklyn are practically in a state of thorough quarantine.

Now, if you will add to these rules the liberal indemnity allowed by the State for such diseased animals as are reported, you can see how little is to be gained by any dairyman concealing the existence of the disease.

But the establishment and enforcing of these regulations has not been a work to receive, as one might suppose, the hearty co-operation of our leading agriculturists, our agricultural press, or even of all the members of the veterinary profession. From the very first the journal, which in our State stands highest as an exponent of live-stock interest, has taken every opportunity to throw doubt on the existence of the disease. The Executive Committee of the New York State Agricultural Society, even after the infected district had been very accurately marked out by the labours of the veterinary staff, passed resolutions to give publicity to their opinion that there were grave doubts in regard to the contagious character of the malady as it exists in this State. But worse than all, gentlemen, was the opposition that came from members of our own profession—from men holding the diplomas of leading veterinary institutions, to whom the public looked for sound advice based upon thorough professional knowledge.

The opposition of quacks and cattle dealers need not be mentioned; it was expected, and treated with that contempt which at once consigned it to oblivion; but the disaffection of the press, the Agricultural Society, and members of the profession, could not be so easily passed over in silence. A wise policy of public *post-mortem* examinations, however, to which the most noted critics of our policy were invited, and the publication of typical cases of contagion in large number, have, we believe, completely disarmed our opponents, and left us, for the present at least, in comparatively quiet possession of the field.

The same fortunate result has not yet been arrived at in other States, and in the majority of those which are infected there is still a deplorable contest over the nature and existence of the disease. As a result nothing is done, the danger continues and the malady is spreading; and this state of things has, as can readily be seen, a considerable influence on the time required for the completion of the work in this State, and our safety in the future.

A word about the stamping-out process. Criticism will always follow the appointment of a commission to perform such important work, even though the selection is made because of special qualifications; but I am sorry to see young men, ambitious of notoriety, whose experience extends little beyond the four corners of a school room, criticising competent and conscientious men, who have on hand a work greater than these would-be critics can appreciate, and who have to encounter obstacles which are unknown to such lookers-on.

If our friends would only give the State Commissioners credit for possessing intelligence and a natural desire for the success of their work, they would not need to be informed that there may be good reasons for carrying out the work exactly as it is being done.

It is possible for pleuro-pneumonia to be exterminated in other ways than going with a torch in one hand and a pole-axe in the other, arousing opposition on every hand and raising a disturbance entirely out of proportion to the work performed.

This most insidious foe, pleuro-pneumonia, because of its long period of incubation, must be met by the guarded quarantine, blocking the avenues of traffic, thoroughly disinfecting the centres of contagion and destroying *diseased* animals. The people must be made acquainted with the laws on the subject, and in my experience I have found my greatest allies among the intelligent herdsmen, who, understanding what was required of them, failed not in their duty.

From April 4th to September 12th, this year, there has arrived in New York 4812 fresh cows, all of which have been critically examined. And within the same time, 1083 cow stables, containing 4749 cows, have been inspected in New York City, of which 67 stables, containing 470 cows, have been found infected and quarantined, and 110 cows have been found suffering from pleuro-pneumonia, and slaughtered, on all of which autopsies have been made in the presence of medical men from the Health Boards of New York and Brooklyn, nearly all the veterinary surgeons of New York, and many eminent physicians.

Up to this time only $35,000 in all has been appropriated, and of this but a small balance remains, without a prospect of more until the next meeting of the legislature. It is to be regretted that after so much work has been done, and complete success almost within our grasp, we should find our work hindered by the diminution of our pecuniary resources. Under these circumstances our executive has been compelled to dispense with the services of some experienced and valuable inspectors, and to otherwise reduce expenses to the lowest possible limit, so that the good work already done can be held until the next meeting of the legislature.

The result thus far has been exceedingly gratifying to those in charge of the work. Stables which might well be called pest houses have been transformed, the number of infected places has been greatly diminished, and, unless the short-sighted policy of our legislators compels a discontinuance, the success will be speedy and complete.

But how unsatisfactory will even this result be if neighbouring States are allowed to harbour this pestilence. Not only will we be obliged to keep up our inspection of incoming animals, but we will be in continual danger of fresh outbreaks from cattle infected on cars, which are admitted while in the period of incubation.

Again, the extermination of the disease in this State cannot rid our foreign trade of its present restrictions, while it is well known abroad that it still prevails over such a large territory. The danger from pleuro-pneumonia and the benefits of the cattle trade, are not restricted to any State or section; they are matters of national interest and national importance, and we cannot escape the conclusion that they should be met by a national policy. There is but one means by which our country can soon rid itself of the stigma which the presence of the lung plague has placed upon it, and that is by a national appropriation expended under uniform regulations.

As you well know, a great obstacle to Congressional action

exists in the opposition of men of intelligence and influence, who have formed erroneous opinions of the prevalence and nature of the pleuro-pneumonia of this country. An explanation of such opinion can, of course, be found in the loud-mouthed course taken by so many quacks and imperfectly educated veterinarians. But an expression of views by the United States Veterinary Medical Association could not be lightly passed over; it would carry a weight with it which would prove of the very greatest assistance in placing our Government right before the world.

I therefore beg leave to offer the following preamble and resolutions:

Whereas such able veterinarians as Prof. Law, of Cornell University, Ithaca, N. Y.; Prof. Liautard, of the American Veterinary College; Prof. Gamgee, of London; Prof. McEachran, of Montreal Veterinary College, and Dr. E. F. Thayer, of Boston, have recognized the existence of contagious pleuro-pneumonia in the United States, and mapped out the infected districts, viz. New York, New Jersey, Pennsylvania, Maryland, District of Columbia and Virginia; and

Whereas, The presence of this disease in our midst has almost destroyed our export trade in live cattle (worth millions annually), by the refusal of such cattle in foreign markets; and

Whereas, The inaction of our authorities caused the 40,000,000 of cattle in this country to be threatened with this pestilence; and

Whereas, The eradication of this plague is a matter of national importance, affecting the welfare of the whole United States, and requiring uniform regulation for its accomplishment; therefore be it

Resolved, That we, members of the United States Veterinary Medical Association, at our annual meeting, held September 16th, 1879, at the American Veterinary College, do ask that our General Government take active measures for the extermination of the plague before its further extension makes this impossible; and

Resolved, That Congress be asked to establish a special commission at the most central point to direct the movements in all the States, said committee to consist of an executive (non-professional), with a chief veterinary surgeon, and a staff organized under their direction; and

Resolved, That Congress be asked to make an appropriation of $2,000,000 to defray necessary expenses.

Resolved, That our Secretary make a copy of these resolutions to be signed by the members of this Association, and presented to the Secretary of the Treasury, Washington, D. C.—*American Veterinary Review.*

THE SPREAD OF PLEURO-PNEUMONIA IN AUSTRALIA.

We would direct the attention of the stock-owners of Victoria to the efforts being made in certain quarters in the way of hushing up all intelligence connected with the rapid spread of the above virulent scourge among the cattle of the colony. Which is the more beneficial to the stock-owners' interests—that the truth should be freely published in respect to this matter, or that all sorts of subterfuges should be resorted to for the purpose of keeping in existence an incapable Stock Department, merely because the personal conveniences, in respect to place and pay, of certain individuals who possess a considerable amount of wire-pulling influence are at stake? During the past twelve months the attention of the authorities has been continually directed, through our columns, to the incompetency of the present system of stock disease supervision, and to the increasing prevalence of pleuro-pneumonia. All attempts of this kind, however, have been met by the stock department with the languid assertion that sensational attempts were being made to "get up a scare," and as a consequence no steps have been taken to prevent the terrible scourge in question from effecting a firm hold in the majority of the districts throughout the colony. Reports are now coming in from all points that the disease has been kept quiet in hopes that it would pass away, but as the losses in many instances recently have become too severe, further concealment has been found impossible. On the one hand there has been concealment on the part of owners of infected herds, and on the other an incapable department, desirous in the first place not to discover disease because of the trouble connected with its treatment; and, in the second place, unable to detect disease, even when accidentally brought into contact with it. In response to charges made by us as to the spread of pleuro, one of the stock inspectors, Mr. Shaw, made a report recently to the effect that during a week's travelling he had only succeeded in finding traces of the disease in one cow, and forthwith there appeared an article of the usual "pooh, pooh" character in the journal which champions the cause of stock department incompetency. Now we find, by means of the local press and by correspondents' communications, that the districts inspected by Mr. Shaw, viz. Wahgunyah, Rutherglen, Chiltern, and adjoining localities have had the pleuro firmly established during the last nine months, carrying off as many as from ten to twenty head even in small herds. The border districts are being constantly infected by travelling cattle from Queensland and New South Wales, while during

the past week most alarming reports have appeared in the local papers as to the spread of the terrible scourge of pleuro among the herds at Lancefield, Gippsland, and in the western district; there is also good reason to believe that another fatal malady is being erroneously set down as contagious pleuro. No official investigation took place in connection with the cattle that died recently on the Geelong common, but we have the authority of several practical men for stating that the cause of death was something distinct from the well-known lung disease. The time, in our opinion, has come when in place of the periodical replies given in Parliament by the Chief Secretary to the effect that Mr. Curr assures him there is nothing amiss, a thoroughly competent aud authoritative examination should be made, and report submitted, as to the nature and extent of the stock diseases that are beyond doubt rapidly extending.

We have frequently pointed out the anomalous position of the present Stock Department, and the utter hopelessness of any improvement being possible while conducted in its present form and under its present management. The department is not only a heavy charge upon the revenue of the State, but the results obtained in exchange for the money expended are worse than *nil*. While engaged in scab eradication the officers of the department were saved from the charge of incapacity that now attaches to them, because of the manner in which they were supervised, and their movements directed under the local committee system. We would advise a reformation of the department in this direction with the least possible delay. Let the present ineffective management give place to a reconstruction upon the basis of the New South Wales system, and the requirements of the colony in this matter will be met. That system, it may be necessary to state, includes, first, the selection, appointment, direction, and oversight of the stock inspectors by local boards appointed from among themselves by the stock-owners; and, second, the payment of their salaries by a light tax levied upon all the stock of the colony for the purpose by the Government. The Government collects the tax, and forwards the salaries to the local boards. There is only one Government officer, the Chief Inspector, who resides in Sydney, and with him the local boards communicate, but in all matters pertaining to the management of their own districts and their own inspectors they are uncontrolled. The advantages of this system are that as the stock-owners pay for keeping their flocks and herds clean, and have the selection and control of their own officers, they take care not only to appoint competent men in the first place, but also to

see to it afterwards that these officers attend effectively to their duties. The New South Wales system is self-supporting, satisfactory, and effective. The Victorian system involves a heavy annual charge on the State, is notoriously incompetent, and in every respect productive of the greatest dissatisfaction.—*The Leader, Melbourne.*

ANIMAL VACCINATION.

It is satisfactory to find that the subject of vaccination by improved means will be carefully considered by the Local Government Department, which has now been made acquainted with the wishes of the British Medical Association on the question. At an interview which the representatives of this society had with Mr. Sclater-Booth yesterday, Feb. 9, certain suggestions were made in accordance with the conclusions recently arrived at in a conference on Animal Vaccination; and these suggestions were received by the President of the Board with an assurance that they should have his most careful and anxious attention.

It appears from what was said at the Conference, and repeated yesterday, that one of the chief objections urged by Anti-vaccinators to the enforcement of the Act is the fact that the lymph, with which children are vaccinated by the public vaccinator, is not taken from the calf or cow, and is not, therefore, always free from the suspicion of impurity. Whether the fears or doubts entertained by these people are well founded or not may be an open question, but no one will deny that if they constitute a real grievance in the imagination of those who are affected by the Act, it would be desirable, if possible, to get rid of the ground of complaint.

The Anti-vaccinators are not a body of which the Local Government Board or any one else has great reason to be afraid; but if one of the chief arguments upon which they rely could be cut away from them without much difficulty it would obviously be conducive to peace and quiet to do so immediately. Similarly, although the idea of certain poor people that in having their children vaccinated they are exposing them to noisome infections may have little or no foundation in reason, it would yet be worth some trouble to take a step which would remove that idea.

The Association, representing, as it claims to do, no less than 90,000 practitioners, is of opinion that, by adopting in all cases at central stations the vaccine lymph derived from the calf, this desirable result would be secured; and such an opinion is certainly of much value and importance. One of

the objections that has been urged against the proposed measure is the cost of providing animal lymph. But Mr. Sclater-Booth is reported to have said that the expense would not be great, and that the lymph referred to could easily be provided if the public demanded it. The main question that remains seems, therefore, to be whether the public do or do not demand it. If they do, there could be no great objection to making the change suggested.—*Globe,* Feb. 10th.

TRICHINOSIS IN PRUSSIA.

An official return recently published states that during the year 1877 the number of pigs in Prussia discovered on examination to be trichinous was 162,800, as against 172,000 in the previous year. In the Stettin district ninety-eight cases of trichinosis in man came under observation, of which fifty-four were in the city of Stettin alone. In this district microscopic examination of pork exposed for sale is undertaken in certain isolated localities only.

In the Merseburg district three epidemics of this nature were recorded in certain villages where, as a rule, pork is eaten raw, or only very partially cooked. At Höxter fifty-two cases of the disease were recorded within the year.

The question as to the origin of these outbreaks is greatly complicated by the fact that many of the salt sides of bacon so largely imported from America are often trichinous, the proportion thus affected being returned by some authorities as ½ per cent.; while others have found it in their experience to be not less than 4 per cent. of the total numbers examined. To prevent the country being literally invaded by the disease, Government has been forced to have recourse to extremely strong measures. No pork may now be offered for sale as food for human consumption except such as has been personally inspected by experts specially approved to make microscopic examinations of it, and declared by them to be free from disease. The value of this precaution of course depends in great measure upon the zeal and ability of the officials thus employed, but, unfortunately, many of them are from some reason or other unsuited for the duties entrusted to them.

Among the inspectors are medical men, veterinary surgeons, and butchers. The butchers, as a rule, are lamentably ignorant of the use of the instruments supplied to them, and only continue to spoil them. They generally report the meat submitted to them to be sound, and apparently they must have done their best to detect trichinæ, for in the Weissenfels district alone 46 out of 125 instruments issued have been returned as "worn out" or "spoiled."

Medical men, again, if their private practice be at all extensive, can scarcely be expected to devote much time or trouble to an ill-paid, and consequently unremunerative, public duty. There are, however, exceptions to the rule, for one of these gentlemen gravely reports that in a single day he examined 503 hams, 3 barrels of bacon, and 46 carcasses of pigs. Inspection such as this is worse than useless.—*Mark Lane Express.*

VARIOLA AND VACCINATION.

Professor Naunyn, of Königsberg, gave a very interesting address on variola, vaccination, inoculation, &c., at a meeting held at Eisenach, which is reported in the *Ærtzliches Verein-Blatt.* Among other things, he mentioned the presence of variola in man, goats, sheep, and hogs, which produces an eruption, accompanied with fever and affections of the mucous membranes, whilst that occurring in cows and horses is a mere local disease. The first group, besides the contagion effected by the virus, produces somites, whilst in the second group the immediate transmission of the virus is necessary for the propagation of the disease. It has been frequently and long observed that cow-pock and horse-pock were inoculated on man, but sheep-pock has only been transmitted by direct and artificial methods. The cow is predisposed to inoculation with human, equine, and ovine virus. The horse and ass have been successfully inoculated with bovine, humanised, and pustular virus. Ovine has had no effect. Sheep are readily affected by bovine and equine virus, but have little susceptibility to the human. Goats are susceptible to the lymph of the sheep and hog, and reproduce it. Hogs can be inoculated with human, ovine virus, &c. The first transmission of a foreign virus is often unsuccessful, or produces doubtful results, so that it appears that there is a natural resistance which is to be overcome by previously acclimatising the virus. In the same species, however, the propagation is easy. In all cases, however, human and animal virus can be reciprocally and successfully inoculated. There is a law by which man has a susceptibility, in common with some other diseases, of contracting variola but once in a lifetime. The practice of inoculation in the past year has proven that the disease, artificially induced, is as competent to insure this further immunity. These laws are equally applicable to the inferior animals. Equine or bovine virus received by accident or intentionally has proved to be of the same value as variola as a future protective. Ovine virus is also a guarantee against

variola, and destroys further susceptibility to vaccination. Cattle that have been inoculated have no longer any adaptability to the reception of equine, ovine, or bovine virus. Sheep enjoy the same immunity after an inoculation.—*The British Medical Journal.*

[There are many statements in the above Extract which we are at a loss to understand, supposing the translation to be correct. Our experiments with the virus of ovine variola have been numerous—we might say hundreds—and it is a singular fact, that they have invariably failed on horses, donkeys, cows, goats, pigs and dogs. Goats are also proof against ovine variola, even if made to live in the *same building* for weeks together, with diseased sheep in all stages of the disease; and although the other animals on the same farm may not have been shut up with variolous sheep, it is nevertheless a well established fact, that none of them ever contract the disease however often they may have been temporarily exposed to its *contagium.*

With reference to the susceptibility of the human subject to sheep variola, Mr. Ceely, the late Mr. Marson, with one of the Editors of this Journal, put this fairly to the test, during the great outbreak of the malady of 1847-9, Mr. Ceely alone making not less than 180 punctures in twenty-five subjects, and invariably with a negative result. Since that time, when engaged in inoculating sheep, we have again and again inoculated ourselves, to give confidence to those who were assisting in the operation. The opinions of Professor Naunyn would seem to be a renewal of the erroneous statements of Sacco, the Italian author, which were refuted here. Were it necessary, we could point out other statements in the Extract which are unsupported both by experiment and experience in this country.—Eds.]

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Monthly Council, Wednesday, February 4th, 1880. Present—the Duke of Bedford (President, in the chair), H.R.H. the Prince of Wales, K.G., the Duke of Richmond and Gordon, K.G., Earl Cathcart, Lord Chesham, the Hon. W. Egerton, M.P., &c.

Veterinary Committee.

The *Hon. W. Egerton,* M.P., reported his election as Chairman of the Committee for the year. The Committee had received a report from Professor Simonds, in reference to investigations made since the last Council meeting; and they recommended that the following report by Professor Axe, of disease in a flock belonging to Mr. Drew, of Tavistock, be published in the agricultural newspapers:—

Report on a Fatal Disease prevailing among Ewes, with special reference to an outbreak of it in the flock of Mr. Drew, Artiscomb, Tavistock.

The disease referred to in this report, I have reason to believe, is at the present time somewhat widely spread: and, having regard to its fatal character, the rapidity with which it runs its course, and the special condition of the animal which it assails, I much regret that I am not able to furnish a fuller and more complete account of its history and pathology. Reports that have reached me from Devon, Cheshire, and Cornwall, as well as others noted in agricultural papers, testify to its widespread existence; and its importance at this critical period is largely enhanced by the fact that it claims for its victims, in a great measure, the best bred and the best fed of our breeding stock. At a time like the present, when a large proportion of our sheep have succumbed to the ravages of parasitic diseases, and large numbers are still threatened with extermination from the same cause, the existence of such a malady as that referred to above in our breeding stock is a matter of serious concern.

It is, however, satisfactory to be able to say that, although my knowledge regarding the nature and origin of this disease is based on general observations rather than (as it should be) on a systematic and exhaustive inquiry, I am, nevertheless, capable of exercising a large influence in arresting its spread, by the application of well-timed measures based on hygienic and prophylactic considerations.

In every instance that has come to my knowledge in the past, as well as the present, all attempts to cure have met with a negative result, both in the practice of our most eminent scientific veterinarians, as well as that of intelligent and experienced practical shepherds, notwithstanding that every class of medicine has been employed, and every variety of curative treatment adopted. The suddenness of its inception, and the rapidity with which it runs its course and destroys life, constitute the chief features of the affection. In numerous instances a few minutes suffice to kill, so that animals apparently well at night are found dead in the morning. In the most protracted cases it seldom extends over from three to four hours, and such may be regarded as cases of exceptional duration.

So far as I am able to speak from past and present experience, ewes are principally its victims at this season of the year, and more especially such as are in a well-nourished and thriving condition. The prevailing fear of "rot" has prompted the universal adoption of a too liberal feeding as a means of protection against its ravages, and in some measure this fact may possibly serve to explain the origin of the malady.

Hitherto my information on the present epizootic is chiefly obtained from upland farms, where the staple pasture is grass, but the malady cannot by any means be said to be altogether confined to such situations, nor perhaps especially to grass feeding.

With reference to the outbreak of this disease at Artiscomb, it may be stated that Mr. Drew's flock originally consisted of 358 sheep, comprising 138 breeding ewes, 65 wethers, 54 draught ewes, 113 lambs, and a miscellaneous lot of 5, in which were included some rams, hoggs, &c.

They are all of the Dartmoor breed, display excellent quality and condition, and some of them are known to fame in connection with the agricultural exhibitions. Mr. Drew's farm is principally devoted to grass culture, with a considerable area of old clover layer, and a small percentage of roots. During the summer the ewes were pastured

chiefly on grass. In September the culls were drawn, separated from the breeding stock, "and fed on," the latter following the former over the same ground. About the 5th of November the breeding ewes were placed on mangold tops during the day, on grass at night. This system of feeding was continued up to the 19th of November, when they were removed to the highest point of the farm, and put on four-year old clover layer. On the 23rd they were turned on to some rich old grass from which lambs had been recently removed. Four days later, Nov. 27th, one of the ewes died suddenly, and on the 29th, two days afterwards, a second died in a similar manner. From this date up to the time of my visit fresh cases continued to occur at intervals of from one to four days, notwithstanding that frequent changes of pasture, and of food generally, were made in the meantime. Up to the 31st of November 25 ewes had succumbed to the disorder, and two others have since died. Until the time of these animals being pastured on old grass, they continued to exhibit a healthy condition. It was, therefore, naturally inferred that the determining cause of the outbreak was in some way connected with the nature and quality of the herbage on the particular field in which they were lodged, and they were consequently removed. While admitting the possibility of this connection, it must be remembered that the ewes were only on the old pasture four days when the disease occurred. Further, that only eight days elapsed between the outbreak of the malady and the discontinuance of the mangold tops, which are said to have been frosted and otherwise damaged. Whether the grass, or the mangold tops, or both, or these together with certain surrounding conditions, be regarded as the cause, it is perfectly clear, from the subsequent changes of management which were resorted to that that cause was not a transitory one, inasmuch as it continued to operate over a period of four weeks after the suspected food had been discontinued. Whatever may be the precise explanation of the origin of the disease, its confinement to the breeding ewes alone is a noteworthy feature in the outbreak; nor is it less important to remember that the only material difference in the food as regards the other portion of the flock is that which pertains to mangold tops, which, as previously pointed out, were given to the ewes for a period of fourteen days. The fact of the lambs preceding the ewes over the old pasture being exempt from the disease does not necessarily acquit such pasture of participating in the cause of the outbreak, any more than the mangold tops can be reasonably held harmless on account of the lapse of eight days between their discontinuance and the commencement of the disease. From a consideration of the foregoing facts it will be seen that while no precise cause can be surely stated, certain general conclusions may be arrived at.

1. The confinement of the disease to the breeding ewes alone, and the general condition of the latter, points in a forcible manner to pregnancy and plethora as predisposing causes.

2. The absence of disease in the sheep that followed the ewes over the pastures in which the malady originated acquits that pasture of being in itself the cause of the outbreak.

3. Inasmuch as the use of the mangold tops represents the only specific difference of feeding and hygiene between the ewes and the other portion of the flock, there is good reason for regarding the tops as the determining cause of the affection.

4. The gradual subsidence of the disorder on the discontinuance of the tops and the diminution of the food tends to confirm the latter view of the case.

The symptoms of the disease vary in different cases. At all times, however, it runs its course rapidly, and rarely exceeds from three to four hours' duration.

In the more acute cases sudden paralysis is rapidly followed by convulsions and a loss of consciousness, and death ensues in a few minutes. In others, the premonitory indications of sickness are manifested by an indisposition to feed; the affected sheep leaves the flock, and seeks some sheltered and quiet corner of the field, or wanders about alone in a dull stupid condition. Its movements are unsteady, the head is carried low, the ears are pendulous; in some instances the body is generally enlarged, while in others local swellings occur, involving more especially the head and neck. When pressed upon, the swollen parts crepitate or crackle beneath the fingers, and give other evidence of the presence of air in the tissues. Not unfrequently the belly alone is swollen, tense, and drum-like, owing to the presence of gas in the stomach. Sometimes the skin presents a leaden hue, becomes soddened with fluid, cold, and moist to the feel. The wool becomes loose in its follicles, and may be removed by the merest traction. The bowels are constipated, and the fæces hard and dry, the urine scanty and high-coloured, and sometimes straining attends their evacuations. The mucous membranes are red and engorged with blood; this is especially marked in the eyes. The mouth is hot at first, afterwards cold and clammy. The breathing is quick, and often of a stertorous or snoring character. After death the body quickly undergoes decomposition, and emits a fetid odour. The blood is firmly coagulated, and the internal organs exhibit blood congestions and extravasations, and in the case of the liver, kidneys, and sometimes the intestines, more or less, œdema and softening.

On my arrival Mr. Squire, veterinary surgeon, of Tavistock, had been in attendance upon the flock for several days, and fully appreciating the nature of the malady, had already administered to each animal two doses of aperient medicine, and prescribed besides a course of antiseptic and alterative medicine. At the same time the food was changed again and again, as will be seen by the table annexed.

The following table will show the progress of the disease day by day during its prevalence, as far as it could be ascertained, and the kind of food given:

Date.	No. of Deaths.	Kind of Food.
Nov. 27th	1	Rich old grass.
,, 29th	1	Rich old grass.
,, 31st	2	Moderate pasture.
Dec. 1st	1	Moderate pasture.
,, 2nd	2	Moderate pasture and cabbage.
,, 4th	1	Clove layer.
,, 7th	1	Grass.
,, 9th	1	Grass.
,, 12th	1	Grass.
,, 13th-21st	6	Old grass.
,, 23rd	1	Poor grass, roots, corn.
,, 24th	1	Poor grass, roots, corn.
,, 28th	2	Moderate grass, turnips.
,, 29th	2	Moderate grass, roots, desiccated grains.
,, 31st	1	Moderate grass, roots, desiccated grains.

This treatment was continued with but slight variation, and notwithstanding that one or two deaths have since occurred, the results may be said to be most satisfactory. J. Wortley Axe, Professor.

The Committee proposed for the consideration of the Highland Society and the Royal Agricultural Society of England, that each contribute a sum not exceeding £100 towards the prizes and expenses of the examinations in veterinary science; that the written portion of the examination be held at Edinburgh and London simultaneously; and that the examination in Practical Pathology, in Dec., 1880, be held at Newcastle-on-Tyne, the expenses of the examiners being paid by the Societies, and the second-class fares of the candidates also.

This report was adopted.

Rot in Sheep.

At the request of the Committee, Professor Simonds had drawn up a short report on the Rot in Sheep, condensed from the revised edition of the treatise lately published by the Society and Mr. Murray, which goes fully into the whole subject; and they recommend it to be printed in the next number of the *Journal*. In this condensed report Professor Simonds stated that the animals must be carefully guarded against all vicissitudes of the weather by being folded in the best sheltered situations, more especially at night. Their food should consist of a liberal supply of food, rich in flesh-forming principles, and also of such as contains a large proportion of sugar, starch, and similar materials, that the heat of the body may be kept up equally with nutrition. If placed on meadows or artificial grasses, the sheep should be often changed, care being taken to avoid those pastures which are wet and cold, or which contain inferior herbage. Manger-food must be supplied, and this should consist, in part at least, of *crushed* corn, of which beans, peas, lentils, &c., are to be preferred. Oats and maize are also good, and to these a moderate allowance of oilcake may be added. Frequent changing of the food will induce the animals to eat more, for which reason, when they are on the pastures, no objection is to be taken to an occasional supply of turnips or other roots; but, unless compelled by the character of the farm, and the system of cultivation, continuous folding on turnips should be avoided. Where this has to be done, great care will have to be exercised in regulating the quantity of turnips according to the condition of the crop, the state of the weather, &c. Under such circumstances an allowance of good hay, in addition to the other food, will be imperatively required.

Medicinal agents will likewise have to be had recourse to, preference being given to those which impart tone and vigour to the system.

Salt cannot be dispensed with. It does good in several ways. It is an agent which acts as a stimulant to the process of digestion, and, by its ready solution and free entrance into the blood, it supplies also any amount of soda which is required in the secretion of bile.

The other medicinal agent to which reference has been made, as imparting vigour to the system, is the sulphate of iron. As a tonic it is excelled by few, if by any, therapeutic agent; while the readiness by which it can be obtained, and the lowness of its price, give it an advantage over many others. Sheep also do not object to take it with their food when mixed in proper proportions; nor is it a matter of much moment if one animal should get rather more than his fellow, by more rapid or longer feeding at the trough. Sulphate of iron is likewise an excellent agent for the expulsion of several of the varieties of *intestinal*

worms. Its chief use, however, in rot is its powerful effect in the reproduction of the red cells of the blood. In all diseases, therefore, in which there is a diminished power of producing red cells, the sulphate of iron is a valuable remedy.

Stomachics or carminatives are likewise required, of which medicaments I give a preference to aniseed in this affection.

A good compound of these several medicinal agents, with some highly nitrogenised alimentary matters, is contained in the following formula. Take of—

Finely-ground oilcake (linseed) .	}	each 1 bushel.
„ peal-meal . .	}	
„ salt . . .	}	each 4 lbs.
„ aniseed . .	}	
„ sulphate of iron .		1 lb.

Let the salt, aniseed, and sulphate of iron be mixed together first, and afterwards well incorporated with the cake and pea-meal.

Quantity *per diem*, each sheep from half a pint to a pint.

The *Duke of Richmond and Gordon* said that the disease amongst sheep is of a very disastrous character, and one upon which the fullest information that we can get ought to be obtained; and every one knows that Professor Simonds treats of every subject he undertakes to write upon in the most complete manner possible. He therefore suggested that instead of the publication of an abstract of Professor Simonds's pamphlet in the *Journal*, the whole paper should be republished.

Mr. Dent explained that Professor Simonds had prepared an abstract of a very complete character, in consequence of several practical farmers having represented that his pamphlet, although, doubtless, most valuable from a scientific point of view, was not easily to be understood by practical men uninstructed in scientific language, and therefore the *Journal* Committee had suggested the publication in the *Journal* of a short abstract only, leaving still to those who required it an opportunity to purchase the more comprehensive paper at the low price of sixpence.

CENTRAL VETERINARY MEDICAL SOCIETY.

An ordinary meeting was held at 10, Red Lion Square, W.C., on Thursday evening, January 15th, 1880, the President, H. T. Batt, Esq., in the chair.

Mr. Hall Brown forwarded a *post-mortem* specimen of diseased liver, which had been taken from a horse that had been destroyed for broken knees; the animal had been used by a butcher at Woodford for six years, and always appeared to be in good health and excellent condition. He also forwarded two enormous kidneys taken from a well-bred horse, 15.2 hands high, that had been passing blood for a week before being destroyed.

The *Secretary* drew attention to a hypodermic syringe, which he considered extremely cheap, only costing 6s. 6d.

Mr. Furnival exhibited some coated horse balls, which he had used for some years; they were prepared for him and with a saving of labour and cost.

Mr. Hunting then resumed the subject of Colic, adjourned from the last meeting. He said one thing had occurred to him, and that was that cold water was frequently looked upon as a cause of colic; he believed in

all cases of colic there was a tendency to constipation, but he thought the exciting cause of cold water alone would not produce colic, it only affected a horse having an empty stomach for a long time; the multiplication of drinking fountains was strong proof that water *alone* did not produce colic; water was an exciting cause but not *the cause* of indigestion.

He wondered no one had as yet given a name for this disease in the horse; there was a disease very analogous to it in the human subject; he referred to sycosis, which would be a very good term for the disease in the horse.

Mr. Gerrard said his ideas regarding colic were very much in unison with those expressed by Mr. Hunting, although he had anticipated a rather different system of treatment from him, as one who had sat so long at the feet of *Gamaliel* or one of the great masters on this subject. He had fully expected a philosophic disquisition on the action of aloes in the treatment of colic, for there was no subject that Mr. Gamgee wrote so dogmatically upon as the action of aloes in the treatment of colic, together with the use of his enema funnel, which he regarded as capable of curing any case of colic; indeed he mentions that he had not lost a case for some thirty years. And those who pursue the *stimulant* or *sedative* mode of treatment, he rather twits with treating the symptoms of the disease instead of the disease itself. Colic being essentially a spasmodic contraction of the muscular coats of the intestines, induced by some irritant, either in the shape of food or water, the most reasonable mode of treatment was certainly to remove the irritant, but he (Mr. Gerrard) had found that if you depended altogether on removing the irritant by purgation you frequently lost your case, from the violence of the symptoms, *unless* mitigated by a sedative. He could not say, however, that he had been so successful as Mr. Furnival, even although he had tried his prescription since the last night of meeting, for he lost the first case he tried it upon, only it turned out a twisted bowel, so that it was scarcely a fair test. Besides, the administration of chlorodyne to the horse, if it has to be often repeated it would be rather an expensive medicine, which was against its general adoption, unless we could always depend upon its action. He had had the greatest success, by the adoption of the stimulating and anodyne treatment, followed up by a dose of aloes if the state of the bowels and other conditions of the patient, as to food and water, demanded it.

One great objection to the treatment of colic by aloes was that you required the patient to be off work for a few days, whereas by the stimulating or sedative treatment you can usually, in ordinary cases, get fit for work in a few hours, which was frequently a matter of very much importance to your clients.

With regard to the production of colic by the drinking of cold water he had frequently found that horses in certain agricultural districts were often the victims of it, from being worked too long without food or water, and allowed to drink at the troughs in the yard when brought in. In Lincolnshire this was frequently found to be the cause of colic and even enteritis, arising from the fact that they worked their horses such long hours—frequently from seven in the morning until three in the afternoon, without food or water, whereas in Essex, where a different system of feeding and working prevails, colic is not so frequently met with; so that under certain conditions of the stomach and intestines, cold water may produce colic, or even too greedy feeding after long fasting; and this pathological fact is strictly in keeping with the anatomy and physiology of the stomach and bowels of the horse.

He regarded public drinking troughs in our large towns—about

which something was said in this discussion—as either a very great boon or a great nuisance. Looking at them from a philanthropic point of view, they relieve the sufferings of the dumb companions of our toil, by frequently allaying their sufferings from thirst; but, on the other hand, he was certain they were one of the greatest means of spreading contagious diseases, such as glanders, &c., so that their good is neutralised by their evil, and they become therefore a positive nuisance. He stated that several cases of this sort had lately come under his notice, which were decidedly attributable to this cause. He thought if an opinion were expressed by this Society it might have some effect upon the public mind, by warning them of their danger. He thanked Mr. Hunting for bringing the subject before them, and giving them some light upon it.

Mr. Hunting explained that he always treated his cases first with a stimulant, which frequently gives an amount of functional activity to the bowels; the removal of the obstruction was the object to be aimed at; if he could obtain such by the mild treatment he did so, but if not he tried the other treatment.

The evening being well advanced, and Mr. Furnival's subject a lengthy one, it was deferred to the next meeting, and the proceedings terminated.

Present—12 Fellows and 5 Visitors.

At a meeting of the Society, held at No. 10, Red Lion Square, on Thursday evening, February 5th, the President, Mr. H. T. Batt, in the chair,

The *Secretary* produced a specimen of ruptured liver taken from a seven-months'-old filly, which had been sent by Mr. M. Tailby, of Birmingham. There was a large quantity of blood in the abdomen. The filly was a quiet animal, and had belonged to a butcher, and was eating shortly before death. The specimen was forwarded eleven days since.

The *Chairman* thought the rupture was the result of a blow. He remembered a two-year-old horse falling very suddenly with a full stomach, and thus rupturing its liver. Had also been called in to see a colt which, when galloping, had slipped up on its side and ruptured its liver; it lived three or four days.

Mr. Furnival had had a colt three years since just in the same way; it died the same day.

The *Chairman* then called upon Mr. Furnival for his essay on "Inoculation in Contagious Diseases as a means of Prevention and Cure, viz. Pleuro-pneumonia, Glanders, and Farcy," who said, on the subject of cattle plague, that on the 23rd April, 1868, there was a large herd of black Welsh cattle passed through Kingston to be sold at the fair. When his men were going to work, between the hours of 5 and 6 a.m., they heard a lot of shouting and the rattling of cows' horns in their place, and, of course, going to see what was amiss, found 350 cattle mixed with their own (they kept 200 fine milch cows, valued at £25 each); they lent assistance, and soon separated them. The cattle were started back the next day, and reached Barnet fair. The following day intelligence came that these cattle were affected with the plague. Professor Simonds, of the Privy Council, went down, and the herd was destroyed, and the poor Welshman had to go to the Hammersmith magistrates in court to ask for money to take them back home. Fourteen days afterwards he (Mr. Furnival) found his cattle began to droop; he communicated at once with the inspector, Mr. Evershed, of Guildford, who gave notice to the Privy Council. Professor Simonds came down

the following day, and the whole of his 97 head had to be shot.* The question comes, Was there a cure for this? He had a pedigree bull, bought it at Mr. Dean's sale, giving 250 guineas for it. It got a slight touch, but not caring to destroy him, consulted a Scotchman, his bailiff, who suggested a good idea—to take a straw rick, cut it through, and make a loose box with an up and down shaft. This advice was acted upon, and the bull inoculated. The treatment pursued was diniodide of copper with suphate of iron and cantharides; it was allowed the most generous diet obtainable. He kept it sixteen weeks, it gradually picked up in condition, and he had the animal still, showing, he thought, that by inoculation cattle plague was curable.

Acute Glanders.—Here there were all the symptoms—defluxion of the nose, stinking breath, swollen tongue and gums, and the horrid effluvia of the breath. Knew of no analogous case recorded in veterinary works, with the exception of one cured in the year 1842, which was recorded in Percivall's 'Hippopathology,' vol. 3, page 184, and also inserted in the *Veterinarian* of 1842 by Mr. Ernes: "He was called to a case on the 6th October, found swellings of the hind legs and enlargement of the parotid glands, with copious discharge from the nostrils, &c."

Mr. Martin asked what was the bull inoculated from?

Mr. Furnival.—From one of the diseased cows directly they were slaughtered. The question has been asked by our continental brethren as to whether anything can be done for it, and he thought his was a *bonâ fide* case. In *pleuro-pneumonia* in cattle he believed that by inoculation not only could it be cured, but prevented. This last year—1879—he personally inoculated 1500 head of cattle, some affected with it, some not, and had not lost one per cent. On *farcy* in horses, had tried that by inoculation; in seven cases inoculated could truly say he had succeeded in curing them, afterwards selling them at Aldridge's. He gave four guineas each for them, and they realised £30 each. He proposed to spend some £500 to obtain diseased horses, so satisfied was he for inoculation if Parliament would sanction it, and instanced the public recognition of Mr. Rutherford's services in inoculating a couple of thousand cows in Edinburgh by the testimonial received in 1879.

Mr. H. J. Hancock asked, with reference to the bull, if there was any suspicion the animal was affected with cattle plague at the time of inoculation; also what virus was selected. He did not think one isolated case was any proof inoculation would be a preventive or palliative to cattle plague.

As to glanders, in his father's time many animals were treated, and several recovered and lived for some years, and no inoculation was practised. Were the horses suffering from farcy at the time, also what did Mr. Furnival inoculate them from?

Mr. Furnival, in reply, was satisfied this bull had the cattle plague on him, but in a mild form. The virus was a portion of the lung he took from the diseased cows and selecting between the third and fourth coccygeal bones he made an incision in either side of the tail and put a piece in and bound it round the tail of the bull. With reference to the animals suffering from farcy, when bought they had got from twenty to thirty farcy buds on them; he slaughtered one on purpose to inoculate the other; he took out a fair portion of the flesh with the bud in, and inserted it in the incision made between the third or fourth bone of the tail of the horse he had.

Mr. G. Banham observed that he had heard and read of cases re-

[* Mr. Furnival's memory seems to have misled him with regard to the part taken by Prof. Simonds in these cases.—Ed.]

covering, and believed a certain percentage did so recover. This bull was slightly affected, and perhaps would have remained so independently of the inoculation. He thought they could not rely upon one single instance and consider this treatment a cure for cattle plague. As regards pleuro-pneumonia, he believed they were satisfied there was some benefit derivable from inoculation, but they knew it did not produce the same disease; in farcy, cattle plague, and glanders inoculation produced the same disease, which was fatal. It appeared to him rather risky to inoculate horses with a poison for the purpose of preventing the ill effects of the same poison. Applied to farcy, he could not understand the theory as to how the inoculation acted, nor could he conceive how a poison taken from one part and introduced into some other part could cure the disease. In the report quoted from Percivall's 'Hippopathology,' he supposed it was considered in those days the best book written, but still they could not rely upon everything that was down in black and white in the present day. He had seen very bad cases of glanders, but had never seen or previously heard of typhoid glanders, but thought it more likely an anthracoid affection, and that *charbonneuse* had also been detailed as the same affection.

Mr. G. Moore observed purpura hæmorrhagica had been mistaken for it, that purpura looked like glanders at one of its stages, and that if a man had not seen many cases he might make a mistake.

The *Secretary* asked Mr. Furnival what class of horses the affected animals were; their condition and age at time of sale; also, if lost sight of since their sale, could he take measures to ascertain where they went; if the whole or half the lungs were affected, and whether he would deal with glanders in the same manner by inoculation and treatment? He thought if the preventive measure was to become amenable to treatment it would be beneficial to the public.

Mr. Shaw asked how many days elapsed before they showed symptoms of farcy after inoculation? In reply was informed he had not tried glanders because there was no Act of Parliament permitting him to do so. Mr. Shaw had seen a great number of affected animals, having to give orders for horses to be destroyed; among farriers it was called the "black fass."

Mr. Hancock observed there had been a case at Poplar where the whole of the herd was destroyed save one cow, which was allowed to remain there for eighteen months; throughout there was nothing the matter with her; she was vaccinated, he got an order this cow should remain; went to a shed in London and found three there; the man had fourteen affected with lung disease, two were no doubt largely affected with cattle plague, he thought the others were the same; the two were killed, the other not affected remained alive.

Mr. Banham said he could corroborate Mr. Hancock's statement. Professor Simonds had narrated a case of a cow which was inoculated, and stood with plague-affected animals and calved in the time.

Mr. J. Moore, sen., saw one at the knacker's that had to be killed; it was bad with the plague; she was put among the dead carcases, and was found going about recovering from her disease. He had seen scores getting better, with cattle plague in a mild form, exhibiting all the symptoms, yet they got perfectly well. He believed Professor Simonds had said it was something similar to cattle plague, and not "it." That was one way of getting out of the difficulty.

The *Chairman* remarked Mr. Furnival had given a large field for discussion. As far as cattle plague was concerned, there was but a very small percentage that did recover. At the time of the first cattle plague in London, in the Edgware Road, there were 150 head of cattle with

the disease, and three or four that had not the disease were placed with them, and two had it and recovered. With reference to the inoculation he had known it to have been tried upon the Continent, in Germany especially, and in Russia. Some years ago Professor Simonds and Mr. Ernes were commissioned by the three National Agricultural Societies of England, Ireland, and Scotland, to investigate cattle plague. They went over Austria, Galicia, Prussia, &c., and came to the conclusion that the *only* plan to adopt was to stamp it out; this was also his opinion. He could not conceive that in the diseases of glanders and farcy inoculation would be of any service; still it was a matter worth investigation. The isolated case which Mr. Furnival had given them, of the young bull, was insufficient to rely upon. It did appear some good had been done with pleuro-pneumonia; but he failed to see how, in regard to the other diseases, the introduction of the same disease, as a cure, could restore the animal to health.

Mr. Martin thought it a very important subject. He believed it would be difficult to induce the public to allow them to inoculate from cattle with pleuro-pneumonia, to introduce it into their stock. Mr. Fleming had written a great deal in the journal about the success in Scotland. He would like to know more of Mr. Furnival's treatment in the cases of pleuro-pneumonia, whether the virus was taken from the lungs, and what the symptoms exhibited were?

Mr. Moore had been in very many cowsheds in London, especially in the parish of Marylebone, and found nearly all keepers had their cows inoculated; they could not make a living unless they did so. Most men who kept 100 cows inoculated all of them, and he had seen them in all stages of inoculation, the day of operation and months afterwards; the loss was something like 1 per cent. The symptoms begin to exhibit themselves after they have been in from a week to twenty-one days; there is a swelling of the tail when the inoculation took, where it ought to be swollen —and often around the fundament, which closes the passage; this swelling has a strong resemblance to lung disease. There are about 700 or 800 dairymen in London, and with few exceptions they all inoculate; some do not like to, it takes the milk off for a time. It was easy to understand how the disease broke out among a lot of cattle when two or three were affected, viz. by inhaling the breath of a diseased cow, and if several become affected all the others are saved, unless perhaps one or two die from the effects; it will run through them all or nearly all. The prize beast taken to Argyllshire from England in 1871 took the disease with him, and a number of animals had in consequence to be destroyed. One man threatened him if he went into his barn. The veterinary surgeon there was a brother-in-law of a farmer at Hendon. They inoculated 1800 in Campbelltown, and since then there has not been a single case of pleuro-pneumonia in it. If this can be done in a place where there is so much to hinder it, why cannot it be done in London? Mr. Rutherford, who is an elderly man, induced the cowkeepers of Edinburgh to adopt inoculation. Mr. Gamgee attempted to do it many years ago and failed signally. Since last year there has been no case of pleuro-pneumonia in the neighbourhood. He contended if there was an Act of Parliament similar to the Vaccination Act, to have cattle inoculated, instead of knocking them on the head with a piece of cold steel, it would be a great saving to the cattle proprietor, who only got three fourths the value of the cow. Two or three years since he saw some twenty or thirty members of Parliament on the subject, and he was astonished to find that scarcely any of them knew or had ever heard of inoculation for pleuro-pneumonia. Sir Patrick O'Brien brought it forward, and his answer was, "There was not sufficient evidence to induce the

Government to bring in a Bill." He had nothing to say on inoculation for farcy. Inoculation was just the same as vaccination. These cattle were affected before. If a child has smallpox, vaccination will not stop it, so it is with pleuro-pneumonia. If a cow has it, it will go on. There were five cattle at the same farm affected with pleuro-pneumonia as well as the rest; he treated them medicinally, and every one recovered. A week after another took it; he treated that and it got better; as far as his experience went it was curable. He would not deny that other cows might take the disease any more than a child would take a disease after vaccination, but it was more effectual in cattle than in human beings. He treated them with phosphorus, bryonia, liq. ammonia caust., and extreme cases with sulphate of zinc, according to the symptoms. He cured many cases of cattle plague medicinally.

Mr. Shaw questioned whether cowkeepers noticed the disease until the last minute when the animal was nearly dead.

Mr. Moore had been at a cowshed and seen animals even with shivering fits.

Mr. Shaw said he agreed with Mr. Moore there, but how long was it before the cowkeeper gave notice of the disease? Until the pleura became affected they knew nothing of it, and it was only when the cow no longer gave milk that they said anything about it.

Mr. Moore said there was no such thing as pleuro-pneumonia; it was broncho-pneumonia; it was not pleurisy. He had seen hundreds of cases, and was certain he had cured several cases such as mentioned. Had been told by farmers, over and over again, that they cured every cow according to his instructions. A gentleman in Australia had sold 500 of his pamphlets. This gentleman also told him the farmers cured every case by adopting his (Mr. Moore's) treatment. He could mention the names of some who had cured cases when taken in time to give opportunity. He went to Blenheim Palace, where there were some affected animals—some badly, exhibiting all the usual symptoms. He had a temporary shed put up for them, and placed them under treatment. Some time after he was asked if he recollected going to the castle. He said "Yes." He found they had lost one lung, but were nice fat beasts. He asked what saved these. They were dying before he went down. He put them under treatment.

Mr. J. B. Martin thought they had the opportunity of treating contagious cases as matters were at present; it was left entirely in their hands; they need not say if it were pleuro-pneumonia, or what it was, and if they could cure such cases it would raise their reputation in the eyes of the public. He would suggest the discussion be adjourned to the next meeting, when Mr. J. Moore could bring in a paper, and give them the benefit of his treatment, for, if that gentleman had the power to cure these cases, it was a matter of the greatest importance to the profession at large, as at present they were ridiculed by the public for having to slaughter the animals instead of curing them. If they said the animal was affected with pleuro-pneumonia it had to be slaughtered; they might say it was a suspicious case, or something else; they had the advantage of being able to treat them in any way they chose; and if Mr. J. Moore was so successful in treating it they might have his treatment in detail. He wished to know whether, in any of the cases cured, the lung had been hepatised afterwards. Twelve months ago there was a case of pleuro-pneumonia which recovered, and was in the lodge now. He did not think it could spread the disease. He did not believe in any treatment in curing pleuro-pneumonia when once established.

Mr. Price said, in tackling cattle plague by inoculation, he thought

Mr. Furnival should have come there prepared to give a better proof of the efficacy of inoculation for cattle plague. He did not regard the one isolated case of *supposed* recovery as at all conclusive.

In pleuro-pneumonia he thought a good deal might be done by inoculation, because nineteen cowkeepers in London, at the present time, had their cows inoculated with pleuro-pneumonia virus.

With regard to the inoculation of farcy, he would ask Mr. Furnival what kind of animals those were he inoculated from, and what in the world was the use of inoculating an animal with a disease that was in the system; whether he gave them any medicine, and how long the horses were under treatment? It was marvellous for any one to say he could cure farcy, and give them no practical proof of it; and it was very questionable policy indeed for any member of the profession to come there, and say he could cure pleuro-pneumonia, cattle plague, or glanders.

Mr. Furnival said he did not include glanders.

Mr. Price thought farcy even more contagious than glanders; he believed it did more harm in London at the present moment.

The *Secretary* said the question before them was as to the efficacy or not of inoculation for certain affections, glanders, farcy, and pleuro-pneumonia. In distemper in the dog the inoculation with another virus (in other words, vaccination) was held to afford the animal an immunity from distemper; numbers of people believed in it. For years he would not vaccinate, but at length on account of the fee and multiplicity of applications he thought he would give it the best test he could. On one occasion he went a long journey to vaccinate twenty-five dogs; he chose the nape of the neck; he wrote to the owner some time afterwards to know how they were (in the meantime he had vaccinated some more for him). The reply he received was to the effect that the whole of the twenty-five dogs he vaccinated were all well; of the last three, two had had the disease—one severely—and died. He asked himself the question, what caused that? Had he operated properly upon these three or was the lymph different? He thought not.

A great deal of farcy was about, but was unnoticed being inside the legs and groins; these horses were worked. At one time he knew exactly where to find cases, but now he never saw one; if he saw a possibility of recovery he would be the first to do his best towards that end. In valuable horses, where the animals were more or less vigorous and good-conditioned, it was worth while to take some trouble, and there was some merit in success.

Mr. Furnival, replying to a question asked by the Secretary, with reference to the horses, said two were hunters, the other three carriage horses; the cost of the three was £4 each, the other two £5 each; they were from eleven to thirteen weeks getting well. He afterwards sold them, with a written warranty, at Firmins, and they realised from forty-five to fifty guineas each.

Mr. Woodger, jun., was inspector in 1865-6, and went through many sheds, and found several instances of cattle plague. Some cows withstood the disease, and never had it; others had it one or two years later. The second time we had cattle plague there were a lot of Dutch cattle affected; these were less severely so than in 1865-6. He wished to know when Mr. Furnival tried his experiments. (In reply, during 1865.) And he remarked that he had given no reason why he thought inoculation was a preventive to disease.

With reference to inoculation for pleuro-pneumonia, he had, when inspector in 1865, inquired into it. He knew it had been practised for many

years. Mr. Priestman had inoculated thousands. Men with only three or four cows rarely had it done for fear of losing a cow, but large cow owners did not mind that.

After further discussion it was proposed that the subject be adjourned; but on an amendment being made and put to the meeting the discussion was then closed, and the proceedings terminated.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

The annual meeting and dinner were held at the Queen's Hotel, Leeds, on Friday, the 30th January, the President, Mr. W. G. Schofield, of Pontefract, in the chair. The following members were also present, viz.: Prof. Williams; Messrs. M. E. Naylor, Jas. Freeman, Thos. Greaves, W. Edmundson, J. S. Carter, J. W. Anderton, Peter Walker, J. H. Ferguson, Parlane Walker, R. W. Murdoch, J. Atcherley, J. E. Scriven, D. R. Sowerby, P. Deighton, Jno. Nettleton, and the Secretary. Messrs. Thos. Taylor, W. A. Taylor, T. Hopkin, A. Lawson, Roberts, Manchester; Mr. Rutherford, 21st Hussars; and Mr. Sweeting, Wakefield, were present as visitors.

A number of members and friends sent apologies for non-attendance.

Mr. Geo. Hardie, M.R.C.V.S., of York, was unanimously elected a member.

The *Secretary* introduced the subject of the election for members of Council, and after some discussion it was resolved, that the Secretary act in concert with the Secretaries of the other Associations, in order to carry out the election of Prof. Williams, as the nominee of the Society. A vote of thanks was unanimously awarded to Prof. Williams for his services in the Council, which the Professor acknowledged in suitable terms.

The *President* then read the inaugural address, and, at its conclusion, *Mr. Greaves* proposed, *Mr. Naylor* seconded, and *Prof. Williams* supported, the unanimous vote of thanks to the President for his able discourse.

The Address.

Mr. Vice-President and Gentlemen,—Being the first occasion this year at which I have had the opportunity of meeting so many professional brethren, it affords me very great pleasure in wishing you, though late, a very happy and prosperous new year.

Allow me also to thank you for the honour conferred upon me by electing me your President for the current year. My acquaintance with this Society dates back some fourteen or fifteen years, when I had the gratification of attending as a visitor one of its meetings held at Pontefract.

I well remember the kindly greeting and cordiality extended towards me by that most genial of men—the then president—the late Mr. McTaggart, of Halifax. I little thought at the time that in a few years I should occupy the position which he then so ably filled. Although many amongst you would have filled this chair with greater credit than myself, yet it shall be my bounden duty, whilst occupying the position, to endeavour to further the progress of this Association and to carry out the wishes of its members, as far as my abilities will allow me, in a honorable and straightforward manner, and I trust also to your satisfaction. I must congratulate you on the present condition of the Society,

t being I believe, financially sound, and though perhaps not numerically strong, yet wide in its influence and social in its character.

The benefits derived individually and collectively by being connected with Veterinary Medical Associations are very many indeed. It is the aim of this and kindred societies to promote the interests and well-being of the profession generally, and harmony and unity amongst its members, also to endeavour to open out the as yet unexplored parts of the vast field of hidden knowledge in connection with veterinary science, and to be the arena in which its many champions may fight their controversial battles in friendly discussion. Men are never so likely to settle a question as when they discuss it freely, for free and fair discussion will ever be found the firmest friend of truth.

Gentlemen, we come here for the purpose of helping others and receiving good ourselves. The older members of the profession to give us the benefit of their large and varied experience, and the younger ones to derive such advice and information as shall fit them to occupy a honorable and distinguished position in the calling they have elected to follow, and be worthy to tread in the footsteps of their talented predecessors. Who are so likely to impart useful information and good counsel as they who have grown old in the profession, they who have witnessed its follies and its failures, its honours and achievements? And though we may never attain their standard, yet by keeping company with them, we shall rise above our own, as trees growing in the society of a forest are said to draw each other up into shapely and stately proportion.

It may unfortunately happen that one member is at variance with another, through some real or fancied breach of professional etiquette, some misunderstanding or misrepresentation, yet under the genial influence created by the assembling together of those mutually interested in the same profession, and in the well-being of its individual members, the clouds are dispersed, the grievance forgotten, the bonds of friendship cemented, and a happier frame of mind instituted. Is there one amongst us who cannot attribute to such meetings as these the formation and consolidation of many friendships, or who have not felt the helping hand of a professional brother in many a difficult case? I think we shall all agree that we have gained something; we have acquired some new knowledge, and we recall the past day, not only without regret, but with consummate satisfaction.

The profession to which you and I have the honour to belong is now, I am pleased to say, recognised as one of the institutions of the country, and justly so, for it has the charge and well-being of many millions of animals, which constitute a large portion of the wealth of the nation. It is from the bovine and ovine tribes that our chief food supply is drawn; and from the equine we derive the means whereby a large proportion of the commerce of the country is disseminated, and which also contributes largely to the pleasures and pastimes of the inhabitants. It is therefore our duty, both in the interests of science and the community at large, and, need I say, for the especial benefit of the animals themselves, to endeavour by all possible and legitimate means, by scientific research, indomitable energy, perseverance, and pluck, to make ourselves throrougly acquainted with the causes of disease; and then, having acquired that knowledge, to put forth our energies for the better prevention, alleviation, and cure of those maladies to which the dumb creature is liable.

Bacon says, "Every man is a debtor to his profession," from the which, as men do of course seek to receive countenance and profit, so ought they of duty to endeavour themselves, by way of amends, to be a help

and ornament thereunto. Ours is indeed a noble science, for the objects to be attained are humane, charitable, and benevolent.

The structure and functions of the bodies of domestic animals are much the same as those of human beings, and the laws which govern the diseased processes in man and the lower animals and the principles which dictate and guide the practice of human and veterinary medicine are identical; but in the diagnosis of disease we are placed at a great disadvantage, from the fact that we have to deal with dumb patients. We can elicit no information from them, but are dependent in a great measure on the attendant in charge for the history of the case—and very scanty information you get generally—yet your employer often expects you to tell him the exact cause of the disease or injury to which your attention has been called. How often would cases be simplified but for the groom withholding highly important information, which, if divulged, might cost him his situation; and again, how many cases are lost from procrastination, negligence, ignorance, and self-conceit on the part of the owner, or from an utter want of sympathy on the part of the nurse towards his patient.

The veterinary surgeon should be a man of keen perception and of an acute and observant nature, for upon the exercise or non-exercise of such qualities as these mainly depends a correct or incorrect diagnosis, resolution or dissolution in your patient, and consequently the surgeon's success or non-success as a practitioner.

And let me here say a few words respecting the training of the embryonic veterinarian. A step in the right direction has been taken by the introduction of an extended curriculum at the various teaching schools, and the adoption of a practical examination, which latter should be no dead letter. The matriculation examination is also a necessary adjunct, as a test of the educational attainments of each intending student; and this should be strictly adhered to, for without a good sound education no candidate should be allowed to cross the threshold of our colleges. Such an education will pave the way and prepare the mind for the reception of the more scientific teachings with which he must hereafter become conversant.

A classical and scientific education, however, is useless, unless combined with practical instruction; and as this cannot be fully imparted, for various reasons, at our veterinary institutions, it is, in my humble opinion, essentially requisite that every veterinary aspirant should be placed for at least two or three years under the care of an experienced practitioner previous to his entering college. This will prove of great benefit to him, by bringing him in direct contact and association with those animals which at some future time he may be called upon to treat as patients, and will give him a knowledge of their habits and surroundings.

It will also give him an insight into the many and various aspects of the profession, the oddities and peculiarities of individuals who are to be found amongst his clients, and the antique and fantastic theories and ideas of horsemen which require exploding. Without a lengthened period of practical tuition it is quite possible, I grant you, for a man to pass successfully his examinations, and to leave the college with his diploma under his arm at the end of the minimum time stipulated by the rules of that college, and yet if his practical knowledge be only of a superficial character can you expect him to be a clever, useful, and successful practitioner? I say no. The man who shines well in theoretical and scientific knowledge often presents a sorry appearance in the sick-box. He lacks confidence in himself, tenders his advice with hesitation, is too apt to appropriate the opinions of others (and stablemen

are ever ready to volunteer theirs), loses the confidence of his clients, becomes disappointed and discouraged, consoles himself with the idea that he has mistaken his avocation, and finally retires from the scene to seek some less troublous and more genial occupation. I should also like to see such subjects as diet, ventilation, and sanitation more largely dilated upon at college, as these subjects are not only useful to ourselves, and which many of our employers reasonably expect us to possess a knowledge of, and look to us for information and advice thereon.

I think the bridging over of the gulf which a short time ago existed between the Royal College of Veterinary Surgeons and the Highland and Agricultural Society is a matter for intense congratulation, as it now enables many able, worthy, and respected members of the profession, men of good social status, scientific knowledge, and practical experience, who have hitherto held only the certificate of the Highland Society, to procure for a mere nominal sum the diploma of the "Royal;" thus removing one great element of discord, and furthering the advancement of that one thing, which I am sure we all sincerely desire, viz. professional unity. That grand old motto of our corporation—Vis unita fortior—has for a long time appeared to me as an anomaly, but through the vista of futurity I begin to discern its realisation. And now that this great stumbling-block has been removed, I trust that the question of a penal clause will again come to the front. In looking over a Post-office Directory of the West Riding of Yorkshire, published about two years ago, I found blacksmiths, farriers, and bone-setters designated as veterinary surgeons. This is a lamentable state of things, and I think it is high time some move was made in the matter. The public are thus imposed upon by men representing themselves as veterinary surgeons who have no qualification whatever pertaining thereto, and it is a mistake to imagine that the public yet thoroughly understand the radical difference between a qualified and an unqualified practitioner. Although we may not have much to fear from charlatanry and empiricism, yet it is only natural that we should desire to see our institutions, rights, and privileges protected against spuriousness. There are many other subjects of interest to us which might have been touched upon, but as it was my intention to be brief, and knowing that we have amongst us to-day eminent and distinguished members of the profession, who will interest you far more than I am able to do, I shall conclude by earnestly appealing to every individual connected with us to aid and asist in promoting the advancement of our science, to put his shoulder to the wheel, and though impossible by one huge effort to lift the profession to the desired altitude, yet we must, by patient plodding, by "a long pull, a strong pull, and a pull altogether," and with a determination to press onwards, eventually reach the long-looked for goal.

"Let us, then, be up and doing,
With a heart for any fate;
Still achieving, still pursuing,
Learn to labour and to wait."

At the dinner, the usual loyal and patriotic toasts were heartily drank, and much disappointment was expressed that Professor McCall, of the Glasgow School, had not thought fit to place the preliminary examination of his pupils in the hands of the Council

Wm. Broughton,
Hon. Sec.

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

FINANCIAL STATEMENT FROM DECEMBER 14TH, 1878, TO FEBRUARY 12TH, 1880.

Knott Mill, Manchester.

THOMAS GREAVES,
Hon. Treasurer.

The National Veterinary Mutual Defence Fund.

Cash Received.	£	*s.*	*d.*
Balance of account, Dec. 14th	388	0	8
Subscriptions of members	246	5	6
Bank interest, Dec. 24th, 1878	6	3	4
Bank interest, June 24th, 1879	1	12	4
Bank interest, Dec. 24th, 1879	0	6	9
	£642	8	7

Cash Paid.	£	*s.*	*d.*
Cash overpaid last balance, returned	2	1	6
Sundry stamps, wrappers, advertising, rent for rooms, &c.	6	14	3
Mr. F. W. Brown, solicitor, Leeds	3	9	8
Mr. Thos. Turner, solicitor, Leeds.	43	7	0
Cash paid March 13th, 1879, to the Benevolent Fund	400	0	0
Cash in bank, Feb. 12th, 1880	185	14	5
Cash in hand	1	1	0
	£642	8	7

Audited and found correct, 12th February, 1880,
W. A. TAYLOR.

The National Veterinary Benevolent Fund.

Cash Received.	£	*s.*	*d.*
Balance of account, Dec. 14th, 1878	888	3	7
Subscriptions of members	2	2	0
Bequest of the late Wm. Field, Esq., jun.	52	3	4
Bank interest, Dec. 24th, 1878	14	9	6
Bank interest, June 24th, 1879	8	13	10
Bank interest, Dec. 24th, 1879	6	16	4
Cash from Defence Fund, March 13th, 1879	400	0	0
	£1372	8	7

Cash Paid.	£	*s.*	*d*
Cash paid Mr. Mather for printing rules, &c.	5	0	0
Sundry expenses	0	0	11
Cash paid for schooling T. Brown's two orphan children	10	0	0
Cash in bank, Feb. 12th, 1880	1357	7	8
	£1372	8	7

Audited and found correct, 12th February, 1880,
W. A. TAYLOR.

		£	s.	d.
	1878—December.			
19th.	Error, Jan. 11th and Feb. 5th	0	1	0
	1879—January.			
2nd.	Edwin Faulkner	1	1	0
	A Friend	0	10	6
3rd.	P. E. Rothwell	1	1	0
	S. Withers	1	1	0
	F. E. Sampson	1	1	0
	A. L. Gibson	1	1	0
	J. Markham	0	10	6
	J. C. James	0	10	6
	E. Knott	0	10	6
5th.	E. Meek	1	1	0
	F. E. Day	1	1	0
	T. D. Lambert	1	1	0
	G. Heys	1	1	0
	J. C. Broad	2	2	0
	J. Woodger	2	2	0
	James Freeman	0	10	6
	John Freeman	0	10	6
	Joseph Freeman	0	10	6
6th.	J. Moon	1	1	0
7th.	J. Bale	0	10	6
8th.	C. W. Elam	1	1	0
	F. Blakeway	1	1	0
	D. Hutcheon	1	1	0
	J. B. Gregory	0	10	6
	T. E. Proctor	1	1	0
9th.	James Welsby	1	1	0
	T. Hopkins	1	1	0
	T. Gregory	0	10	6
10th.	F. W. Wragg	1	1	0
12th.	Mr. Mole	1	1	0
	Hy. Blunt	1	1	0
	John Gerrard	0	10	6
14th.	E. Hodgkinson	1	1	0
	E. Nuttall	0	10	6
	C. Crowhurst	1	1	0
23rd.	D. R. Sorbery	0	10	6
	Sir F. Fitzwygram	1	1	0
	G. Ball & Son	2	2	0
	J. D. Overed	0	10	6
	A. H. Santy	1	1	0
	W. J. T. Bowers	1	1	0
	T. E. Auger	1	1	0
	F. Case	1	1	0
	D. E. Rattee	1	1	0
	F. Lowe	1	1	0
	A. Rushall	1	1	0
	James Rowe	2	2	0
	James Howel	1	1	0
	C. Crowhurst	1	11	6
	J. C. Plomley	1	11	6
	W. Woods	0	10	6
	G. Schofield	0	10	6
	J. J. Collins	0	10	6
	Hy. Olvers	0	10	6
	John Carless & Son	2	2	0
24th.	J. B. Taylor	1	1	0
	G. H. Pratt & Bro.	1	1	0
26th.	H. J. Goodall	1	1	0
	J. L. Barling	0	10	6
27th.	B. Cartledge	1	1	0
29th.	O. J. Hill	1	1	0
	Joseph Woodger	1	1	0
31st.	Peter Walker	1	1	0
	J. W. Anderton	0	10	6
	R. W. Murdock	0	10	6
	W. Broughton	0	10	6
	J. E. Scrivens	1	1	0
	Thos. Pratt	1	1	0
	J. L. Faulkner	1	1	0
	F. Danby	1	1	0
	J. Fergurson	1	1	0
	Professor Axe	1	1	0
	Parline Walker	1	1	0
	February.			
2nd.	James Brooks	0	10	6
	T. D. Broad	1	1	0
5th.	P. Taylor	1	1	0
	A. Taylor	1	1	0
	Thos. Greaves	1	1	0
	H. T. Batt	2	2	0
	T. G. Batt	2	2	0
8th.	W. Cawthorn	1	1	0
	T. Briggs	1	1	0
11th.	Wm. Whittle	0	10	6
	T. A. Dollar	2	2	0
	Finlay Dun	2	2	0
	Francis Ridler	2	2	0
	B. H. Dyer	1	1	0
13th.	T. Collins	1	1	0
	H. Thompson	1	1	0
	Thos. Taylor	1	1	0
	S. Locks	2	2	0
14th.	G. Darwell	1	1	0
	Jos. Leather & Son	2	2	0
	J. Carter.	0	10	6
	J. Storrar	1	1	0
	G. Cave	0	10	6
	T. E. J. Lloyd	1	1	0
	Rd. Reynolds	0	10	6
	M. J. Roberts	2	2	0
	Hugh Fergurson	2	2	0
	B. H. Russell	0	10	6
15th.	A. B. Proctor	3	3	0
16th.	T. Collins	0	10	6
22nd.	H. J. Cartwright	1	1	0
	J. W. Hill	1	1	0
28th.	John Blakeway Wolstenholme	1	1	0
	March.			
10th.	J. Marton	0	10	6
11th.	J. Lawson	1	1	0
	A. Lawson	1	1	0
	J. Mosedale	2	2	0
	April.			
7th.	John Howard	0	10	6

		£	s.	d.
29th.	J. M. Axe	1	1	0
	May.			
10th.	G. Carless	1	1	0
11th.	Bell & Carlisle	2	2	0
16th.	J. M. Broad	1	1	0
	July.			
19th.	H. M. Stanley	1	1	0
23rd.	Steven Beeson	1	1	0
	October.			
15th.	R. H. Cartwright	1	1	0
	J. Marshall	1	1	0
22nd.	A. G. H. Thornley	1	1	0
	November.			
6th.	R. Roberts	1	1	0
7th.	C. Patterson	1	1	0
13th.	T. Aubory	1	1	0
14th.	W. A. Field	1	1	0
	J. Storrar, jun.	1	1	0
	J. Cuthbert	0	10	6
20th.	T. Aubory	0	10	6
	December.			
4th.	G. A. Banham	1	11	6
10th.	C. Moir	1	11	6
13th.	R. C. Friggar	2	2	0
15th.	C. Sheather	2	2	0
17th.	E. H. Luck	1	1	0
	Hy. Thos. Hodgkinson	1	1	0
18th.	Edward Stanley	1	1	0
22nd.	W. N. McCaldon	1	1	0
	T. G. Chesterman	2	2	0
	G. Wartnaby	1	1	0
25th.	C. Morgan	1	1	0
27th.	A. H. Darwell	1	1	0
	Hy. Hodben	1	11	6
31st.	Alfred Over	1	11	6
	Philips Deighton	1	1	0
	1880—January.			
1st.	Alfred Over	0	10	6
4th.	A. H. Santy	1	1	0
	J. Markham	0	10	6
	R. Reynolds	0	10	6
	J. C. James	0	10	6
	Hy. Olver	0	10	6
	J. Rowe	1	1	0
	M. J. Roberts	1	1	0
	T. Aubery	0	10	6
	C. W. Elam	1	1	0
	C. Morgan	1	1	0
	J. D. Overed	0	10	6
	T. D. Lambert	1	1	0
	C. Collins	0	10	6
5th.	W. Whittle	0	10	6
6th.	H. Thompson	1	1	0
	G. Cave	0	10	6
	F. Danby	0	10	6
	E. Nuttall	0	10	6
	T. H. Simcock	1	11	6
7th.	T. E. Masterman	1	1	0
	H. J. Goodall	1	1	0
	A. G. H. Thornley	1	1	0
	W. J. T. Bowers	1	1	0
8th.	Plomley & Crowhurst	1	1	0
	Osburn Hill	1	1	0
	F. G. Sampson	1	1	0
	E. Stanley	1	1	0
	A. L. Gibson	1	1	0
9th.	T. E. Knott	1	11	6
10th.	J. Lawson	1	1	0
	A. Lawson	1	1	0
	J. B. Gregory	0	10	6
	J. Gerrard	0	10	6
	J. Storrar	1	1	0
	J. Storrar, jun.	1	1	0
	James Bale	0	10	6
13th.	T. E. Auger	1	1	0
	W. Carless	1	1	0
	J. Carless	1	1	0
	J. H. Fergurson	0	10	6
	Sir Frd. Fitzwygram	1	1	0
16th.	James Freeman	0	10	6
	John Freeman	0	10	6
	Joseph Freeman	0	10	6
	Batt & Son	2	2	0
	F. Blakeway	1	1	0
	Thomas Walley	1	1	0
	J. J. Collins	0	10	6
	S. H. Withers	1	1	0
	E. Meek	1	1	0
	C. Sheather	1	1	0
	J. Moon	1	1	0
	T. Briggs	1	1	0
17th.	C. Crowhurst	1	1	0
18th.	B. H. Russell	1	1	0
	G. Wartnaby	1	1	0
21st.	Hy. Blunt	1	1	0
	T. A. Dollar	1	1	0
24th.	Wm. Woods	0	10	6
	D. R. Sourby	1	10	6
	February.			
1st.	A. Rushall	1	1	0
	F. W. Wragg	1	1	0
	T. H. Simcock	0	10	6
	H. R. Perrins	2	2	0
	Cartwright & Son	2	2	0
	E. Beddows	1	1	0
	G. H. Pyatt	1	1	0
	Philip Deighton	0	10	6
	J. W. Anderton	0	10	6
	J. Murdock	0	10	6
	J. E. Scrivens	0	10	6
	J. L. Carter	0	10	6
	Parline Walker	0	10	6
	Peter Walker	0	10	6
	Professor Williams	0	10	6
	W. J. Schofield	0	10	6
	Wm. Broughton	0	10	6

		£	s.	d.
	G. A. Banham	0	10	6
	G. Newsome	1	1	0
	T. Wm. Riddler	1	1	0
	J. Bell	0	10	6
	Professor Williams	1	1	0
2nd.	R. C. Friggar	1	1	0
	Tom Taylor	1	1	0
3rd.	E. Faulkner	1	1	0
	Mr. Schofield, sen.	1	1	0
	Mr. Sweeling (Donation)	1	1	0
7th.	James Howell	1	1	0
	John Howard	0	10	6
	Wm. E. Rallie	0	10	6
	F. Lowe	1	1	0
	Thos. Secker	0	10	6
9th.	T. D. Broad	1	1	0
10th.	P. Taylor	1	1	0
	Wm. A. Taylor	1	1	0
	R. J. Dyer	1	1	0
	J. Storrar	0	10	6
11th.	G. Morgan	1	1	0
12th.	J. A. Taylor	2	2	0
	Samuel Lock	1	1	0
	The late Wm. Field (cheque paid 1879)	52	3	4
	Bank interest on Mutual Defence Fund, Dec. 24th, 1878	6	3	4
	Bank interest on Benevolent Fund, Dec. 24th, 1878	14	9	6
	Ditto, do., June 24th, 1879	8	13	10
	Ditto, do., Dec. 24th, 1879	6	16	4
	Ditto, do., Mutual Defence Fund, June 24th, 1879	1	12	4
	Ditto, do., Dec. 24th, 1879	0	6	9
		£337	11	11

NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

The half-yearly meeting of the members was held at the Norfolk Hotel, Norwich, on Wednesday, Feb. 4th, Mr. A. H. Santy, F.R.C.V.S., in the chair. Geo. Fleming, F.R.C.V.S., and Thos. Greaves, F.R.C.V.S., honoured the meeting with their presence. The sister profession was represented by M. Beverley, M.D., Messrs. Chas. Williams, F.R.C.S., and R. J. Mills, M.R.C.S. Amongst the members present were Messrs. Bower, Whincop, Shipley, Overed, Gooch, Smith, Newson, Hammond, Ellis, Rattee, Butters, Howard, Low, Buckingham, and Augur; and Messrs. Santy, jun., Hammond, jun., and Rattee, jun., as visitors.

Letters were read from Sir F. Fitzwygram, Prof. Pritchard, and others, regretting their inability to attend.

The minutes of the last meeting having been read and confirmed, the auditors' report was received, which showed a balance in favour of the Society of £18 2s. 10d.

The *Secretary* next read a communication he had received from the Hon. Sec. of the Lancashire Veterinary Medical Association respecting the election of members of the Council of the Royal College of Veterinary Surgeons in May next, and after considerable discussion it was resolved to support the re-election of the retiring members.

The instruments recently purchased by the Association for the use of the members were exhibited on the table, including "Farmer Miles" Casting Tackle, Ecraseur, &c.; also Thompson's Tooth Shears and Santy's Tooth Forceps and Lever (kindly presented to the Association).

A short conversation ensued as to the use and merits of the above, especially the écraseur, and instances were named in which its value in

the castration of horses, the removal of tumours, &c., was highly spoken of.

Mr. Fleming named a very interesting case in which he had successfully removed (without hæmorrhage) a tumour from the inguinal region of a mare, which weighed 4½ lbs. He recommended in all such cases the skin to be incised, and the tumour separated from its superficial attachments, before its removal was attempted, which should be done slowly and deliberately, as hæmorrhage would then be less likely to follow the operation.

The *President* then requested Mr. Fleming to read his paper on "Tuberculosis from a sanitary and pathological point of view." It is unnecessary to state that this important subject was treated by the essayist in a most scientific and exhaustive manner, being calculated to assist us very materially in arriving at correct conclusions respecting the true pathology of this hitherto somewhat obscure malady, and also of its great importance to the public in general, viewed as a sanitary question.

The discussion which followed was both animated and instructive, in which the medical gentlemen present took a prominent part, and at its close the President conveyed to Mr. Fleming the cordial thanks of the members for his kindness in being present on that occasion, and for the excellent paper with which he had favoured them. He (the President) trusted that it would be published in the professional journals, and also in pamphlet form for circulation, to which the essayist kindly consented, and expressed his acknowledgments.*

A vote of thanks to the President for his able conduct in the chair, and to the Hon. Sec. for his services, was carried by acclamation and respectively acknowledged by Mr. Santy and Mr. Overed.

The members and visitors afterwards dined together, and spent a very agreeable evening.

SMITHFIELD CLUB.

DENTITION OF PIGS.

At a meeting of the Council, held at the Agricultural Hall, February 3rd. Present: Lord Tredegar, President, in the chair.

The minutes of the last Council meeting were read and confirmed.

The Stewards' report on protests and other matters connected with the last show was received and adopted.

On the recommendation of the stewards, it was resolved that the following rule be readopted, viz. :—

"All the Pigs exhibited at the Smithfield Club's Shows shall have the state of their dentition examined by a competent authority previously to the Judges making their award. If the dentition shall indicate that the age of the Pigs has been incorrectly returned in the Certificate, the Stewards shall disqualify such Pigs, and report the same to the Council."

It was resolved that the necessary portions of Professor Simonds' paper on dentition of pigs be reprinted in a cheap form, after having been revised by the Professor.

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* We hope to be able to publish this paper in our next issue.—[Eds.]

Veterinary Jurisprudence.

POISONING HORSES BY A FARM SERVANT THROUGH IGNORANCE.

At the Court House, Driffield, on Thursday, Feb. 5th, before Mr. Reynard (Chairman) and Major Brooksbank, Charles Pyke, a farm servant, in the employ of Mr. William T. Hornby, farmer, of Middleton, was charged with having administered poison to his master's horses.

Prosecutor stated that on the 27th ult. he had some horses taken ill, of three of which the defendant had charge. He called in Mr. F. Danby, veterinary surgeon, and, after a good deal of evasion, defendant admitted having given the animals a little "*markary*," which he said he had had a length of time.

Mr. Danby said he was called in on the 27th ult., and one of the horses died about ten minutes after he had seen it. Another died the next morning, and a third the morning after. From the symptoms he at once suspected foul play, and as the defendant denied giving the horses anything, he called in Mr. Bowman, and on Wednesday they made a *post-mortem* examination of the horse which had died on the previous day, when they found that it had been poisoned with arsenic. After the third horse had died, and they ascertained that they had all been poisoned, the defendant admitted having given the animals a little "markary," which was the name by which farm servants called arsenic. Another horse to which poison had been given had got better; and another had died that morning, making four deaths.

Mr. Bowman, veterinary surgeon, Croome, corroborated.

Mr. James Asher, chemist, Driffield, deposed to the defendant purchasing 1lb. of arsenic at his shop on the 20th ult., when he said it was for his master to dress wheat with. He was then cautioned as to the dangerous nature of the drug, and was told that he was not to give it to any person or animal.

The *Chairman* stated that the case was the worst of the kind which had come before the Bench for years, and defendant would have to go to prison for one month—the longest term which he could give him. He also suggested that druggists should not supply servants with such drugs without a written order from the master. It was stated that the four horses which had died were worth £200.

CONVICTION FOR SELLING THE FLESH OF ROTTEN SHEEP.

Southwark Police Court, *Feb. 21st.*

George Godbold and *Charles Betts*, butchers, were placed at the bar before Mr. Bridge, on remand, charged with having in their possession and exposing for sale at 117, Lower Marsh, Lambeth, 70 carcases, 31 hind-quarters, 24 fore-quarters, 18 shoulders, and 40 lbs. of chops, weighing 13 cwt. 2 qr. 24 lbs. of diseased mutton, totally unfit for human food.

Mr. Thompson, instructed by Mr. Roffey, Vestry Clerk of Lambeth, prosecuted, and Mr. Wright appeared for the defendants.

On Saturday, the 7th, Messrs. Coxhead and Bott, Sanitary Inspectors in the service of the Lambeth Vestry, had their attention called to 117,

Lower Marsh, a shop lately in the possession of a man named Jackson, who a few days ago was sentenced to four years' penal servitude for obtaining provisions by fraud. They saw a large quantity of legs, shoulders, and pieces of mutton hanging up, and being sold in a horrible state of disease, they seized it. In a cellar 83 carcases were found in the same state, which they seized and brought to this court, when his worship condemned the whole as unfit for human consumption.

Dr. Archer Farr, Medical Officer of Health of Lambeth, said he inspected the meat and pronounced it to be unfit for food. The viscera had been removed, so that he could not tell what was the disease, but he believed it was the "rot." Such food was likely to be purchased by the poor, and to spread disease in the locality.

Mr. Charles Statham, farmer, Sudbury, Middlesex, said that, unfortunately, three weeks ago he had a large number of Welsh sheep suffering from the "rot," and on the 3rd of the present month both prisoners came to him and said they would buy them for the Zoological Gardens. After some hesitation he consented to take 3s. 6d. a head for them, and they paid him £14 on account. They afterwards clandestinely removed the sheep, and he had never been paid the balance due to him. Witness added that he had unfortunately lost upwards of £300 lately by disease in his cattle, and would not have sold the sheep to the prisoners had they not told him they wanted them for the beasts at the Zoological Gardens.

Mr. Bridge sentenced each of the prisoners to three months' imprisonment, and he was sorry he could not include hard labour.

IMPRISONMENT FOR GIVING A FRAUDULENT CERTIFICATE OF THE AGE OF A BULLOCK.

At the late assizes held at Warwick, a "gentleman farmer," named Hopkins, was sentenced to three months' imprisonment with hard labour for fraud, in having furnished to the Committee of the Birmingham Christmas Cattle Show a false pedigree concerning a bullock exhibited by him, by means of which he obtained a first prize of £20.

ARMY APPOINTMENT.

War Office, *Feb. 24th.*

Veterinary Department.—Inspecting Veterinary Surgeon William Death retires on *Half-pay.*

OBITUARY.

We have to record the death of Mr. Chas. Turner, M.R.C.V.S., Croydon, on Feb. 9th, in the 52nd year of his age. His diploma bears date May 18th, 1849.

John Croft Plomley, M.R.C.V.S., Maidstone. Diploma dated Jan. 22nd, 1840.

Charles Harriss, M.R.C.V.S., Balham, Surrey. Diploma dated April 30th, 1856.

THE

VETERINARIAN.

VOL. LIII. No. 628. APRIL, 1880. Fourth Series, No. 304.

Communications and Cases.

SYNOPSIS OF CONTINENTAL VETERINARY JOURNALS.

By John Henry Steel, M.R.C.V.S., F.Z.S., Demonstrator of Anatomy at the Royal Veterinary College.

Summary.—From the *Recueil de Médecine Vétérinaire*, 15th February, 1880. *MM. Toussaint and Perroncito* on "Cholera or Typhus of Fowls." *MM. Vernaut and Bouley*, "On the Identity of Black Quarter with Splenic Fever. *M. Violet* on "Sporadic Pleuro-pneumonia," from the *Journal de Médecine Vétérinaire et de Zootechnie.*

Cholera of Fowls. Letter by M. Toussaint.—Our colleague and co-editor, M. Toussaint, of the Toulouse school, addresses to us the letter which we shall shortly give, relating especially to a question of priority which interests him, that of the nature of the parasite which gives rise to "Fowl Cholera." M. Toussaint claims, with justice (and this is the main point in the history of the disease), having first, accurately determined the parasitical nature of fowl cholera by giving the true signification to a material fact which Professor Perroncito had observed and even figured, but the true import of which had evidently escaped him. In order to place our readers in a position to pronounce on this question, we can do no better than reproduce here the passages

from the very interesting *mémoire* of the Turin professor, which relate to the characters of the blood in cholera of fowls, and to the nature of the contagium principle of that disease. This is M. Toussaint's letter. "In the last number of the *Recueil*, M. Megnin has thought right to publish a study on typhoid fever of the pig and typhus of fowls, as he has been pleased to call it. I do not wish to here discuss the fitness of the word *typhus*, which M. Megnin, following Klein and Perroncito, applies to these diseases, but I cannot help regretting, presuming that I have some acquaintance with matters of this kind, that such premature changes in the names of diseases should be made, since they only seem to complicate the already obscure nomenclature of certain diseases. I allow that the term *cholera* or *charbon* which have been applied to the disease of fowls are not entirely satisfactory, but they are no more inexact than the term *typhus*, and I do not see what benefit it can be to reject them before the disease to which they have been applied is perfectly known and placed in its proper position on the list of parasitic disorders. I affirm that the disease has no analogy with the pathological state of man known as typhus and typhoid. The word typhus, too, gives no indication of the nature of the diseases to which it is applied, since it literally only means 'stupor.' M. Megnin thinks that M. Perroncito first saw the cholera parasite, which he has described and figured in a mémoire which appeared in 1878. It is certain that the learned Turin professor published a figure of the blood of the fowl in which, in spite of defects of engraving, we can strictly recognise the microbia, but it is equally certain that M. Perroncito attributed to these granules neither the significance nor the value which I have given them. M. Megnin may assure himself of this by reading the following passage in the mémoire. "The white globules are almost always intermingled with very minute granules with highly refractive margins. In the blood plasma occur more or less numerous granules subjected to the Brownian movement, and also free oval nodules. We have never found either Bacteria or vibriones." A number of other passages in the mémoire allude to the granules without indicating their importance. M. Perroncito, therefore, gave proof of the fact of their presence, but their significance escaped him. His work was presented to the Academy on 2nd February, 1878, but the volume of Proceedings appeared only in April, 1879. Then only I became aware of the mémoire of my Turin colleague. I recognised the parasite on the 6th October, 1878, and at

the commencement of December I forwarded it to M. Pasteur, who was good enough in a letter, dated 16th January, 1879, to inform me that after having cultivated and inoculated with it, he allows that it is a distinct species, which statement he confirmed before the Academy of Medicine at the sitting of 4th March, 1879. With regard to the engraving which represents the Bacteria, these small bodies do not resemble anthrax parasites which are always more or less flexuous or undulatory. Besides, staff-like Bacteridia do not occur; the rectilinear character especially belongs to the Bacteria of putrefaction, which appear thus when in a state of repose. The flexed state of Bacteridia appears to me so characteristic, after some thousands of examinations, that I deem it their most marked optical character. M. Megnin is in error when he says that Bacteridia can live only in blood of which the temperature does not exceed 36°—38°. The normal temperature of the rabbit is never lower than 39°, and often rises to 41°. Ovine and bovine animals almost always have a temperature of 39° or 40°. And it is rare to find the temperature of birds only 40°, for it generally is 42°—44°. At the latter temperature in cultivation fluids the Bacteridium is quiescent, but nevertheless preserves all its vitality. It can even sustain a higher temperature, as M. Davaine has shown. For my part I find the following fact in my notes. The wick of a spirit lamp which heated my stove having been raised more than necessary, the thermometer of the warm chamber in which the long bacteridial filaments were multiplying for two hours, remained at least at 47°. When I reduced the temperature to 38° the Bacteridia continued to increase and gave numerous spores!" We will now give some extracts from M. Perroncito's mémoire, which will allow us to determine the share he has had in determination of the nature and discovery of fowl cholera. "The blood is always coagulated and the clot which it forms is almost always hard and of a reddish-brown colour; generally the globules are of various forms and diameters, or forms which indicate their state of proliferation or arrest of development. The epizooty, then, is not of an anthracoid nature, for we never met with Bacteria in the blood, which also is not liquid, and the flesh is not so flaccid as that of anthrax victims. I have never proved that the disease is transmissible to man by the use of the flesh of diseased animals, nor to the dog by inoculation with the blood of animals which succumbed to the disorder. It has no influence on the health of cattle. Their diseases do not seem to rage

more extensively during an outbreak among fowls. It is not cholera for it does not present lesions of that affection. Could it be a sort of enzootic or epizootic typhus? We attach to the idea of typhus a tendency to dissolution of the blood, and very rapid decomposition of the body. But in this disease of fowls, in place of dissolution of the blood, there is great coagulability. It is only the symptoms which are analogous with those of typhus, as stupor, extreme debility and prostration; but it is the lesions not the symptoms which denote the nature of a disease. In many cases, but not in all, the lesions observable are those of septicæmia. *The cause of the disease is not known,* but clinical and experimental observations teach us that it is due to a *virus* which is diffused throughout the organism, enters the blood, and determines, sooner or later, death of affected animals. It is very probable that the temperature and certain hygrometric conditions of the atmosphere are favorable to the formation of a stratum suitable for the multiplication and development of the virus of this disease; but as it is developed as well in warm as in cold seasons, in dry as in wet weather, we can give nothing definite concerning this. The cohabitation of healthy animals with sick is the cause of contagion. I have succeeded in convincing myself of this by direct experimentation. But contact is not sufficient, as MM. Renault and Delafond have proved. It has been found necessary that healthy fowls should consume food defiled with dejections of diseased animals, or with the mucosities from the beak, or that they should drink in the same watering place. I have communicated the disease to one cock and two hens by making them eat the recent ovary and lungs of an animal which died from the epizooty. But how is the virus of this disease produced? Here is a question to which we can give no exact answer. But from considering the manner in which the disease appears and progresses, we may conclude that the cause is specially produced in fowl houses. Certainly, whilst the disease is always mortal when the animals are left collected together in fowl houses, we may completely arrest its progress by dispersing through the meadows the fowls among which it has appeared. *Is its virus a contagious miasma similar to that which, in stalls, causes anthrax of larger animals?* Probably it is so. I find conditions favorable to its appearance in faulty construction of fowl houses which are low, moist, and cannot be properly ventilated, in accumulations of fæcal matters, which ferment there, putrefy, and generate a more or less prejudicial gas, in agglomeration of

fowls, who naturally warm themselves by close contact, &c. A combination of all these causes can lead to production of a stratum favorable for the development of the disease. Although I have often met free granules in the blood plasma such as I have described and figured, *I do not dare state that they are micrococci in the true sense of that term used by Hallier.*"

To M. Toussaint belongs the merit of having determined the part which these granules perform in cholera of fowls, similar to that of Bacteridia in anthrax, of having attributed to them their real nature and functions, and of having given demonstrations of them. He thus expresses himself on this point in the paper which he addressed to the Academy of Sciences in May last:—"An attentive examination of the blood shows in that liquid a considerable number of moving granules, either single or in pairs. The blood of fowls, when introduced by inoculation into rabbits, produces death in twelve to fifteen hours, and the above-mentioned microbia may be found in the blood and the tissues. This organism can be cultivated in an artificial liquid. A drop of blood having been introduced into twenty grammes of the proper liquid the parasite multiplies with great rapidity, and soon all the solution is intensely crowded. M. Pasteur, to whom I sent specimens of the parasite, has cultivated it, and he affirmed, on the 4th March, 1879, that it is, indeed, to cholera of fowls what the Bacteridium is to anthrax. When it has been dried it retains its properties for many months, as may be proved by inoculation, or the retention of vitality may be proved in another way, by placing rabbits in a hutch in which at least a month before other rabbits succumbed to the disease; the new comers will succumb in their turn. It is allowable, in such cases, that the microbia in the excrements dried up, and were taken in with the food by the animals who succeeded those that previously succumbed." On 10th February last M. Pasteur communicated to the Academy of Medicine the results of certain new researches which he has made on cholera of fowls:—"We know how energetically that which we have hitherto termed the virus of cholera of fowls manifests its presence. The most infinitesimal quantity, such as might be collected on the point of a needle, gives rise to inevitably fatal results in fowls into which it is inserted; as many animals as are inoculated die." M. Pasteur, by a means which at present he keeps secret, has so attenuated this virus that it is no longer superior to organic resistance; on the contrary, the latter determines return to health after manifesta-

tion of the phenomena which result directly from inoculation. This is very remarkable in itself, but it is not all. Fowls inoculated with this attenuated virus acquire from this an immunity which protects them from the action of the natural virus, such as ordinarily, when inoculated, infallibly produces death. After the minor inoculation the effect remains *nil*. Thus, M. Pasteur transforms the most powerful virus, that which is most inevitably mortal, into a benign virus, which bears to itself the relation which vaccine does to variola.

On hearing M. Pasteur make this communication to the Academy, with that loftiness of view and clearness of style of which all he does bears marked signs, each member present was struck with the greatness of these results, and the new horizons opening before medicine. Could not that which M. Pasteur has done for this most energetic of virulent matters be done for others? Could not we succeed in transforming them also, and in making beneficial organisms so formidable by the immunity which they would give by their attenuated action. Why not?

The Academy in a body applauded when M. Pasteur terminated his reading, and these plaudits recommenced after the demonstration on living and dead fowls, which he gave of the effects produced by inoculation. I was struck, when examining in the laboratory of M. Pasteur the changes which the tissue at the seat of the inoculation undergoes, by the remarkable resemblances which exist between these lesions and those which insertion of the virus of pleuro-pneumonia produces in the bovine species. Perhaps this similitude of effects results from similarity of causes, that is to say, the action on the part of the microbium of the virulence, reproducing in myriads. This must be elucidated by future experimentation. Thus, we see M. Pasteur's idea gains ground, in spite of all the negative results which have been opposed, and we may hope for much from the fecundity of his methods of enlightenment on those questions of contagion which have hitherto remained obscure. The results at which M. Toussaint has arrived, working in the line suggested by his master are a proof of it."

M. Bouley continues his chronique by discussing the question of the identity of black quarter with splenic fever. He gives three letters by M. Vernaut, of Clamency, from which "we may see that he, guided by his practical experience, had been impressed with the noteworthy differences between the charbon fever and external charbon, that he un-

dertook some experiments in elucidation of the subject, and that he countenances the necessity of more of them to completely elucidate the clinical question which was presented to him. After the experiments which have been made at the Lyons school, and those which are still in progress there, the solution of that question, as concerns diagnosis, will be easier than when M. Vernaut addressed his communications to us .... I inoculated an adult rabbit with blood from the anthrax tumours, and it is not dead. All the infected animals succumbed; they pastured on the marshy ground near the Canal of Tinvernais. The animals living in dry places near were not affected. Of the diseased calves, some were housed at night, while others remained in the pastures. A heifer, aged eleven months, having died yesterday, 23rd November, at 8 p.m., after twenty-four hours' sickness, I went to-day, at midday, to make a *post-mortem* examination, and found the body distended with gas to a remarkable degree, and affected with œdema, involving the left shoulder and the neck. Scarifications made in the diseased parts gave exit to a gas with a peculiar crackling sound. From the muscular tissues, which had a charbon tint, and were infiltrated with black blood, I took some sanguineous sanies, and inoculated in the thigh two young rabbits by incisions through the dermis. These two animals did not die. Much emains yet to be learned about the etiology of charbon and its manifestations or its forms. Why, three weeks ago, after continuous rains, did we always find *external anthrax* affecting in calves of a year old instead of splenic fever, which destroys in half an hour? This disease is of the same nature as external charbon, and the two affections are always fatal. Why in two places separated from each other by six kilomètres do we see in one splenic fever and black quarter in the other? To what is due this difference in the manifestation of anthrax? Why does splenic fever last only half an hour with heaving of the flanks and hæmaturia, while black quarter may last for two days, with the system visibly affected from the commencement, as indicated by general prostration and loss of sensibility, which may be observed from the first? So much for questions which require solution. I believe splenic fever is more contagious and more dangerous than black quarter. Last year a cattle owner, who skinned an ox which succumbed to this disorder, died three days after; he exhibited the following symptoms:— Absolute loss of appetite, acute fever, and continuous muscular twitchings, without œdema or lividity of the body surface being detectable. Now, if we admit that the Bac-

teridium is the contagium bearer in the two varieties of the disease, I do not know to what to attribute the want of success of my five inoculations, which were made with serosanguineous fluid of the tumours. Knowing that Bacteridia die a little while after death of the host, and attributing my want of success to this result, I took blood then from an animal which was still living, and inoculated, on each thigh, an adult rabbit, who has been wonderfully well ever since (during ten days); nevertheless, I took care to make large and deep incisions into the swelling, which the patient bore with such calmness and insensibility that it seemed like operating on a corpse; death only occurred five hours after these incisions or scarifications. Such want of success causes me to doubt the virulence of black quarter, though it is anthrax. Having been assistant to M. Renault when that regretted teacher made experiments on contagious maladies, I cannot question my inoculative skill, so I asked whether the source of the virulence may not exist in the internal organs? Also, to look more deeply into matters, could this variety of charbon, which occurs in certain places and at certain times in the year, especially when animals have only moist pastures, with deficient herbage, situations so poor that a looker-on would think the animals must eat the earth, so near it do they graze, be non-contagious in its character? But this is only a theory, and I believe the nature of the disease will only be determined by carefully conducted inoculations and microscopical examinations. The experiments must be made in the country where it occurs. I made a limited inquiry in the infected locality, and have learned that no such disease is known in man; that yearling beasts only have been affected, and they all had been pastured in damp meadows near the canal and the river, land subject to inundations; that before the outbreak of the disease so much rain fell that wheat could not be sown on account of the moisture of the ground; that animals pasturing in dry meadows, and living there day and night, were not affected; that, strange to say, the disease generally only took one victim from each house, invariably a young animal, a fact which would lead us to suppose that it is more infectious than contagious, but if it is communicable by either means, adults are always most insusceptible; that also, even supposing all animals had been able to take germs from the pasturage in question an entire month of residence indoors was necessary to eliminate or expel the morbid principles ingested by those animals which remained healthy.

According to my observations *external charbon differs in its nature from splenic fever*, and is very far from being an eliminatory crisis, favorable and critical for the organism. It is a special disease, always fatal and easy to distinguish from inflammation, which causes neither prostration, absolute loss of appetite, nor mortality. Those who boast of having cured black quarter, empirics especially, have only had to deal with inflammations which may be caused to disappear very rapidly. In this disease, external charbon, prostration is marked even before the appearance of the swelling. At the time of swelling the animal, as far as sensibility is concerned, is but little more than a corpse, so that you can make sections with a bistoury without the animal noticing it. Under these circumstances you have simply to order that a grave be dug and announce to the owner and the empirics who are generally present that the animal is beyond hope. If external charbon and splenic fever were of the same nature inoculations from one ought to produce sometimes the former disease, sometimes the latter, but this is far from being so. Also, in the outbreak in this place, out of ten fatal cases not one was splenic fever, and all cases were alike, there was, so to speak, a mathematical exactness about them even in the choice of the seat of attack, which in nine cases out of ten was the shoulders, and once the thigh. In another town, six kilomètres distant, splenic fever appeared sporadically from time to time, and I was never called to see a case even to suggest sanitary measures. The animals heaved at the flanks, the heart's action was turbulent, sometimes the urine was bloody, and death occurred in from fifteen to thirty minutes after the attack. The empirics, who flourish in all these parts and outdo all veterinary surgeons, pretended death was due to fluid accumulated around the heart, and took good care not to make autopsies. I was sent by the *Sous préfet*, escorted by the local police, and showed the people that I was not afraid to open a carcase even when there is risk of fatal infection. The necropsy taught me with what disease I had to do, and since light was thus thrown upon the matter the empirics have been anything but quiet. To live we must instruct them; we sow and they reap; a strange state of affairs which leads us to the conclusion that to be successful among such more philosophy is necessary!" These notes of M. Vernaut are very interesting, not only from a pathological point of view, but also because they give us an instance of a practitioner involved in diagnostic difficulties, not so much from the actual state of affairs as from subjection to a medical doctrine.

We may observe how letters have been written step by step with the impressions of the observer, who, struck at first with the many marked differences which occur between two conditions reputed to be of the same nature, finds himself compelled nevertheless to identify them according to the classification of Chabert, which had been long accepted as the expression of a truth demonstrated by rigorous observation. Later, in the presence of the so different modes of manifestation of the disease which he observed, and especially from the results, always negative, of the inoculations of one of them, M. Vernat feels his faith wavering; he expresses his doubts; he appeals to experimentation to give a solution of a matter of which clinical study can only supply the data; he is anxious that experiments be made in the same places where the disease occurs, in order that trial may be made to discover the Bacteridia; and then, at last, casting off the doctrinal ideas which have for some time restrained his clinical acumen, he declares definitely in his third letter "external charbon is of a different nature from splenic fever." And he goes on to point out the clinical characters by which the two diseases may be distinguished and the results of inoculation, which show that while splenic fever is constantly contagious, external charbon has never been transmitted. The experiments made at the Lyons School are in every respect confirmatory of the views of the practitioner of Clamency, whose clinical observations and experiments constitute a valuable contingent to the proofs now collected, tending to disprove the anthrax nature of the *symptomatic charbon* of Chabert. If the disease is not anthrax, what is it? The experiments at Lyons will doubtless tell us!"

In our last synopsis we alluded to the fact that the question whether simple sporadic and non-contagious pneumonia of the bovine species exists distinct from pleuro-pneumonia zymotica, but producing apparently lesions of a like character is *sub judice*. The *Journal de Médecine Vétérinaire* for February, 1880, contains an original article by M. VIOLET "On the Question of the Independent Existence of Ordinary Pneumonia of the Ox. The title placed at the head of this article will raise a smile on the countenance of more than one practitioner long accustomed to combat diseases of the animal which it concerns. Nevertheless, the examination of the question is not so puerile as it may seem to some, for recently the solution of the question raised has occupied the attention of the Société Centrale de Médecine Vétérinaire, to which an author, as yet unknown, has sent in competi-

tion a mémoire entitled *Sporadic Pneumonia, or Fluxion of the Chest of Bovines;* and some of the members of the society are of the opinion that every attack of pneumonia of the ox is contagious. But they are not alone in this opinion; indeed, in a work published in 1875 by the *Recueil*, and reproduced in 1876 by the *Revue Vétérinaire*, Professor Maury of Toulouse, after having been asked "Is it true that there occur in the ox two forms of pleuro-pneumonia, one sporadic, distinct, spontaneous, and non-contagious, the other contagious?" And after having reported, while doubting the competence of the author, the opinion of M. Tahourin, who replied to this question in the affirmative, wrote as follows: "But, for pleuro-pneumonia of the ox have we diagnosed two types generally admitted, corresponding with simple coryza of the horse and glanders, simple urethritis of man and syphilitic urethritis respectively? We feel in a position to decidedly reply in the negative; and this ought not to astonish any one. *Pleuro-pneumonia, whether spontaneous or whether resulting from contagion, always presents absolutely the same symptoms, progress, termination, duration, and lesions.*" With regard to the opinions of various authors on this question, Lafosse says simple pneumonia may affect all domesticated animals, but he omits to trace its differential characters in different species. Cruzel declares that inflammation of the pulmonary parenchyma, acute pneumonia, *is very frequent in all animals of the bovine species*. He gives a description of it, too short, but nevertheless sufficient to show that he had observed and recognised it. Zundel writes that we see this disease only in working beasts; and, in regard to its morbid anatomy, he says distinctly, "that in place of the variably mottled condition of the lungs, as seen in peri-pneumonia, we here only see a uniform reddening." According to Röll, "in bovines the interstitial form is the most frequent, and ordinarily accompanies extensive pleurisy," constituting epizootic pleuro-pneumonia. He mentions croupal pneumonia only as affecting the horse and the dog. Thus we see that, save the short description by Cruzel and the assertion of Zundel, we want data of sufficient explicitness concerning pleuro-pneumonia sporadica in the ox. The Société Centrale did well to raise this question. In so far as I am concerned, I am thoroughly convinced of the existence of this disease. I have treated some cases of it, few indeed, because cattle are few in number where I live, and also examined cows used for breeding and milking purposes, never having any work to perform. Also some brother

professionals of mine, with whom I have discussed the matter, are equally sure of having had such cases. Veterinarians who are called to give their attention to working oxen ought frequently to meet with this disease. Let us hope that all our readers who have had experience in this matter will publish their experiences. I publish the histories of two cases, which I have had an opportunity of examining *post-mortem*. The lesions which I have met with differ so much from those of epizootic pleuro-pneumonia that, I doubt not, unprejudiced minds will allow that I had not to do with cases of that disease. Further, these two cases seem to point out, by the difference of their lesions, that the lungs of the ox may present a pneumonia similar to that of the horse, and besides another form, unknown in the horse, due to the special structure of the lungs of the ox, of lobules separated from each other and almost independent.

Case I. Pulmonary congestion, with interlobular hæmorrhage in a cow.—The lesions presented in the lobules are those assigned to the congestive stage of pneumonia, but, in addition, interlobular hæmorrhage, by the compression which it exerted on the lobule brought about closure of the bronchial tubes and air cells, just as a pleuritic effusion does and very seriously aggravated the pulmonary congestion. Does this interlobular hæmorrhage, which has not yet been described, as far as I know, occur in all cases of sporadic pneumonia in the ox; and, if so, is it a direct result of the special structure of the lungs of the ox, and will it replace the yellow infiltration of pleuro-pneumonia? This is not so, for the lung of the ox may be congested without such complication as Case II shows, for it is one of simple pulmonary congestion in a cow.—These two animals, of which I have just been speaking, lived with other animals of the same species, no sanitary precautions having been taken, and not the slightest sign of transmission of their disease, such as would have occurred had they been contagious pleuro-pneumonia, was observed. Pending new observations, which will definitely teach us if the ox from the special structure of his lungs may suffer from several kinds of pleuro-pneumonia sporadica, I believe I am right in stating that the lungs of this animal may present congestive lesions quite different from those of exudative and epizootic pleuro-pneumonia; in other words, *may be affected with a simple pneumonia truly inflammatory and apparently completely devoid of contagious properties.* But are the sporadic and contagious diseases readily distinguishable in the living animal? I am

hardly in a position to resolve this question. It is quite possible that examination of the animal may give nothing of a truly diagnostic nature. Fortunately, the history of the case will assist the practitioner. If the animal suddenly became affected, if it is not a fresh arrival in the country, and if pleuro-pneumonia contagiosa is not present at the time, it is certainly a case of the sporadic form of the disease. On the other hand, we must suspect peri-pneumonia, and ought to isolate the patient if he has been dull and had a cough for some time, and if he has been only a few weeks in that part of the country; peri-pneumonia may be already prevalent among other animals, or the sick animal may have come from an affected locality. These means of diagnosis are not truly scientific, but are practical and convenient.

ON PLANTS IN RELATION TO ANIMALS.

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

(*Continued from p.* 167.)

It is impossible to dismiss the Brassica tribe of plants without a few special remarks upon their uses in connection with stock, a subject to which we shall particularly pay attention in the present article.

The Sinapis series afford plants which are somewhat relished by sheep, for which the *Sinapis alba* is very frequently cultivated. Throughout Wiltshire especially many acres of this plant are grown for sheep pasturage. When sown in spring it is thought that its stimulating properties conduce to the bringing forward of the ewes, for which, indeed, it is often available when sown after early crops of peas, oats, &c. In both cases winter wheat can be sown after the mustard has been eaten off, which is considered a wise proceeding, especially where the wire-worm prevails, as it is, indeed, very fatal to this pest.

When mustard is sown in spring it is no bad preparation for turnips, which may be put in as soon as the land is ready, and the manure derivable from the digested mustard is a good preparative for either rape or turnips.

It is well to allow a little bruised corn with the mustard, as it beneficially aids the flock, and, besides this, it tends to keep the land in good condition.

As regards the cabbage or hearting forms of the group scarcely too much can be said; the growth of these is yearly extending, and as we have so many sorts seemingly adaptable for very different conditions of land, we have no doubt but that the cultivation of cabbages will greatly increase.

The drumhead, a smooth-leaved form, and the drumhead savoy, a wrinkled-leaved form, are much grown for food for both cattle and sheep. In growing these the young plants are sown in seed beds and transplanted to the field before the summer has quite gone. The size to which they sometimes grow and the amount of the crop may be judged from the fact that forty tons per acre, some of the individuals weighing as much as fifty pounds, are not uncommon.

Some of the smaller sorts of cabbage, as the Battersea, the London market, the Enfield market, and others, make an exceedingly good cattle crop as well as being esculents.

Our plan of growing these is to sow in April, in autumn cultivated root-land, drilled in rows, at the rate of two pounds of seed to the acre. When the plants get into their second leaf they may be flat-hoed preparatory to thinning, and regulating when they get to a sufficient size. This work is done, much like that connected with roots, by means of a twelve-inch hoe; or if the plants be required for transplanting, they can be thinned out by hand.

For weeding purposes, as well as to return the soil about the roots, the horse-hoe may be employed as often as necessary, though we prefer hand-hoeing if it can be done at reasonable cost.

But, however cabbage crops are grown, there is no doubt about their utility. Cattle and sheep are both exceedingly fond of cabbage, and it is found upon trial to be a most nutritious and salutary crop. Its feeding qualities are said to be about on a par with swedes, and, therefore, it is not ill adapted for cultivation on part of the root ground, as it affords a change; but there is one reason why it should not be grown to a large extent, and that is the difficulty experienced in keeping it so well or so long as roots.

The cabbage section that does not heart is such as the thousand-headed cabbage, greens, and rape.

As regards the former, we have just now a magnificent crop. It would well nigh overshadow a sheep, and is of great importance in aiding us to bring on both ewes and lambs.

The rape crop is always useful. We usually employ it to mend up headlands in the swede and turnip field, sowing it after these crops have been hoed, the clear headlands

giving greater facility for horse-hoeing. But, besides this, we usually have a few acres of this crop, as it is found to be so good as a change for sheep feed.

The following contains an account of our cabbage growth for 1867. Our trials for that year were of the three following sorts.

1st. London Market . . . Two rows each.
2nd. Battersea . . . . Ditto.
3rd. Imperial Oxheart . . Ditto.

These were drilled with the same drill as the mangolds, on the 15th of May, and were well up on the 28th of the same month, while the mangolds were not so until June 3rd. These crops were regulated at the same time and in the same manner, first by flat-hoeing, and afterwards singled.

The crop was remarkably good, and we had our ewe flock upon them for at least a month.

Having estimated the crop we found them to be an improvement upon that of 1866, clearly showing that this inexpensive mode of growing cabbage gives tolerable results, which will be seen from the following figures:

Per acre, estimated Nov. 9th, 1867.

	Tons.	Cwt.	
Oxheart . . .	16	6	at 20 inches apart.
London Market .	21	3	at 24 „
Battersea . . .	17	15	at 24 „
Rape . . .	19	19	sown a little afterwards.
Mangolds . . .	35	10	estimated by the judge.
Swedes . . .	37	6	ditto, for prize list.

Now, these figures of cabbages and roots show a great preponderance in weight in favour of the latter, and the following figures will show that chemical composition is not in favour of the cabbage.

	Cabbage, Fromberg.	White Globe, Voelcker.	Swede, Voelcker.
Nitrogenous, or flesh-forming ingredient	1·75	1·143	1·443
Non-nitrogenous, or heat-giving	4·05	4·799	6·594
Mineral matter	0·80	·628	·623
Water	93·40	90·430	89·460
	100·000	100·000	100·000

These figures do not altogether recommend an extended growth of cabbage upon the plan proposed, a much larger crop being required to make it equal to roots; but, at the same time, this plan is most expeditious, and brings in a crop in readiness just before the root crop is ready, and we

all know how important it is to retard the eating off of roots as long as possible.

Practically, we have found all kinds of stock do well upon cabbage, and we therefore recommend a few acres to be grown on the plan proposed, not, however, mixing the sorts as we have done, but the three sorts last described in separate plots; these will come in successively thus: The Oxheart the last week in September, the London Market the end of October, and the Battersea the middle of November. Nor should they be all treated alike, though sown at the same time, as the Oxheart should be left twenty inches apart in the rows, and the others from twenty-four to thirty inches, according to the richness of the soil.

Cabbages may be grown in the field in the manner described for the vegetable market. It is not at all necessary to transplant either cabbages or lettuces; we believe that in both the best results, in a given time, are to be obtained by thinning out. This kind of field cultivation is not half so liable to injury from insects.

In both 1866 and 1867 our garden crops were overrun by caterpillars, especially those of the white butterfly, but the field crops remained uninjured, the fact being that our wide fifty-acre fields are too exposed for them.

In concluding these remarks we would observe that, as the growth of cabbage is certainly extending as an agricultural crop, we have penned these remarks upon actual experiments with various members of this family, over a great many acres, in the hope that it may stimulate others, like us, to "prove all things."

The bulboid forms of the cabbage tribe, generally known as *turnips*, come on now for review, and had we time or space to devote to the subject it would form a lengthened and interesting history of farm progress.

Before the introduction of turnip culture as a regular farm crop stock had to live hard during the winter, when, indeed, fattening of sheep and cattle was next to impossible.

In those days cattle were fattened on the pastures and salted down for winter use, but at present it is often found that both cattle and sheep are made out during the winter, and this has been mainly due to the growth of roots.

Of these the Swedish and the common turnip may be looked upon as two specific forms, of both of which are very many varieties. Indeed, so plastic are roots, that in a very short time a new variety may be attained to as the result of care and attention, so that each seedsman has his own

favourite form, and hence it is found that different varieties prevail in different districts, whilst some, such as Sutton's Berkshire Champion, the Westbury Swede, and others, are sown all the world over.

As regards turnips, both for farm and garden purposes, their varieties are legion, and scarce a year passes without the introduction of some new sorts, recommended either by our home or foreign seed growers.

There can be no doubt but that the introduction of turnip culture has tended to raise farming to a very high pitch of excellence, as it is found that these roots are as salutary to the animal economy as they are to the preparation of the land for other crops; but, at the same time, if we consider that root crops contain a variable quantity of from 90 to 96 per cent. of water, it is folly to estimate their value at a very high price.

The crop that is sometimes produced is very large. We have a valuable silver cup which was given for the best crop of swedes in our district, estimated at forty-one tons per acre; this, however, is somewhat uncommon. From fourteen to twenty tons is nearer the mark, and we should say that during the past year few farmers attained to even the lowest of these numbers.

We incline to the belief that the value of root crops has been considerably overrated by the farmer, and we cannot help thinking that much of the present distressed position in what farming is at present found is due to the fact that, high rents and consequent high taxes, combined with increase for labour and manures, have tended to make the cost of roots more than their value.

Still, all must admit that the cabbage family, with its salutary herbage of, if not highly nutritious, at least very convenient food, has been a great gain to the public at large.

MATRICULATION EXAMINATION OF VETERINARY SURGEONS.

Correspondence between Professor McCall and General Sir Frederick Fitzwygram, Bart.

Veterinary College,
83 & 85 Buccleuch Street,
Glasgow; *25th March*, 1880.

Gentlemen,—As the position which I have assumed in dealing with the subject of the matriculatory examination of

veterinary students, has evidently been misunderstood by many of my professional friends, and as my letter to the Council appeared in the February number of your Journal, I beg to request that you will allow the correspondence which has *since* passed between Sir Frederick Fitzwygram and myself, also to appear in your next issue.

I am, gentlemen,

Yours truly,

JAMES MCCALL,

Principal.

To the Editors of the 'Veterinarian.'

ALDERSHOT; *February* 1*st*.

DEAR PRINCIPAL,—I was not able to be at the Quarterly meeting at Red Lion Square, but I understand that you objected to the proposed matriculation scheme mainly on the ground that it would give power to the Council of the Royal College of Veterinary Surgeons, and that at some future time they, having obtained the power to regulate the examination, might increase the stringency of the examination to an extent which might be unsuitable to the Scottish students. If this *were so*, your ground of objection would be perfectly *sound* and *valid*.

But this was not the intention.

The intention was and is that the schools should AGREE on a standard of examination suitable to themselves, the standard agreed to by all, and that the College should be asked to supervise and CONDUCT the examination.

The Royal College of Veterinary Surgeons would acquire no power, nor could it raise the examinations beyond the standard fixed by the schools. Its function would be limited to seeing that the standard so agreed on, was fairly carried out.

Believe me, truly yours,

F. FITZWYGRAM.

4*th March*, 1880.

DEAR SIR FREDERICK,—I must apologise for the delay in answering your kind letter regarding the matriculatory examination of students. You have exactly stated my reasons for declining to hand over to the Royal College of Veterinary Surgeons the power I possess of fixing the standard of examination of my pupils.

I was the first to institute a matriculatory examination, and am vain enough to believe that I have caused it to be carried into effect with as good results at this, as at any other college, and my desire is *steadily* to advance the educational test until we may all rejoice in having our colleges filled with pupils whose education is on a par with medical students.

I am perfectly certain that I can formulate a scheme which would meet with the support of all the colleges, and at the same time effect the reformation I have referred to; but at the same time I am quite willing as an individual to allow the Council of the Royal College of Veterinary Surgeons to take the initiative, stipulating, however, that the conditions of the agreement be drawn out in detail, nothing implied which is not stated, and the whole, subject to revisal and adjustment by the colleges.

Trusting that this may meet your wishes, and the approbation of the Council, I remain,

Yours very truly,
JAMES MCCALL.

PRACTICAL HINTS ON STABLE MANAGEMENT IN INDIA.

A Second Edition, revised and enlarged, of a Lecture written by J. B. W. SKOULDING, Veterinary Surgeon First Class, Royal Horse Artillery, the prototype having been written and delivered by him when in charge of B. F. R. H. A. at Campbellpore, in November, 1875. Meerut, 1878.

(*Continued from* p. 176.)

c. *Forage.*—Having housed our horses satisfactorily in each of the foreshown particulars, the forage for them claims our attention, and we are called upon to decide on which kind of food horses will thrive and perform the work they are required to do best, *i.e.* with most ease to themselves, and with the greatest satisfaction to their owners or to those who use them. In England, experience shows that sound good oats, with a modicum of old beans and a fair supply of sweet upland hay, by common consent take the precedence, with a few exceptions, of all other foods; but, unfortunately, out here oats are very inferior and too scarce for general use, while beans and old hay are unprocurable.

The substitute for the oats, the beans, and the upland hay, with which we must perforce content ourselves, being gram or barley with bran. In a few districts Indian corn may be procured, though, unfortunately for horses generally, this grain is but little used as fodder by their owners.

Khooltee, a species of food with which I am acquainted, is also consumed in some parts of India, and moot, a small grain that boils into a mucilaginous mass, is given by the natives to pro-

duce the enormously fat condition met with occasionally amongst native horses, and which fills the eye of the Oriental, whether it exist in man or animal. We use linseed for this purpose, and also as a soft and easily digestible diet for sick horses.

Of the three grains—gram, barley, and Indian corn—each has its advocates, and each is declared by one or other to be injurious to the horses fed on it. The observations of many years has taught me, that while gram is highly indigestible, barley is so in a still greater degree, and is on that account of the least value of either of the three as a food for horses, and that sound well-grown maze is one of the most profitable of the seeds which are used as diet for horses, cows, sheep, or pigs.

That ill-effects follow the feeding of horses on barley I am convinced, for I have witnessed outbreaks amongst them of troublesome and intractable diseases of the skin with violent attacks of colic, and numerous simultaneous cases of acute laminitis, the effects of indigestion caused solely by the use of this grain as the staple commodity of their food; while, on the other hand, I have seen the horses of two batteries of Royal Artillery (private horses also) fed on Indian corn with the most gratifying effect, as it increased the muscular development in a very marked degree, and made them, in stable language, "as fresh as paint." From this I hold that, notwithstanding the general prejudice in favour of the oat, maze ranks second to none as a stable viand.

Gram.—Gram, when good, has a light yellowish brown colour, which darkens with age. The grain should be firm, plump, free from black grains, dust, dirt, foreign seeds, or worm-holes. It is said that the gram which is harvested in March will not be fit for consumption till the rainy season, and again, it should not be kept too long. It is crushed usually, but this is unnecessary, nor should it be wetted before being given to the horse. With reference to the practice of crushing the gram in order to prepare it as food for the horse, it appears to me that the benefit, if any there be, arising from this process, is reaped by those who crush it, for the grain is small, and on inspecting the "natural mill" possessed by the horse, one is struck by the power of its machinery, and fails to see what advantage can possibly accrue to him by the mashing of his provender, for in his case nature has certainly made ample provision for the bruising and trituration of his food. Again, the custom of soaking the grain has ever seemed to me to be useless, since he is gifted with active salivary glands, the secretions from which are ample to moisten it sufficiently during mastication for the primary processes of digestion, while the grain loses some of its nutritious qualities by being steeped in water, and if soaked too long it turns sour and becomes highly deleterious.

Barley.—If used at all for horses, barley should be selected of a pale or bright yellow colour, the kernels being sweet, dry, firm, and well filled with farina, thin skinned, free from dust, dirt, or extraneous seeds, and without any fungi or mould to be found on the grain, when broken between the teeth; it may be consumed either steeped, parched, parched and ground, or simply in a crushed state. A really good sample is rarely seen in this country, as far as my experience has shown.

Maize.—Maize should be white or yellow (sometimes the grain has a reddish tinge), sweet, heavy, well-filled, hard, dry, free from insect-holes, dust, dirt, or other grains. It is given simply crushed, and that chiefly on account of the size of the grains.

The best samples I have ever seen were grown in China.

Bran.—Bran, when good, is most useful, and much to be preferred before either gram or barley for consumption during the hot weather, as at that season the digestive powers of many horses are often totally inadequate to the task of assimilating these grains. It should be chosen free from smell, insects, dust, or chopped straw, with which it is so often adulterated.

Ration.—We have now to determine the quantity to be given daily to each horse of whichever of these cereals we may elect to feed our horses upon, and should be guided in this matter by the size of the horse, the amount of work exacted from him, and by the time of year. The allowance of gram or barley for troop horses, and for horses in ordinary work, has been fixed by custom at from eight to ten pounds per horse daily, according to breed; that is, five seers for Walers and four seers for stud-bred horses. This ration is wisely modified regimentally during the hot season, by deducting a seer or more of gram, and substituting for it the same weight of bran. Some horses when in training can eat and digest a greater quantity than the usual allowance, and it is customary to increase the rate of feed for horses in low or poor condition. This, in my opinion, is a dietetic error, and one which I formerly fell into, but of late, from the evidence of others, combined with personal observation, have arrived at the conclusion that I was radically wrong, for I feel sure that many horses remain thin, or do not throw up flesh or muscle, simply through the lack of power to digest the quantity of grain consumed by them at each feed; consequently this is not taken up or assimilated to meet the wants of the system (the supply being in excess of the demand), but passes out of the body again, sometimes in a crude state, after causing, in many instances, a severe attack of colic or diarrhœa by the irritation it has occasioned by its presence in the alimentary canal. It may also provoke an attack of acute laminitis.

Change in the character of the dung is occasionally the only

sign of the mischief that is brewing within from this excessive rate of feeding; the fæces, instead of being passed in healthy balls, usually become soft and sticky, of an unhealthy light, clayey colour, and having a sour and sometimes very offensive odour.

This abnormal condition demands an immediate change of diet, and is one in which bran, with linseed, will prove eminently beneficial in aiding to restore to a healthy state the feculent matter, and when this condition has been regained, it will be advisable for a time to reduce the quantity of grain originally allowed by half, supplementing it by that weight of bran daily. Towards the end of the rainy season horses (especially those which have been cut off their corn during it and the previous hot months) are liable to fall away in condition, and should, under those circumstances, be allowed their full ration of grain, for the grass at this period being watery, is less nutritious than usual.

Issue of ration.—Let the weight of the daily ration of corn for each horse be what it may, the rule of issue in vogue is to apportion it into three feeds or portions, giving one in the morning, the second at noon, and the third in the evening. To this custom, I believe, many of the cases of indigestion which occur may be imputed, and should therefore rejoice to see these three portions or feeds divided into six, and given at the following periods, viz. one at daylight (or before starting for drill, &c.), one at morning stable hour, one at noon, one at 3 p.m., one at 6 p.m., and the last at 8 p.m., and am confident that this change in the routine of feeding would be attended by a perceptible and rapid improvement in the condition of a vast number of those horses which are now declared by their attendants and others never to carry flesh; for under this arrangement the stomach (which is very small in the horse in comparison with the size of his frame) would not be overloaded with an immense bulk of grain suddenly taken into it, while the smaller quantity would be the more surely and easily digested; and as the intervals between the hours of feeding are too short to render the animals inordinately hungry, the liability to such accidents as rupture of the stomach, choking, and to colic, would be reduced to a minimum, and the last, though not the least, of the advantages to be gained by adopting this plan is that it keeps horses always ready for work without inconvenience to themselves, or being liable to damage their health from working when the stomach is distended with food.

In order to further assist digestion, it is a good plan to mix from a quarter to half an ounce of salt in each feed.

Grasses—dhoop.—The grasses consumed as fodder in most

stables are the dhoop, and a long grass, given in a dry state, the nearest approach to hay procurable. The dhoop I believe to be the creeping, bent, or fiorni grass (*Apostis stolonifera*). It is gathered and given in a green state, and is allowed by all to bear the palm amongst the grasses; the stringy portions of it when fine, soft, and fresh, seem to be as nutritious as the blade, but if eaten when coarse and dry are apt to produce serious and even fatal mischief. It is said to yield from five to ten tons per acre when cultivated and cut for hay.

Under cultivation, or grown on good soil with a sufficient quantity of moisture, it loses its tendency to creep, and also its stringy character. The hay made from it has a sweet odour. Under ordinary circumstances it should be carefully picked over before issue to ensure the removal of any weeds, and it should also be well beaten to knock out the dust and mould, which clings to it when gathered.

Troop grass-cutters will, if allowed, moisten it surreptitiously in order to increase the weight, and therefore the value of their bundles. A portion of this grass is usually cut into small pieces and mixed with the gram feed, as chaff is at home, in order to ensure the mastication of the corn by the horse. This I think is a good plan to pursue while the grass is soft and fresh, but doubt the advisability of it when the grass is dry and, consequently, more fibrous than usual.

Dry grass.—The best sample of dry grass that has come under my notice is that used in Calcutta, thongh fair samples are met with occasionally up country; but generally these grasses (which are grown, as a rule, in the cantonment compounds) being naturally hard and wiry, are on that account so innutritious as to be only fit for bedding. If cut with the view of using them as fodder they should be harvested when in flower, before running to seed. I may mention here that the dry grass consumed in Calcutta is grown in the Barrackpore district, near the salt lakes, and in the country round Calcutta. The best is from Barrackpore, and the worst from the salt lakes. It is sold in bundles weighing about half a pound each, one hundred amounting to twenty-seven seers, at a cost of eleven annas.

There is no doubt that a great necessity exists for the proper provision of a reliable supply of good grass for the Indian army at all seasons, and the day cannot be far distant when farms for the special cultivation of this herbage will be established throughout the country.

During a long march in charge of 400 horses I noticed the fact that a horse will consume, without waste, from 12 to 15 lbs. of grass daily. The regulation allowance is about 20 lbs. per horse.

Lucerne.—Lucerne is a boon to the sick, but large quantities would not be beneficial for horses in hard work.

Long grasses.—The long grasses, if used in the green state, with the unripe barley so freely given in this country, I consider absolutely hurtful, notwithstanding their general popularity, and am sure that numbers of horses fall as their victims annually. If given at all, these should be chopped small and exposed to the sun for some hours, and the dhoop grass also during the rains, if wet from rainfall or dew, should be dried prior to issue.

Carrots.—Carrots are very useful in improving the condition of horses, especially if there be a scarcity of green grass; but the quantity given should never exceed, for each horse, two seers per diem, and this amount may be divided with advantage into four portions.

Oat straw.—Clean sweet oat straw, when procurable, is highly valuable cut and given as chaff.

Bedding.—The grass used as bedding is of a rushy nature, and the allowance per horse is about 8 lbs. per day.

(*To be continued.*)

Pathological Contributions.

CATTLE PLAGUE.

Recent reports from St. Petersburg state that the cattle plague continues to prevail in the following provinces bordering on Austria and Germany, and in those adjoining the Black and Baltic Seas, namely:—Bessarabia, Warsaw, Volhynia, Ekateriaoslav, Podolia, Kherson, and Plotsk; but has diminished in the district of Berdiansk.

The Austro-Hungarian Dominions are now declared to be free from the cattle plague.

The disease has ceased in the Island of Rhodes, but has appeared in the neighbouring Island of Lymi, and is said to be still prevailing at Macri in Asia Minor.

This disease continues its ravages in the Island of Mauritius, and between the 20th of December of last year, and the 24th of January, 1880, no less than 1790 cattle and 19 goats have succumbed to this fatal malady.

PLEURO-PNEUMONIA.

This disease still continues in various parts of the United States; fresh outbreaks have been reported from West Chester in Philadelphia.

Pleuro-pneumonia appears to have been extirpated from all the provinces of the Netherlands, with the exception of South Holland, where during the four weeks ending the 21st of February, only eight cases of this disease were registered.

In this country pleuro-pneumonia has declined considerably in the last few months ; but fresh outbreaks have been reported from Cambridge, Cumberland, Kent, Lancaster, Norfolk, Notts, Stafford, York (West Riding), Metropolis; and in Scotland, in Fife and Lanark.

In Ireland, according to the returns the disease has decreased recently, but cases have occurred in the four provinces, viz. in Ulster, three cases, Munster, one case, Leinster, twenty-five cases, and in Connaught, three cases.

FOOT-AND-MOUTH DISEASE.

One case of foot-and-mouth disease was reported from Goole, but on inquiry it was ascertained that the disease was not foot-and-mouth complaint, but some ordinary malady which had been mistaken for it.

SWINE FEVER.

Swine fever continues to prevail to a serious extent in many parts of the country, returns of the disease have been received from Bedford, Berks, Buckingham, Chester, Devon, Dorset, Essex, Hants, Hertford, Huntingdon, Lancaster, Lincoln, parts of Kesteven, Monmouth, Norfolk, Northampton (ex. Soke of Peterborough), Oxford, Suffolk, Sussex, Warwick, Wilts, York (East and West Riding), Liberty of the Isle of Ely, Soke of Peterborough, and Glamorgan.

We observe that Somerset where the malady prevailed a few months ago remains free, a satisfactory result of the energetic measures which were adopted by the local authority.

Facts and Observations.

Poisoning of Horses by Carters.—Three valuable cart-horses, the property of Mr. W. Wood, of Harborough, near Ulceby, have recently died from the administration of "Mercury" by the carter. The agent was given for the purpose of improving the animals' coats.

Trichinous Pork.—Madrid, *March 9th.* A Royal Order is published to-day prohibiting the importation into Spain of Pork in any form from the United States and Germany.

THE VETERINARIAN, APRIL 1, 1880.

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

LOSSES FROM SHEEP ROT.

THERE is no difficulty in arriving at the conclusion that the losses from rot among sheep, during the last few months have been enormous. But beyond the occasional statements by individuals of the number of sheep in a flock which have fallen victims to the disease, we have no records from which an estimate could be made.

In the outbreak of the year 1830, some returns were collected, and the flock owners of that time were enabled to form an idea of the magnitude of the mischief; but since then there are not, so far as we can find, any figures to guide us.

Returns of losses from rot might be obtained through some of the channels which are at present open. Local authorities under the Contagious Diseases (Animals) Act, are quite familiar with the means of collecting such evidence, and the various executive committees could without much extra trouble obtain from their inspectors, or from the farmers in their districts, information which when classified would be sufficient to allow of an estimate not far from the truth being made, of the injury which has been done by this disease, in comparison with that done by other maladies which are usually looked upon as matters of importance to the collector of statistics. The agricultural returns on the other hand, might contain a column having reference to the point. In short, the thing might be done if it were any one's business to do it, but as the malady is not contagious or infectious within the meaning of the Act relating to animals, no steps have been taken to get the particulars

Apart from the interest which would attach to a return of the losses which have been sustained recently from rot, there would arise a successful and great advantage to the farmer, whose attention would be attracted to the subject in its most practical aspect. We are often told that

the flock owner in the present emergency does not require to be furnished with scientific treatises on the development of the *Distoma hepaticum*, but rather with a plain statement of the means which he should adopt to cure the disease from which his sheep are dying. And we admit that it is not consolatory to a man who has tumbled into a furnace to have to listen to a critical discussion of the circumstances under which heat is generated, and the precise effects of an elevation of temperature upon organic substances; but unhappily in reference to the cure of rot, there is little to be said and not much to be done, while very much may be effected in regard to its prevention by flock masters who have taken the trouble to comprehend the chief facts in the history of the disease.

An outbreak of cattle plague in a single dairy would set the agricultural world in arms. The introduction of sheep-pox into a single district would alarm every sheep farmer in the land, and if the present conditions in regard to the importation of foreign animals were such as to make the introduction of either disease almost a matter of certainty, the agricultural community would make itself heard in a manner which it would be impossible to misunderstand or disregard; but while everybody who knows anything of the conditions under which sheep rot is developed, was aware that its extensive prevalence in the near future, was quite inevitable, those most concerned remained apparently indifferent in spite of warnings, constantly repeated in agricultural and veterinary journals, until the event actually happened, and prevention became impossible, and the result is the loss of thousands of sheep, which might have been saved by a moderate allowance of dry food, a proper quantity of salt, and reasonable care in keeping them from the most dangerous grounds in the most dangerous part of the year. The necessity for extra caution in regard to sanitary conditions could in no way be more effectually asserted than by bringing the farmer face to face with the sum total of the losses which have happened in the last six months, from a disease the effects of which would have been considerably ameliorated by the adoption of proper precautions.

Extracts from British and Foreign Journals.

ANIMAL VACCINATION.

We extract the following letters from the *British Medical Journal*:

Sir,—A letter, signed "Frithiof," which appeared in a recent number of your journal, gave me a clue to an important paper published by Mr. Ceely, in the tenth volume of the 'Transactions of the Provincial Medical and Surgical Association,' of which paper I had no previous knowledge. A careful study of it has convinced me that I have been in error respecting the mutual relations of smallpox and cow-pox.

I hasten, as in duty and honour bound, to acknowledge my mistake, and to apologise to the gentlemen upon whose measures on this subject I may have commented.

Henceforward, I promise not to burden your pages with any farther contributions personal to myself.

I am, sir, your obedient servant,

Thomas Watson.

16, Henrietta Street, Cavendish Square, W.;
Feb. 23rd, 1880.

Sir,—The letter of Sir Thomas Watson which appeared in your issue of to-day will, I venture to think, be hailed with immense relief by all your readers. It was not a little embarrassing to find supported by so eminent an authority the statements which have recently appeared in the public prints as to the vaccine lymph raised by Mr. Ceely and Mr. Badcock by the variolation of the cow being, in fact, smallpox lymph.

Sir Thomas Watson has, however, now distinctly withdrawn the sanction of his great name to the theory that vaccination with variola vaccine lymph is in fact inoculation for the smallpox; and as the unconscious agent in his conversion, perhaps you will allow me to say a few words on the subject. Dr. Cameron, M.P., in his letters to the *Times*, following M. Chauveau and his colleagues, says that lymph obtained by variolation of the cow "is not vaccine lymph at all, but smallpox lymph capable of being inoculated apparently with greater safety to the individual, than ordinary smallpox, but, like the mildest inoculated smallpox, capable of propagating that disease in its most virulent form by infection." In a subsequent letter, Dr. Cameron somewhat modified his earlier statement by remarking that he sees "no reason why what Chauveau terms vaccino-variolic lymph should not be less contagious, as it certainly appears to be more local in its effects than smallpox matter taken direct from the human

being. It may, for that matter, be shorn of its contagious properties altogether." This remark can apparently only mean that such lymph induces a new species of smallpox, as yet unrecognised, which has none of the characteristics of that disease, since it is neither eruptive nor contagious. Dr. Cameron has evidently mastered the experiments of the Lyons Commission on the subject; but I should much doubt whether he has studied with equal assiduity the important work by Mr. Ceely, which appeared in the early 'Transactions' of this Association, and which has now convinced Sir Thomas Watson. It is to be feared, indeed, that Mr. Ceely's painstaking researches into this question have never been sufficiently known or thoroughly understood. Abroad especially, they are not so well known as they deserve; and as M. Chauveau and his colleagues state that they had not seen Mr. Ceely's "plates," it is more than likely that they had not seen his report. If M. Chauveau and his colleagues had seen Mr. Ceely's plates, they would have learned that their own local results on cattle had been quite well known in this country twenty-five years before. The local effects produced by their inoculations were not in any respect greater than those produced by Mr. Ceely in cases which he regarded as failures, nor than in cases which the authors themselves at first put aside as failures. It is not in the least improbable that, if Mr. Ceely had dealt with the tumid papules that arose on the cows, as M. Chauveau did (viz. in removing a quantity of them from the cows, and scraping their inner surface), he might have got from them the same stuff that was put in, stuff which, in the words of the late Dr. Seaton, "had undergone no sort of transformation whatever, but which had lain where it was put, as in a pouch, quite inert, giving rise only to local irritation without inducing any sort of general affection or disease." It is significant that M. Bouley, having inoculated a cow with variola with the same results as M. Chauveau obtained, vaccinated it afterwards, with the result of producing regular cow-pox; and Mr. Ceely, in his variolous experiments on cattle, constantly produced the phenomena described by M. Chauveau and found subsequent vaccination of these animals, in the great majority of cases, successful. The Lyons experimenters did not, it is true, in the least dispute Mr. Ceely's account of the results he met with, but maintained that what he mistook on the cow for cow-pox vesicles was in reality the variolous eruption; and what he produced on children taken from these vesicles was not, as he imagined, cow-pox at all, but simply inoculated smallpox. I am, &c., FRITHIOF.

February 28th, 1880.

VITAL STATISTICS OF CAVALRY HORSES.

At the usual monthly meeting of the Statistical Society, on Tuesday, the 16th inst., Sir Rawson W. Rawson, C.B., R.C.M.G., in the chair, two papers were read, the first by Dr. T. Graham Balfour, F.R.S., on "Vital Statistics of Cavalry Horses." The author stated that this subject has received much more attention in France than in this country. In 1843, owing to the heavy losses by glanders sustained by the Army during the preceding ten years, a permanent Commission, presided over by the celebrated physiologist Magendie, was appointed, whose duty was to be the examination of all questions relating to the health and preservation of the horses of the Army. The Commission established statistical returns to be furnished annually by the Veterinary Surgeons of the Army, and was authorised by the War Minister to publish an annual volume giving the results of these returns, and any information it might judge deserving of publication relating to the health of the horses. The first of these reports was brought out in 1847, and twenty volumes had been published prior to the breaking out of the Franco-German war.

The mortality of the horses in the French army during the thirty years 1837-66 averaged 58 per 1000 of the strength; ranging between 195 in 1841, and 26 in 1862; and the proportion "cast" was 80 per 1000, ranging between 135 in 1849, and 47 in 1855. The total loss amounted to nearly 14 per cent. annually. Dividing the thirty years into quinquennial periods, the mortality shows a marked progressive reduction, attributable to the improvements introduced by the commission, the deaths in the last five years having been only 27·5 per 1000 as against 115 in the first.

The reduction did not extend to the casting, which was higher in the last two than in the first two periods.

The importance of these results is shown by the fact that a saving of upwards of £90,000 a year was effected in the amount required for the purchase of horses for the army during the last five years compared with what would have been necessary had the ratio of deaths and casting been the same as during the first five years. The influence of sex is shown in a slightly higher rate of mortality, but lower of casting among mares than horses. The mortality by ages shows the rate to decrease steadily till 11 years of age, when the minimum is reached. The casting, as might have been expected, increases steadily with advancing years.

The disease which causes the highest rate of mortality is Glanders, and next to it stands inflammation of the lungs and pleura. The highest death-rate by glanders occurs at the age

of six, after which it steadily decreases; the highest rate of deaths by lung disease is among the four-year-old horses. The chief cause of casting is legs worn out, which accounts for two fifths of the whole. The mortality has been highest in the Engineer Train and Transport Corps, and lowest in the Imperial Guard, the latter being, in the opinion of the author, to a considerable extent owing to the Guard being mounted on better bred horses than the line.

The admission of cases into the infirmaries averaged more than 50 per cent. annually, about one fourth of them being on account of wounds and injuries. The influence of the seasons on the sickness is shown by a table of the admissions in each quarter of the year by the chief classes of diseases; they are lowest in the fourth, and highest in the second quarter. The returns, unfortunately, do not show the number constantly non-effective—a point of great importance.

The information respecting the British Cavalry is very meagre. The deaths, on the average of eighteen years, 1861-78, were 21·07 per 1000, ranging between 16·9 in 1864, and 28·1 in 1871. The number cast averaged 98 per 1000, and ranged between 76 1871, and 156 in 1878. The mortality was lowest in the Household Cavalry, and highest in the Cavalry of the Line, while the casting was lowest in the Royal Engineers, and highest in the Military Train and Army Service Corps, the Household Cavalry furnishing the next highest proportion. There is no information available as to the causes of death and casting.

The author concluded by calling attention to the very valuable results obtained by the statistical method of investigation as applied to the horses of the army in France, and suggested that a similar course should be followed in our service, more especially with a view to test the actual value, as a measure of efficiency and economy, of the importation into our cavalry of horses imported from Hungary. He also pointed out the importance, as shown by the French returns, of stamping out glanders by killing all infected horses as soon as the nature of the disease is verified.—*Journ. of the Statistical Society.*

VARIOLA EQUINA.

We give insertion to the following communication extracted from the *Montreal Gazette* of March 1st, relating to the disease which has been designated *Equine variola*. We may remark that, prior to the paper coming to hand, we had written to Professor McEachran asking for some of the lymph from the vesicles, taken in the ordinary way on points, to be forwarded to us for experimental purposes. There are many statements in the letter which we are unable to account for as strictly belonging

to variola, but we refrain for the present from commenting on them.

Horse-pox—(Variola Equina.)

To the Editor of the 'Gazette.'

Sir,—My attention has been called to numerous paragraphs which have appeared in Canadian and American newspapers referring to the epizootic disease at present prevailing in the city and vicinity, containing statements which are incorrect and calculated to cause alarm among horse dealers, which is altogether unnecessary. The disease is unquestionably *variola equina*, or horse-pox; it is similar in its nature to vaccinia or cow-pox; it has no connection with smallpox of man, other than being a variolous disease, that is to say, when man is inoculated by the virus of horse-pox, smallpox is never produced, its effects on man are exactly the same as vaccination, and has the same protective power against smallpox.

Horse-pox and cow-pox differ from smallpox by the exanthemata being in nearly all cases purely local; instances of its involving the entire body are extremely rare in the horse; the eruptions are confined to the heels and pasterns, occasionally extending up the legs; seen also on the muzzle, mouth and nose, groin and perineum, and in a few instances diffused over the shoulders and loins. In cattle it is almost invariably confined to the udder.

Jenner, the great discoverer of vaccination, one of the most important advances in medicine, was of the opinion that cow-pox was often due to the accidental transmission of the virus of the horse to the udder of the cow from the hands of a milker who had been taking care of horses suffering from variola.

Cruschmann says: "The horse-pox very probably can be inoculated upon the human subject with the same effect as vaccinia, and the practice is objected to merely because horses have other kinds of sores upon the foot print which might occasion disagreeable mistakes sometimes."

On this subject I might remark, that both during the epizootic of this disease in 1877 and the present winter, I have invariably urged the grooms not to fear inoculation, as their being susceptible to it indicated their susceptibility to smallpox, and that if they became inoculated, it would in all probability protect them as surely as vaccination would. From observation in half a dozen cases of inoculation of grooms, four on the hand and two on the face, I am convinced that the results are identical with vaccination. Two or three days from the time of inoculation the part becomes red and slightly swollen, a sympathetic swelling also extending up the arm to the *axilla*, when in the hand, accompanying which there is a slight fever. By the

fourth day a single vesicle forms, containing clear lymph, which enlarges till about the seventh day; it attains a diameter of an eighth of an inch and gradually becomes opaque. About the tenth day it is yellow, and the surrounding tissues are swollen and red. It now gradually begins to desiccate, beginning in the centre; the scab thickens, dries, and becomes of dark brown colour, and about the seventh day it is thrown off, leaving a scar similar in every respect to that seen from vaccination.

With regard to the causes of this disease, it may be difficult to account for it. During a residence extending over seventeen years in Canada, I have only seen it twice, viz: in 1877 and during the present winter. There can be no doubt that it is dependent on some peculiar atmospheric condition, sudden changes of weather, such as have recently prevailed here, or other causes purely local. That it is contagious cannot be doubted, and that it is infectious I am also inclined to believe, but neither contagion nor infection form marked features in the disease. For instance, in the College Hospital, which for several weeks back has been full of variolous patients, my own horses and half a dozen others have not presented any symptoms of the disease. True, the patients are in loose boxes, and dressed by different persons from the healthy horses. Again, in an establishment of nearly 200 horses only three or four cases have occurred, while in some stables of two or three horses, all have become affected. That the disease can be carried to a distance and become epizootic I do not believe. Thus, for instance, I do not believe that a horse suffering from variola taken to, say Boston, or New York, would introduce the disease to these cities as an epizootic, unless the climatic and atmospheric conditions necessary for its existence and spreading existed there, which is very improbable; consequently no apprehension need be felt on account of it. At most it is merely a temporary inconvenience, necessitating, in the majority of cases, cessation from work for about three weeks, and if allowed to run its regular course unattended by any injurious results. Injudicious doctoring, or keeping the animal at work, may produce sores of the heels affecting the deep tissues, which are sometimes difficult to heal.

I may further add that, whatever the cause has been, it seems to have exhausted itself, as the disease is rapidly disappearing. Very few new cases are occurring, and most of those labouring under it are returning to work.

D. McEachran, F.R.C.V.S.,
Inspector of Stock for the Dominion Government.

Montreal Veterinary College, *February* 28, 1880.

THE CATTLE PLAGUE IN CYPRUS.

We have received a copy of the *Cyprus* of March 1st, in the supplement of which we find the following interesting letter from Dr. Heïdenstam, *Chief Inspector of Cattle Disease,* on the malady which is now proving so destructive to the cattle of the island. Our readers will be glad of official information on this subject, more especially as Dr. Heïdenstam deals with the pathology of the disease.

To the Editor of Cyprus.

Sir,—Having noticed that the extract from my report pointing out the principal symptoms of the prevalent disease among the cattle in the island, which you were good enough to publish in your issue of December 15th, has received attention from most persons interested in this important subject; and having, since the date of that report, had occasion to make a more complete study of the malady, I shall feel indebted to you if you can find space for the following statement, which comprises a more precise account of the disease, and which shows the result of the *post-mortem* examinations which I have made on the carcases of several of the dead animals.

Symptoms of the Disease.—The animals which I have seen suffering from the prevalent disease are not all attacked in exactly the same way, and this I attribute to the fact of the affection being slight or violent as the case may be; but the diagnostic signs are invariably the same.

The period of incubation varies from five to eight days, and one of the first apparent symptoms is a loss of appetite. This is accompanied by an increased rapidity in respiration, which reaches as much as 74, while the temperature of the body attains 108·6°, and the pulsation 128. The animal seems uneasy; it stretches out its neck as if seeking for breath; its ears hang downwards, and in some instances it is deaf; the head and breath are hot, the ears and limbs quite cold.

A running of a watery nature commences about the second day from the eyes and nose, changing in the latter period of the disease to a purulent secretion. I should, however, mention that I have known of cattle having a running at the eyes and nose, which it was stated were attacked with cattle plague, while it was afterwards proved that they were merely suffering from catarrh.

On the tongue and on the inside of the lips there is an epithelial deposit of a yellowish colour, which has a peculiar fetid

smell. I noticed, also, in some cases, that the mouth and the membrane round the nasal orifices were ulcerated. About the fourth day the animal is generally unable to move, which indicates that it is suffering from excessive weakness. It refuses all food, and when offered water it endeavours to drink but seems unable to swallow. A constant diarrhœa of fetid greenish matter sets in, and the urine is scarce and highly coloured. These symptoms increase in violence up to the fifth or sixth day, when the animal expires completely exhausted.

I have noticed that, in some cases, there are signs of amelioration about the third or fourth day; these, however, soon fail, and the animal relapses into its original condition.

Post-mortem examination—I have carefully examined thirty-nine animals after death, and have found, almost invariably, that the interior of the carcases presented the same appearance. The inside of the mouth and pharynx, were of a darkish red colour. The tongue was flabby and covered with a yellowish exudation. I saw nothing remarkable about the three first stomachs, but on the fourth I noticed several deep red blotches and, in some cases it was spotted with small ulcers, which forcibly reminded me of those so common in cases of catarrhal inflammation of the human stomach. I was surprised to find the small intestines, generally speaking, free from disease. The bronchial mucous membrane was frequently injected and covered with tough mucus. The lungs were congested and swollen, and their interlobular tissue was distended with air. The heart was relaxed and discoloured. The brain appeared to be unaffected, although it was more than usually injected with blood, and the meninges were of a reddish colour. I noticed no particular change about any of the other parts, except that the body was generally more red than is customary, as were also the urinary and generative organs.

Many suggestions have been made respecting the manner in which this disease should be treated; but, up to the present, they have all signally failed in producing any practical result. I may, however, say that a medicine composed of "ferri sulphas" or "acid sulphuric," with a little laudanum, seems to produce some effect; and a small cup of vinegar administered internally every morning, and the washing of the eyes, nostrils, and mouth of the animal with vinegar several times a day, proves a good preventive against the disease. The only thoroughly efficacious means, however, of combating this terrible malady that is known at present is to slaughter the animal immediately it is attacked; to bury it in a bed of quick lime along with the hide and dung; to carefully disinfect the stable where it has been standing, as well as the persons that

have attended it; to prevent any other animals, and especially dogs, having access to it; and to isolate and watch its companions.

One of the principal causes of the propagation of this disease from village to village is, without doubt, the dogs that scratch up and feast on the carcases of the dead animals, and afterwards drink at the troughs where the cattle are watered. It is, therefore, most essential that dogs in the country should be kept tied up at home. I am, Sir,

Your obedient Servant,

DR. HEÏDENSTAM,

District Meical Officer.

Chief Inspector of Cattle Disease.

Larnaca Road, Cyprus, *March* 1*st*, 1880.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MONTHLY COUNCIL, Wednesday, March 3rd, 1880. Colonel Kingscote, C.B., M.P., trustee, in the chair.

JOURNAL COMMITTEE.

Mr. Dent (Chairman) reported that the Committee had reconsidered the contents of the forthcoming number of the *Journal*, and they recommended that permission be given to the Smithfield Club to republish Professor Simonds' paper on the "Dentition of Pigs."

This report was adopted.

VETERINARY COMMITTEE.

The *Hon. W. Egerton* (Chairman) reported the recommendation of the Committee that for the future the Members' Veterinary Privileges should read as follows:—

I.—*Visits of the Veterinary Inspector.*

1. Any Member of the Society who may desire professional attendance and special advice in cases of disease among his cattle, sheep, or pigs, should apply to the Secretary of the Society, or to the Principal of the Royal Veterinary College, and Consulting Veterinary Surgeon, Camden Town, London, N.W.

2. The remuneration of the Consulting Veterinary Surgeon or Inspector will be £2 2*s*. each day as a professional fee, and the charge for personal expenses, *when such have been incurred*, will in no case exceed one guinea per diem. He will also be allowed to charge the cost of travelling to and from the locality where his services may have been required. These charges may, however, in cases of serious or extensive outbreaks of contagious disease, be reduced or remitted altogether, so far as the Members of the Society are concerned, at the discretion of the Council, on such step being recommended to them by the Veterinary Committee.

3. The Inspector, on his return from visiting the diseased stock, will report to the member, and, through the Principal of the Royal Veterinary College, to the Committee, in writing, the results of his observations and proceedings, which report will be laid before the Council.

4. When contingencies arise to prevent a personal discharge of the duties, the Consulting Veterinary Surgeon may, subject to the approval of the Committee, name some competent professional person to act in his stead, who shall receive the same rates of remuneration.

II.—*Consultations without Visit.*

Personal consultation with Veterinary Inspector .	10*s.* 6*d.*
Consultation by Letter	10*s.* 6*d.*
Post-mortem Examination, and report thereon .	21*s.*

A return of the number of applications from members of the Society during each half-year is required from the Veterinary Inspector.

III.—*Admission of Diseased Animals to the Royal Veterinary College, Camden Town, N.W.: Investigation and Reports.*

1. All Members of the Society have the privilege of sending cattle, sheep, and pigs to the Infirmary of the Royal Veterinary College, on the following terms: viz. by paying for the keep and treatment of cattle 10*s.* 6*d.* per week each animal, and for sheep and pigs 3*s.* 6*d.* per week.

2. A detailed Report of the cases of cattle, sheep, and pigs treated in the Infirmary of the College, or on farms in the occupation of Members of the Society will be furnished to the Council quarterly; and also special reports from time to time on any matter of unusual interest which may come under the notice of the Officers of the College.

The Committee also recommended that Professor Simonds be granted gratuitously a further supply of 200 copies of his paper on "Sheep-rot."

The Committee presented the following report from the Examiners for the Society's prizes and medals for proficiency in cattle pathology:

Gentlemen,—We have the honour to report that the examination for the prizes offered by the Royal Agricultural Society took place on Thursday, the 22nd January, at the Islington Cattle Market, and the Royal College of Veterinary Surgeons, 10, Red Lion Square.

Six candidates were eligible for competition. Of these, one declined; one, in consequence of the regiment in which he holds his appointment, having been removed from Aldershot to Leeds, did not receive his notice until too late; and one sent no reply.

Three presented themselves, and these having afforded such proofs of their practical acquaintance with the subjects brought under their notice, we adjudicate the prizes in the following order:—First prize, William Alston Edgar, 1000 marks; second prize, William Frank Smith, 875 marks; third prize, Nicholson Almond, 735; out of a maximum of 1200 marks.

It is a subject for great regret that the liberal inducements offered by the Royal Agricultural Society have not been more appreciated by the recent graduates of the veterinary profession. Possibly, this may in some degree arise from the expenses occasioned by a journey to London, and we would therefore suggest that some allowance for travelling expenses might overcome the difficulty.

Thomas Walton Mayer,
D. Gresswell,
William Duguid.

The Committee had received reports on anthrax experiments from Dr. Burdon Sanderson and Dr. Greenfield, which they had recommended to the *Journal* Committee for immediatepublication. They recommended that Mr. Arkwright be added to the Committee.

This report was adopted.

Mr. Martin said he should like to remark that an outbreak of foot-and-mouth disease was reported to the local authority at Ely the other day. The inspector reported to the Privy Council, and Mr. Duguid went down from the Veterinary Department. They were, however, quite at a loss to know how it had arisen. If the Veterinary Committee would place themselves in communication with Professor Brown, they might be able to obtain some information which would prove of value.

Mr. Dent asked Professor Simonds whether it was true that the same disease as rot in sheep had attacked cattle, and even horses.

Mr. Chandos-Pole-Gell and *Mr. Neville* said they had known instances of the disease in cattle.

Mr. Rawlence said that he had never before known a cow die of a fluke liver during forty-five years' management of estates in the West of England, but now the disease was extremely prevalent all over his district.

Colonel Kingscote was sorry to say that he had heard of three young horses in his neighbourhood dying from the disease.

Professor Simonds said there was no doubt that, in consequence of the long-continued wet weather of last year, many cattle are affected with rot, as well as sheep. He did not anticipate that aged cattle would suffer materially from the disease, because there were plenty of instances of animals on being sent to the butcher giving evidence of having had flukes in the liver. Those which would suffer most were young cattle badly kept.

With reference to horses, veterinarians very rarely found flukes in the liver of a horse; and he did not anticipate that there was any truth, practically considered, in horses being seriously affected. Of course, one could readily understand that, under the circumstances in which sheep and cattle had suffered so much, flukes had also entered into the liver of the horse when at grass; but it would be a new feature in veterinary pathology if it was found that horses died in consequence of a large number of these parasites in their liver.

ROYAL COLLEGE OF VETERINARY SURGEONS.

A Special Meeting of the Court of Examiners for the Fellowship Degree, was held February 27th, 1880, when the following candidates having produced their certificates underwent the necessary examination, and were admitted Fellows of the Royal College of Veterinary Surgeons:—

Mr. Wm. Sheppard Wallis, Halstead, Essex.
„ John Wiggins, Market Harborough, Leicestershire.
„ Wm. Albert Russell, Army Vet. Department, Dublin.
„ Thos. Simpson, Seel Street, Liverpool.
„ Isaac Vaughan (Professor), New Veterinary College, Edinburgh.

QUESTIONS FOR THE FELLOWSHIP DEGREE.

Physiology.

1.—Enumerate the functions of the nervous system, state what is meant by reflex action, give an example and mention in what respect it differs from a voluntary act.

2.—What objects are accomplished by the function of respiration. How are these obtained in the different classes of Vertebrata. State what conditions and structures are essential to the formation of a respiratory organ.

3.—Describe the process of absorption; (*a*) from the intestines; (*b*) from the other organs and tissues of the body. State what changes Chyle and Lymph undergo as they pass through the glands previous to entering the general circulation.

Comparative Anatomy.

1.—Describe the chief differences between the digestive organs of a Herbivorous and Carnivorous animal.

2.—State the difference observed in the arrangement of the bones of the anterior extremity of the Horse, Pig, and Dog.

3.—Describe the arrangement of the placenta in the Mare, Cow, Sow, and Bitch.

Therapeutics.

1.—What is Chloral Hydrate, describe its physiological and therapeutical actions.

2.—Describe the physiological and therapeutical actions of Alcohol, and state under what conditions its administration is indicated.

3.—What are the therapeutical uses of the salts of Iron, and give the indications for their administration.

Pathology.

1.—Describe the nature and characteristic lesions observed in "Anthrax" or "Splenic Fever."

2.—Enumerate the different kinds of "Pneumonia" and describe the appearances presented in the different stages.

3. What are the principal differences between the morbid conditions known as Hæmaturia and "Hæmoglobinuria?"

Sanitary Science.

1.—What constitutes the differences between hard and soft water, and how can the degree of hardness of water be accurately ascertained?

2.—What is the effect of ergotised food on animals?

3.—What sanitary measures are necessary for the prevention of Trichinosis in mankind and animals?

Epizoötology.

1.—What are the influences upon which depend the extension of ovine, bovine, and equine variola?

2.—What is necessary for the successful transmission of a contagious malady.

3.—How is Swine Plague extended, and what measures are necessary for its limitation or suppression?

Surgery.

1.—Describe the covered operation, in castration, and state under what circumstances it is desirable to perform it?

2.—State the principles which should guide you in operating for "Poll Evil," and Fistulous Withers, and how you would proceed?

3.—State how you would treat a "Chronic Quittor," and what surgical operation, if any, you would perform for its cure?

DIETETICS.

1.—Name the nitrogenous and non-nitrogenous elements of Cereals?

2.—State the comparative dietetic merits of Oats, Beans, Indian Corn, and Bran, and give your reasons?

3.—State in order the hours for feeding, and watering, and the quantity of food and water which you consider essential under ordinary conditions for an average farm horse in the twenty-four hours?

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE ordinary quarterly meeting of this Association was held at the Medical Institute, on the 13th of February, 1880; C. H. Elam, Esq., President, in the chair.

The minutes of the previous meeting were read and confirmed.

Election of members to the Council.—Letters were read from the Secretaries of the Lancashire, Norfolk, and Yorkshire Veterinary Medical Associations.

The *Secretary* stated that he had not received a reply to his letter from the Midland Counties Veterinary Medical Association.

After some discussion it was unanimously agreed that this Association nominate for re-election to a seat at the Council of the Royal College of Veterinary Surgeons Professor Brown, of the Royal College of Veterinary Surgeons, London, and that the President and Secretary act as an election committee, to make the necessary arrangements for supporting his election, in connection with the election of the gentlemen nominated by the Lancashire, Yorkshire, and Norfolk Veterinary Medical Associations.

The *President* then delivered his introductory address. He commenced by thanking the members for the honour they had conferred upon him in electing him their President, and expressed the hope that his conduct in that capacity throughout his year of office would meet with their approval, and not belie the confidence they had so unsolicitedly reposed in him, as he assured them that no effort should be wanting on his part in order to make the meetings of the Association a success, both professionally and socially.

He then referred to the great benefits which veterinary medical associations had already been the means of conferring, both on their individual members, and also on the profession as a body, and strongly urged us to cultivate unity and *esprit de corps* among ourselves, in order to attain that position in the estimation of the Government and the country which the practice of our honorable and useful profession entitled us to.

He said: We have now got a thoroughly representative Council, and we shall have ourselves to blame if we do not send our ablest and best men to represent us there; and if we are only true to each other, and have the best interests of our profession at heart, we shall very soon feel ourselves in a position to demand from the Legislature that legal protection from unfair and dishonest competition with which the profession has been so long burdened.

He next referred, in congratulatory terms, to the completed arrangements between the Royal College of Veterinary Surgeons and the Highland and Agricultural Society of Scotland, whereby the latter body

discontinue their veterinary examinations and the issue of their certificates.

He then, in commendatory terms, spoke of the improvement which had taken place in the curriculum of study at the veterinary colleges, but added that there were still great improvements needed, both in the manner and method of teaching, in order to place within the reach of every student facilities for acquiring a thoroughly sound, practical, and theoretical education. He also expressed his opinion strongly, that no young man ought to enter College without first serving an apprenticeship with a duly-qualified veterinary surgeon.

In speaking of the Court of Examiners, he said that he hoped soon to see our Court of Examiners composed entirely of veterinary surgeons, and after passing a warm tribute of praise to the medical profession for their invaluable assistance, &c., during the period of our protracted infancy, he said that we should never develop the resources, now lying dormant in our members, until we threw open these sources of honorable distinction and ambition; for if these were thrown open our best and most promising young men, after finishing their college education and obtaining their diplomas, would have an inducement held out to them to continue in that course of study and research which will bring its own reward, and raise both them and their profession in the estimation of the public. I am persuaded, he added, that there are no lack of members now who, if these positions were thrown open to them, would, with six months' study, be able to act as examiners in every branch of our professional education with distinction and credit, both to themselves and to the profession to which they have the honour to belong.

Commenting on the legal responsibilities of veterinary surgeons, and the risks they incur in the practice of their profession, he said that there was no calling or profession free from risks and responsibilities, and he did not think it desirable that there should be, but, as a safeguard against any unfair treatment, he strongly recommended all veterinary surgeons to become members of the National Veterinary Defence Society, whose powerful aid and assistance are ever at the disposal of its members in every time of need, and whose veteran officers are always accessible when counsel and advice are required.

He concluded a very instructive address by exhorting the members to endeavour, by their regular attendance, valuable contributions, and personal influence, to induce others to become members, so as to render our meetings both more interesting and profitable.

Mr. Peter Taylor, of Manchester, then read his paper on "Is it advisable to apply Counter-irritation in Acute Disease of the Respiratory Organs?"

The following is a copy of Mr. Taylor's paper:

Mr. President and Gentlemen,—I have selected Counter-irritation for our evening's consideration, knowing it to be a vexed and much disputed subject with some of our practical veterinary surgeons, and also with our learned and scientific men. I thought that a night devoted to its consideration would be profitable, interesting, and instructive.

I had the privilege, some years ago, of hearing an essay read at Leeds before the Yorkshire Veterinary Medical Society, by Professor Williams, on the "Effect of Counter-irritation in the Treatment of Bone Spavin," when the late Professor Spooner honored the Society with his presence and took an important part in that interesting discussion. I had the pleasure of taking a part in that discussion, and now, having had thirty-

six years of extensive public practice and close observation in my profession, I feel justified in reading this paper before you; not that I am producing an elaborate and scientific thesis, the time having been very short, since your respected president solicited my assistance.

I do assure you, by appearing before you in this position, I am, though feeby, fulfilling the call of duty, and endeavouring to cement still closer the bonds of brotherly love and professional friendship.

The tendency of the present day is, I fear, to jump to conclusions upon insufficient practical observation and clinical experience. The most important part in a veterinary surgeon's education is, undoubtedly, to be gained of the sick box, where every feature of disease can be watched and noted; and in order that the observations of disease may be profitable, it must be complete. The termination of a case is especially instructive, and not the less so when it results in death, since we may then mark the way which the patient succumbed, and learn to guard against such an event in similar examples for the future.

If I were to believe in Professor Williams's treatment, as published in his work, on diseases of the respiratory organs, I should not have appeared before you in the position I do this night, though, at the same time, I am pleased to give him my warmest thanks for the great meritorious and noble works he has given to the veterinary profession, the result of much thought and great labour. I shall read you his remarks on counter-irritation, so as to give you the most recent opinion of one of our ablest writers upon its effects as applicable to the relief of acute inflammatory action of the respiratory organs, before I open to you the result of my experience (Mr. Taylor here read the extract referred to).

Gentlemen, in all serious cases let me impress upon you the necessity and great utility, and particularly in acute diseases of the pulmonary organs and their coverings, that the first duty of a careful practitioner is to take an accurate, quiet, and collected observation of the suffering patient, so as to ascertain the structural and the functional derangement, the peculiar symptoms, the painful or irritable countenance, the temperature by the thermometer, and the pulse, and make himself acquainted whether the patient is a nervous and irritable one, or on the other hand, a quiet, subdued, and plethoric one; and in addition to all this we must never lose sight of the fact that we are treating a living and a most vital complex organism, endowed with beautifully arranged and complicated nervous and circulating systems. The latter organism is set into active motion at the birth of the animal, and continues in motion day and night, never ceasing one moment its action during the allotted period of its earthly existence. Interfere with this activity and disease results; arrest it and life ceases. How wonderful, how beautiful, are the works of the Great and Almighty Creator; in wisdom has He made them all, even to the tiniest insect.

Gentlemen, what mighty progress have these societies throughout our land given to our scientific advancement and our social status. Much has been done, much there is yet to do. Therefore I implore you to be earnest, to watch, work, and do your duty to your own Society, and then you will immediately advance your profession scientifically and practically, and to endeavour truthfully to solve some of our complex problems, which our most learned and scientific men have not as yet done for us. It is, I think, a disputed point and matter of opinion whether the primary cause of acute disease in the respiratory tract is a poison or an irritant impression made upon the nerve centres, or whether it is from the imbibing of a diseased germ into the blood, or from some chemical

or mechanical effect upon the organ or tissue affected, producing what is called inflammatory action or perverted nutrition. Whatever explanation may be given or accepted as to how the diseased action is brought about in the respiratory organs, you are, from your own observation and practical experience, I am sure, fully conversant with the manifold causes and symptoms of the malady.

I cannot allow the present opportunity to pass without adding my testimony to the great advance we have made in our improved methods of ascertaining the progress or decline of diseased action by the unerring aid of that beautiful instrument, the thermometer, also by careful clinical instruction; in fact, gentlemen, our clinical aids in chest diseases may be said to be the pulse, respiration, its painfulness and quickness, and the temperature as ascertained by the thermometer. All and each of these represent forces at work in the living body, all of which are now capable of being measured with great exactness, and such measurements show how closely such expenditure of forces is related to the *excreta* which represents the waste of tissues in health and disease.

The subject I have now in hand—"Is it advisable or advantageous to apply counter-irritation in acute disease of the respiratory organs?"

I should probably do more justice to this important consideration if I divided it under the following heads, viz.:—1. What is meant by the term counter-irritation? 2. How is counter-irritation believed to act? 3. If it acts as before mentioned, when and how should it be applied? 4. When should it be abstained from, and why?

First, then, What is meant by the term "counter-irritants?" These may be defined to be remedies of external application, by which we endeavour to remove or diminish the morbid condition of a particular structure by artificially creating a new irritation or determination in some other part more or less remote from the seat of disease; but since in its most comprehensive meaning it would embrace too wide a field of physiological and pathological inquiry, and include the majority of those changes which are induced by such internal remedies as cathartics, diuretics, and diaphoretics, &c., I have therefore inserted the term of "external applications," so as to define that the seat of irritation is transferred from an internal organ to the surface. The application of a counter-irritant for the relief of a labouring organ was doubtless suggested to the attentive observer by the occurrence of spontaneous translation of disease from one part to another, and by the obvious and immediate relief so frequently thus afforded, as, for example, in the subsidence of pulmonary and enteritic irritation, on the appearance of laminitis, or a cutaneous eruption.

The object, then, of a counter-irritant is to produce a salutary change in an inaccessible organ by effecting an artificial change in one within our reach, and to transfer morbid action from a structure more immediately subservient to life to a less essential surface in sympathy with it.

In order to render such agents available in the case of disease, much judgment and nice discrimination are necessary. In the hands of an inexperienced or rash practitioner the evil might be aggravated rather than relieved.

Various substances have been proposed at different times to produce counter-irritation, such as mustard, hot or boiling water, cantharides, ammonia, turpentine, preparations of iodine, setons, rowels, plugs, issues, strong acetic acid, and the actual or potential cautery.

I come now to the second part of my subject, viz.: How is counter-irritation believed to act. I was instructed at my Alma Mater in the

year 1842, and subsequently by that great and noble professor, the late Professor Dick, with very great force and emphasis, that two acute inflammations could not exist at the same time in a living animal, and by producing an external artificial inflammation you must of necessity relieve the internal morbid one. Reasoning and clinical observation in the sick box have materially modified this opinion. When counter-irritants operate so mildly as merely to excite the capillaries without occasioning any effusion of serum, they are called rubefacients; but if by increased strength or continued application they excite the vessels into such a state of inflammation as to terminate in effusion of a serous fluid, and the elevation of the papillæ of the skin forming what are called vesicles, which gradually enlarge, and by their lateral extension soon coalesce, so that blebs of different size are produced, they are called vesicants. These vesicles are filled with a fluid rich in albumen, and generally contain some fibrine. Or when a still higher grade of inflammatory action is produced, as by the application of tartar emetic ointment, they are designated suppurants.

In acute inflammation of the organs of the chest the counter-irritant I chiefly rely on or apply is the best mustard mixed with tepid water, in other words, a mustard cataplasm; when applied to the walls of the chest and breast it produces in a little time a sensation of pain, heat, redness, and swelling, the immediate effect as upon the peripheral extremities of the nervous system, and through them to the nervous centres, and from the nervous centres we have a reflex motor action, thereby increasing the action of the capillaries and the circulatory system on the surface upon which the counter-irritant is applied. If counter-irritation abstracts a large amount of nervous force and causes a great determination of blood to the part upon which it is applied, combined, secondly, with large effusions of serum within the areolar tissue, we must, I think, without the slightest doubt, relieve the vital organ or organs affected with morbid action; and that we do so we know by careful observation of our suffering patients; we see the acute pain modified or relieved, and the cough reduced; the pulse becomes more soft and lower, the breathing more tranquil, the temperature lessens gradually, and the secretions and excretions become more regular and natural. In fact, gentlemen, the countenance and the healthy condition is resuming its normal and wonted standard, a condition which any of us always welcome and are delighted to see in our suffering patients. In pleurisy, pneumonia, or pleuro-pneumonia, the mustard cataplasm should be applied over the walls of the thorax, throat, and breast; the greater extent of surface of the skin to which the mustard is applied the greater will be its influence on the inflammatory action of the organs within.

Thirdly, if it acts as before mentioned, when and how should it be applied? Well, to practically qualify this, I will relate a supposed case. A very expensive cart-horse, recently purchased, rising five years of age, has changed hands, thereby changed diet, stables, and his daily work and climate. He has, during the last week, improved very much in his condition. He is suddenly seized, after dinner-time, or in the evening, with a rigor or shivering fit; pulse hard and quick; breathing quickened; temperature 104°; fæces coated with mucus; Schneiderian and conjunctival membrane increased in redness. Auscultation may detect, according to the degree, whether the pleura or parenchyma is mostly affected. The friction sound in pleurisy—a rustling or laboured action if it is pneumonia. If my patient is admitted when the rigor is set in, my first duty, after a careful examination, is to administer a nerve stimulant,

such as ammonia carb., apply warm clothing to the skin, and give as much pure air as possible to breathe. In the space of some hours afterwards the hot stage succeeds the cold, and after a certain space of time my patient has a painful expression, dirty mouth, quick breathing, pulse hard and quick, exalted temperature, and sore cough. I immediately apply a thick mustard cataplasm over all the walls of the chest and breast. Over this I place thick paper, and repeat in ten or twelve hours, according to the symptoms of relief produced, or continue to reapply if the vital and delicate organs within are not relieved in fifteen minutes after the second mustard application. I often apply a hot-water blanket around the chest and a mackintosh over the blanket on the second, third, and perchance the fourth day. I may, in severe cases, apply thin mustard cataplasm morning and evening.

Gentlemen, the medicine I most chiefly rely upon is a draught composed of Belladonna, Spt. Eth., Nit., or Chloric Ether, with Liq. Ammonia Acetatis, twice or three times a day, according to the urgency of the symptoms, &c., and I continue my treatment until the temperature is down to 101°, pulse lower, mouth cleaner, secretions and excretions more normal, and the appetite and countenance restored to a natural condition.

Fourthly, When should counter-irritation be abstained from? When the powers of life are ebbing, or when you have a weak pulse, blanched membranes, as in all cases of hæmorrhages; or when a mulberry-coloured discharge comes from the nostrils, denoting disintegration of the pulmonary tissues. Counter-irritation should also be refrained from in eruptive fevers, or when you have an eruption of any kind on the skin.

In acute laryngitis, when danger of suffocation is imminent, counter-irritation on the throat and breast, with belladonna gargles and inhalations, are your sheet-anchors and your safe curative agents.

Gentlemen, we have yet much to investigate, much to learn, in order to overcome morbid action, and if I have awakened your attention and interest in reference to this important pathological and practical subject, I shall have given an impulse to the advance of our clinical observation. I have one request to make to you: receive what I have said in the tone of truth. Seek not to dispute, but to prove, to confirm, or correct my statements. It has taken some years of close observation and inquiry to give the advice upon counter-irritation that I have done to you this evening, and much, very much, remains to be done. I trust that I shall be assisted by you in the further prosecution of this important subject. Be careful how you observe in your clinical practice, and let those instructions be engraved upon your minds. Fulness, accuracy, and probity should be the eligible characters written upon every case.

Gentlemen, our sick boxes, our laboratories, are always open—our resources are abundant and great. We, the scientific workmen, are never at rest. Day and night our brains are endeavouring to unravel hidden problems; therefore, in closing, I would say, Continue faithfully to do your duty, and our profession will surely be advanced.

Mr. Storrar said that he agreed in the main with the views so ably propounded by Mr. P. Taylor in his essay. He said that he had himself experienced much benefit from the application of a mustard cataplasm in attacks of bronchitis, to which he was somewhat liable; and it was his general practice to apply a counter-irritant to the sides and chest in pneumonia-bronchitis and laryngitis; he preferred mustard, and did not approve of several applications of cantharides blister in such cases.

Mr. Dacre said that he was once a great advocate of counter-irritation in the treatment of chest affections, but he was now as strongly anta-

gonistic to it. He did not apply mustard even in the first stages of such cases. He said if any one would carefully observe the symptoms exhibited by a pleuritic patient as he stands, with an anxious, painful expression, abdominal breathing, quick pulse, high temperature, and every manifestation of intense internal pain, so characteristic of this disease, and then to order the application of two square yards of mustard to his sides as a remedy, he was gifted with a peculiar power of reasoning which he (Mr. Dacre) failed to appreciate. Some nervous horses would be almost driven to distraction by such a remedy. He maintained that in cases where mustard had been repeatedly applied there was usually great prostration, and convalescence was very much retarded. Mr. Dacre then related his experience of the effects of a blister which was applied to his own side for an acute attack of single pleurisy; how, notwithstanding that the blister acted well, and was continued for twenty-four hours, it failed to give him any relief; but, when the blister was removed and hot water applied, he felt relieved directly. His own practice in such cases was to administer a sedative internally and apply soothing remedies externally, such as hot water, cloths, &c. After seven or eight days, when the acute symptoms have subsided, he might apply a mild counter-irritant, but never during the early stages.

Mr. Greaves said that they owed a deep debt of gratitude to Mr. P. Taylor for the able manner in which he had introduced the subject. The views he had propounded were very much milder than he (Mr. Greaves) had expected to hear. He thought, however, that the application of severe blisters to the sides in chest affections was not so much adopted now, even by the strongest advocates of the system, as it was formerly. He (Mr. Greaves) was taught it at College, and practised it for a considerable time afterwards; but he gradually came to adopt milder remedies, and he had no reason to regret the change, as in his experience fewer cases died under the milder treatment than under the more heroic. As an instance of the power that unassisted nature possesses when not interfered with, he related the history of eighteen cases of chest affection which he was treating homœopathically. The medicine was used up, he had no more in his pharmacy, and there were no means available at the time for replenishing his stock, so he refilled the bottles with cold water, and ordered its administration as before; the patients all recovered. He believed with the late Mr. Haycock that no disease was ever cured by medicine. He did not consider that counter-irritation was necessary or advantageous in such cases. In his own practice when a horse came in blowing and manifesting symptoms of congestion of the lungs he administered a dose of carbonate of ammonia, gave him a bran mash, and turned his head to the door, and he was generally all right in the morning. In cases of sore throat, or affections of the mucous membrane, counter-irritation acted more beneficially than on serous membranes.

Mr. Reynolds expressed himself as very much gratified by hearing Mr. P. Taylor's paper, as he believed it to be the offspring of several conversations on the subject during their journeys to London together. He (Mr. Reynolds) did not think, however, that those typical cases which had been mentioned were so difficult to manage as the cases where the patient was seen to be off his food, dull, and adynamic generally, going from bad to worse, until he died. He had no faith in the old theory that two inflammations could not exist in the body at the same time; still, in some cases where you are very anxious about your patient you have a difficulty in keeping your hands off him; you feel as if you were at least *trying* to cure him.

In bronchitis and laryngitis the application of a counter-irritant gave

relief, and in adynamic paralysis I would rouse my patient by a counter-irritant, but I consider it useless in pneumonia or pleurisy. He did not rely much on the readings of the thermometer in such cases, unless it conformed with the other symptoms.

Mr. Hopkins said that the old practice of *bleed*, *purge*, and *blister*, was fast dying out. He, however, disagreed with Mr. Greaves in the opinion that a cold atmosphere was more beneficial than a warm one in the treatment of chest affections in the horse. Of course there were varying degrees and stages of congestion, and in such cases as Mr. Greaves had referred to, when taken in their first stages they all got well. But, as a general principle in the treatment of congestion or inflammation of the lungs, a mean dry temperature was, in his opinion, by far the best, as the circulation of the blood goes on more readily in hot air than in cold. As to the thermometer not being reliable in such cases, the temperature indicated the fever, but the fever stage may pass, and the patient still die. You must distinguish between the fever and the inflammatory process. He believed that counter-irritation was beneficial in bronchitis when the larger tubes only were affected, as in laryngitis and strangles, but not in pneumonia or pleurisy. His own practice, in the latter cases, was to apply hot water and hot rugs, with the internal administration of aconite, placing the animal in a warm box, with pure air.

Mr. A. Lawson expressed himself in favour of counter-irritation being applied in chest affections, although he did not believe in the beneficial effects of repeating it three or four times in one day, until the sides were raw, as was sometimes recommended. In laryngitis he would apply a counter-irritant once, twice, or thrice, with discretion, and when the animal commences to feed you may then come in with your soothing applications. At one time during an epidemic he tried both modes of treatment among the omnibus horses of Manchester. A certain number he treated by the internal administration of carbonate of ammonia and the application of hot cloths, and the same number he treated by the internal administration of carbonate of ammonia, and applied counter-irritants externally. By the former treatment he lost a large percentage of his cases, but by the latter treatment he did not lose one. He therefore considered it both good policy and sound reasoning to follow a practice that was successful.

Mr. H. Leather said that he preferred hot cloths to irritants in the acute stages of chest affections; they gave a more uniform heat, &c. He put cloths around the body, and rubbed some mustard on to the front of the chest. In cases of acute congestion he gave a stimulant and opened the box door. He was of opinion that the rising of the thermometer was sometimes affected when inserted in the rectum if the latter was full of fæces.

M. T. Taylor declared that he was completely in a *fog;* it would appear that the patients got better under any kind of treatment, and some died, even under Mr. Greaves's mode of treatment. He contended that a great many animals must be killed by severe and repeated applications of counter-irritants to the chest in cases of pneumonia, and nothing was more to be deprecated than the practice of trying to emblazon your coat of arms on a horse's sides. He agreed with others that the essayist had been much more modified in his ideas of counter-irritation than he had expected.

Mr. E. Faulkner, after complimenting the essayist on the modified views expressed in his paper, said that he would like to know from Mr. P. Taylor if, during his long and extensive experience, he had observed

any difference in the types and characters of chest affections. In some cases of congestion, where the pulse at night might be 72, and the animal blowing, he would administer a stimulent, and slightly irritate the sides, and not unfrequently the patient would be all right in the morning. Some cases might go on to broncho-pneumonia, and require further treatment. To these he would apply soothing remedies, coupled to good nursing. He believed that *dabbling* practitioners hurried their patients down hill.

Mr. W. A. Taylor said that he held a very strong opinion in favour of counter-irritation properly applied. In congestive pneumonia you have an arrest of the circulation of the blood, and a paralysed condition of the vessels; it is to act as a stimulus to these vessels that I apply a counter-irritant. In my own case, when suffering from an attack of bronchitis, associated with lung complications, the application of a blister gives me immediate relief from pain, and if we can relieve pain by the application of a blister we are certainly on the right track. But by repeated applications of counter-irritant you deplete your patients. Apply your counter-irritant during the crisis of the disease, when it will have some effect, and do not be fiddling at it when your patient is dying. In cases of laryngeal and bronchial congestion, amounting in some instances almost to suffocation, the application of mustard gives great relief. He said that in those cases referred to by Mr. Reynolds, where the animal is off his food, dull, and adynamic, such cases are sometimes allowed to slumber because they do not manifest equally acute symptoms as others; but if you insert the thermometer you will find the temperature high, and then is the time to administer your stimulant and apply your counter-irritant. He related the history of three similar cases of infla mmation of the lungs, &c., which occurred at one place. The first one was treated on the soothing anti-irritant principle, viz. hot rugs, &c., and the administration of belladonna and ether; it died however. The other two were treated by the application of mustard at once, and repeated in one of the cases twelve times; both animals recovered. I am convinced, he added, that the repeated blistering saved the last one.

Mr. Whittle said that he thoroughly endorsed the views on counter-irritation propounded by Mr. P. Taylor in his essay. Chest affections, he said, varied so; in some you would have the mucous membranes principally affected, and in others the serous membranes would be the principal site of the disease, and as a consequence our mode of treatment would require to be adopted to the peculiar type of disease present in in each case.

Mr. Woods said that he thoroughly agree with the views of the essayist on this subject, and he had tried both modes of treatment. About a year ago he had a great many cases of inflammation of the lungs, and very bad cases they were too; he put mustard on them immediately, and in some cases repeated it. My assistant, he added, was an advocate of the soothing expectant treatment, and he declared that my patients would all die under such treatment as I was then adopting, but every one of them recovered; in one case, in the treatment of which I allowed my assistant to carry out his own plan for several days, the animal was getting so bad that I was afraid he would die, in which opinion my assistant concurred, and we at once applied a blister, repeating it every day for three days; the animal ultimately recovered. In laryngitis he said he had great faith in the application of croton liniment; it acts like a specific, it produces a crop of pustules, but does not cause much external irritation.

Mr. W. A. Taylor suggested that the further consideration of this

subject should be adjourned, as it was evident from the diversity of ideas expressed upon it that further discussion would be beneficial.

This suggestion met with general assent from the members, and it was agreed that Mr. Morgan would open the debate at the quarterly meeting to be held in August next, as Professor Axe, of the Royal Veterinary College, had promised to open a discussion on "Contagious Diseases" at the next quarterly meeting.

A vote of thanks to the President closed the meeting.

DUNCAN HUTCHEON, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE annual meeting of the above Association was held at the Blackfriars Hotel, Manchester, on Thursday, the 19th day of February, 1880. W. Dacre, Esq., President, in the chair.

The following members and friends were present:—A. Gamgee, Esq., M.D., F.R.S., Professor of Physiology in Owen's College, Manchester; Dr. Renshaw, of Altrincham, Dr. F. Holmes, Manchester, Dr. Owen, Manchester; J. Lambert, 17th Lancers; S. M. Wilson, 12th Lancers; W. A. Russell, Army Service Corps; Messrs. Peter Taylor, T. Greaves, Tom Taylor, John Lawson, W. A. Taylor, A. Lawson, E. Faulkner, T. Hopkin, J. B. Wolstenholme, and E. Kitchen, of Manchester; R. Roberts, of Kendal; J. B. Taylor, Ashton; Messrs. Elam and Hutcheon, Liverpool; J. Burnett, Oldham; — Freeman, Hull; Peter Walker, Bradford; H. Baird, Macclesfield; J. Howell, Rochdale; W. Woods, Wigan; W. Whittle, Moseley; C. E. Challinor, Pendlebury; W. G. Schofield, Pontefract; T. Briggs, Bury; Mr. Litt, of Bolton, and the Secretary.

Letters of apology were received from Prof. Pritchard, Messrs. Geo. Fleming, J. Welbsy, M. Naylor, R. Reynolds, &c.

The minutes of the last meeting were duly read and confirmed, after which,

Mr. C. E. Challinor begged leave to nominate as a member of this Association, Mr. T. Stone, M.R.C.V.S., of Walkden, near Manchester.

The *President*, Mr. William Dacre, in making a few remarks, said—Gentlemen, I have no intention this evening of reading you a formal inaugural address, but the occasion of our annual meeting can scarcely be passed over without my rising to thank you most sincerely and heartily for the honour and undeserved compliment you have paid me by my election at your hands to this chair for a second term of office, and I can assure the members of this Association that with their support, and the valuable assistance of my fellow-officers, nothing shall be wanting to render the coming year of work one of interest and pleasure. Looking forward to the interesting paper we are to hear this evening, I hope we may terminate our labours as auspiciously as we are about to commence them.

The doings of our small world are so favorably chronicled in our journals that it becomes a difficult task to speak of anything, on an occasion like the present, that has not already been often brought before you in a better form, nevertheless, I am of opinion that your attention cannot be too often drawn to matters of vital importance to the profession; matters that should be found uppermost in the minds of every member of it.

I would speak, more particularly, of those reforms which we have

loudly, persistently, but fruitlessly demanded in years past. You are all aware that the acquiescence of the Highland and Agricultural Society (to the generally expressed wish of the profession) that they should discontinue the issue of certificates to practice has brought to a happy termination the dissensions that have so long agitated the profession. and cleared the way for the introduction of such measures as will enable the public to distinguish a thoroughly educated and legally qualified person from one who has not undergone the test of examination, and whose presence among us a soi-disant veterinary surgeon was inimical alike to the interests of veterinary practitioners and the public. The time, I think, has now arrived when the profession should be relieved from the odium attaching to the presence in its ranks of charlatans and pretenders. It has been asked why we desire the insertion of a penal clause in our charter, and it has been said, surely the gentlemen now leaving their alma mater and commencing to practise are sufficiently strong in practical and scientific knowledge to compete successfully against quacks, and I would say yes, if that competition was honest; but when you remember the strata of society from which these persons crop out, and the class from which they are recruited, you will find, as a rule, the type of them is an utterly unprincipled individual. You will observe, gentlemen, that I say as a rule, for I have certainly met exceptions in unqualified practitioners who would not have disgraced the profession, and I think it would naturally facilitate the passing of a new Veterinary Medical Bill if some special arrangement could be made on their behalf, and I am sure any legislation having for its object the protection of its interests would be universally acceptable to the profession and conducive to the public good.

Quite recently, I have had some talk on this subject with an influential member of the Veterinary Committee of the Royal Agricultural Society, and he stated to me his intention of bringing this matter to the notice of that board. Some few years ago I introduced the subject to a Member of Parliament, and elicited from him an opinion that the veterinary practitioner had an equal right with the medical practitioner to be protected.

In mentioning these two instances I merely wished to suggest that practitioners having an opportunity of coming into contact with gentlemen of influence would greatly benefit the cause by making a statement to them of what we require.

In our friend, Mr. Geo. Fleming, we have one who has never yet taken up his pen without some substantial good to the profession issuing out of his advocacy, and you will all be pleased to see the manner in which he is handling this subject.

Before concluding these few remarks, may I be allowed to suggest that if we are to have a new Veterinary Medical Bill, a clause might be inserted praying that veterinary surgeons may be exempt from service on juries; this is a privilege enjoyed by the medical profession, and one to which we are equally entitled. And now, gentlemen, I shall close these few remarks by hoping that a discussion may follow that will call forth the opinion of every one present.

The discussion was opened by *Mr. Peter Taylor*, but, in consideration of Dr. Gamgee, it was postponed until the next meeting, and the apprenticeship clause was also added to the list for discussion.

Mr. Wm. Woods begged leave to move at the next meeting an alteration of Rule XVII, with respect to the election of Honorary Associates.

Mr. T. Briggs gave notice that at the next meeting he would move that the meetings of our Society be held oftener.

Presentation of Testimonial to Mr. Samuel Locke by Mr. Thomas Greaves.

Mr. President and Gentlemen,—I rise on this occasion to perform a most pleasing duty, viz. to present Mr. Samuel Locke, our worthy and respected Hon. Secretary, with a "Testimonial," in recognition of his valuable services. I consider it is alike honorable to him and creditable to the good feeling, the spirit, and character of our Association. We have been in existence about twenty years; during those years we have had many worthy and able secretaries, who have performed the duties with credit to themselves and satisfaction of the Association; but none—and I say it without the slightest spirit of invidiousness—have served us so well and so long as Mr. Locke has done. Sir, your constant willingness, your uniform kindness, and urbanity of manner, together with your regularity and efficiency in the performance of your duties, have secured for you the good opinion of your fellow veterinary surgeons, and we feel a desire to show you some mark of our esteem and respect.

The "Testimonial" I have now the great pleasure in presenting you with has been subscribed for by the members of "The Lancashire Veterinary Medical Association," almost unanimously. It is a cabinet with five drawers and folding doors, in mahogany, containing thirty-six table and small knives, thirty-six table and dessert forks, fifty-six table, dessert, tea, egg, salt, and gravy spoons, large and small ladles, carving knife and fork, fish slice and fork, napkin rings, sugar tongs and spoon, knife rests, nut crackers, &c., &c., all of Rogers's best cutlery and the best electro-silver plate, 160 articles in all; every article bears your initial, and on the cabinet is a plate with the following inscription:

> "Presented to Mr. Samuel Locke, M.R.C.V.S., by the Lancashire Veterinary Medical Association, in appreciation of his services during the four years he acted as Hon. Secretary. 1880."

It is considered very handsome, and does great credit to Messrs. W. Batty & Son, silversmiths, Market Street, Manchester. We hope and trust it will meet with your approval, and that you will accept it in the same kind spirit it is given. I feel that I am speaking the heart-felt wish of our President, and every member of this Association, when I say we wish you the enjoyment of good health and every comfort, together with a long and prosperous life; and in this present your children and your children's children, together with all your friends, will see in what respect and esteem you are held by your professional brethren amongst whom you are toiling and living; and even when you are no longer in our midst, this "Testimonial" will perpetuate your memory, the excellence and worth of character we now accord to you with so much pleasure.

Mr. Locke responded in a few words, thanking the President, Mr. Greaves, and all the members, most heartily for their kindly feeling towards him, and for the honour they had conferred on him, in the shape of such a handsome testimonial, assuring all members that he never expected any remuneration for his services, but had accepted the office for the honour of the post, and what he had endeavoured to do was for the success of the Lancashire Veterinary Medical Association and the advancement of the veterinary profession in general.

A. Gamgee, M.D., F.R.S., Professor of Physiology at the Owen's College, Manchester, then delivered the first of two lectures upon the physiology of digestion.

The professor (who was received with great applause) commenced by describing the difference in structure between the so-called mucous and serous salivary glands, and drew attention to the change which occurs in the mucous glands, when these passed from a state of rest into that of activity. The physical and chemical properties of the saliva were discussed at length, and it was shown that the saliva was a liquid which mainly served mechanical ends, seeing that in a large number of animals the liquid is devoid of the starch dissolving ferment called ptyalin.

The various facts connecting the secretion of particular salivary glands with special functions, as deglutition, gustation, mastication, were passed under review, the lecturer pointing out that from them it could certainly be concluded that whilst the parotid gland secretes a saliva specially subservient to mastication, the submaxillary and sublingual glands secrete a liquid specially related to gustation and deglutition. In this division of the subject the doctor discussed the quantities of saliva secreted by the principal domesticated animals on various diets.

The structure of the stomach was then described, the description bearing especially upon that of the horse and dog. The lecturer pointed out that the old view which restricted the functions of the pyloric glands to the secretion of mucus have been shown to be incorrect, the epithelium at the bottom of all the gastric glands being engaged in the preparation of gastric ferment—"pepsine," whilst the large oval so-called peptic cells of the gastric glands proper, of the older writers, are probably concerned in the secretion of hydrochloric acid.

The lecturer then described the properties of the gastric juice, and showed how it acted upon the proteid constituents of food, converting them into peptones. The lecture throughout was fully illustrated by the aid of diagrams and experiments.

In the second lecture Dr. Gamgee proposes to treat of the digestive changes which the food undergoes in its passage through the small and large intestines.

A cordial vote of thanks to Dr. Gamgee, proposed by *Mr. Peter Taylor*, and seconded by *Mr. T. Greaves*, for his most interesting and instructive lecture, was carried by acclamation.

A vote of thanks to the chairman closed the proceedings.

SAM. LOCKE, Hon. Sec.

NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

WE insert the paper on "Tuberculosis," read by Mr. Fleming, at the half-yearly meeting of the members of this Association.

Mr. Fleming, in commencing his paper, pointed out that while medical science is combating, with some degree of success, many diseases which have long been a scourge to mankind, and finds the prospect of complete victory more in the way of prevention than of cure, there are hydra-headed disorders which strain to the utmost the skill and ingenuity of man. To discover the cause of disease is a grand object in medicine, and especially with regard to those maladies whose course is so insidious, rapid, or destructive that all attempts at remedying them are futile. Hence it is that in recent times far more attention has been devoted to the pathology of disease, and particularly to its causation, than formerly. Experimental pathology, a creation of modern days, is destined to play a leading part in all pathological investigation. Helped by the accessory

aids, it has already thrown a flood of light on what was before obscure, while it has revealed most startling facts which were never suspected, and which places it in the power of man to understand the manner in which morbid processes are set up and extended, to avert them, and to remedy their effects. To seek out means of prevention, and to thoroughly investigate the influences which lead to the production and perpetuation of disease, whether in man or beast, is a far higher, nobler, and more satisfactory task than attempting to discover cures; it is the special and sacred duty of the sanitarian, no less than the pathologist. The disease he was about to bring to notice—tuberculosis—though possibly affecting bovine animals for a very long time, has only recently started into prominence, and is receiving great and deserved attention, though not in this country, he feared. For many years his attention had been particularly drawn to the greater frequency of this malady among cattle, and his acquaintance with what was going on in veterinary science on the Continent led him still further to inquire into this progressively extending disease. Fillemin had experimentally demonstrated the inoculability of human tubercle, and Continental veterinarians—notably, Chauvan, Gerlach, and Coleir—aware of the analogy, if not identity, of this tubercle to that found in cattle, instituted not only inoculation, but also feeding experiments with the tuberculous matter, as well as the milk and flesh of tuberculous cows. In 1874 the evidence seemed to be so strong and decisive that he wrote a long paper on the malady, which showed there was great reason to apprehend that, if it could be produced experimentally by feeding animals on the flesh and milk of cattle which had been tuberculous, the same result might occur accidentally in our own species. He also referred to the possibility of the large mortality among infants from what is known as "infantile diarrhœa" being due, at least to some extent, to their receiving the milk of tuberculous cows. In 'Veterinary Sanitary Science and Police' (vol. ii), published in 1875, he also included it as one of the diseases which caused great destruction among the cattle by its infectiousness, and treated it as a malady which, for this reason and also because of the grave risk of injury to mankind, should be made the subject of Government control. Nothing, however, had been done to protect animals or people from the disorder, nor did he suppose there would be, until public pressure was brought to bear on the Government, when the mortality among people from consumption and other morbid conditions due to this cause, has reached an alarming extent. Whatever amount of indifference or absence of knowledge the Government may manifest, it is nevertheless incumbent on the veterinary profession, as guardians of the animal wealth of the country, so far as sanitary science is concerned, and also to some extent of the public health in the matter of food, to not only keep this very serious matter in view, but also to ascertain all they can with regard to it. To what extent the disease prevailed in this country he knew not, neither did he know how information could be obtained. There is no sanitary inspection of dairy stock; our public abattoirs are, he regretted to say, exceedingly few, and he was not aware whether the carcases of all animals killed therein are inspected while being dressed, or what steps are adopted to discover disease in them. The private slaughter-houses afford ample opportunity for killing, dressing, and disposing of diseased animals without observation, and until public abattoirs can be generally instituted, placed under regular sanitary surveillance with regard to the condition of the animals killed in them, and statistics drawn up with respect to the diseases observed, they would have no conception of the extent to which this and other disorders prevail among animals destined

as food for man, especially in our large towns. (Applause.) Mr. Fleming then referred to some statistics collected on the Continent, giving some idea as to the prevalence of tuberculosis, and from which an inference might be drawn as to the state of things in our own country. He mentioned that in 1789, 1791, and 1794, it appears to have been very prevalent in the neighbourhood of Paris; in 1791 it caused much destruction of cattle in the department of la Meurthe; in the departments of the Jura, Doubs, Vosges, and others in France, it has also at various times caused alarming loss; and Hurtrel d'Arboral estimated that one in every eight or ten head of cattle was destroyed in Brie, Beauce, Caux, and other parts of that kingdom, by this so-called "Phthisie-pulmonaire." In Germany the disease is also very prevalent; Wolff asserts that in the County of Leignitz, Saxony, 15 to 20 per cent. of the cattle was affected. At the abattoir of Munich, in 1875, Drechsler found 704 cattle tuberculous out of 55,882 head, those with isolated tubercle not being included. At Mannheim Fuchs discovered that in 1831 cattle, 65 were tuberculous. Zippelius, of Obernburg, about ten years ago commenced an inquiry, and after the most careful observations in a number of district abattoirs up to January 10th, 1873, he estimated the number of cases at 2·50 per 1000 of the bovine population throughout his part of Germany, and he only took notes of those cases which appeared on the registers of the abattoirs as undoubted tuberculosis. As the result of his inquiry he came to the following important conclusions, which were derived from investigations carried on in thirty-six different localities:

1. That bovine tuberculosis is most common in poor localities.
2. That the localities in which the disease is frequent are all situated in valleys, and that it is all the more common as the valleys are narrow and deep.
3. That the mortality caused by tuberculosis is less, all things being equal, in the parts of the narrow and deep valleys where the dwellings are widely separated than in those where they are not so.
4. That the localities situated in elevated plains freely exposed are seldom visited by the malady, even if the cattle are maintained in conditions little favorable to health.
5. That the mortality from this affection is, all other conditions being equal, greater in localities enclosed by walls than in those which are open.
6. That in those places where tuberculosis is most frequent the largest number of tumours about the head are met with.
7. That in the seven localities in the district of Obernburg, where the smallest number of cases is seen, there were 47,981 cows, while in that where they are most common there were 57,083 cows per 1000 head of cattle.
8. That the frequency of tuberculosis in man is in general independent of the use of the flesh or milk of tuberculous cattle; at least, no relation could be established between these two factors, though no restriction is placed upon the consumption of the flesh and milk.
9. That the mortality from tuberculosis in man in the Obernburg district is 3·32; that is, higher than the average mortality from the malady in the other parts of the kingdom (in which it is 2·16); that this malady in man generally depends upon the same local conditions as bovine tuberculosis, though in a less degree; that in none of the localities has the mortality from the disease in man attained the proportions of that in cattle, but that it is more uniformly spread in the different localities. Dr. Hoffmann thinks, and with good reason, says Zippelius, that the

frequency of marriages has a noted influence on the great number of deaths from tuberculosis, occurring amongst the inhabitants of that district.

Mr. Fleming next directed his attention to Bavaria, where all doubt appeared to have been removed that this disease, so common in this country, is identical with phthisis in mankind. If the conclusions arrived at by Gerlach from his feeding experiments—(namely, that the flesh and milk of tuberculous animals must be excluded from human food on principle, since by using it in its raw and half-cooked state, tuberculosis is liable to be reproduced in man)—were carried into practice, and the connection of tuberculosis in cattle with that of the human subject be firmly established, it was felt that the result would be to furnish the sanitary and veterinary police with a very difficult task, as well as involving serious loss and injury to the agricultural interest. Gerlach's views, however, were so far at variance with the German veterinarians, but his experiments relative to the transmissibility of tuberculosis to man, although no doubt worthy of great attention, could not yet be regarded as thoroughly conclusive. From statistics collected, it appeared that in 1877 there were 4976 cases of tuberculois reported, as follows:—Upper Bavaria, 1557; Lower Bavaria, 395; Pfalz, 502; Upper Pfalz, 425; Upper Franconia, 270; Middle Franconia, 227; Lower Franconia, 447; and Swabia, 1096. Upper Bavaria and Swabia had more cases (2663) than all the other counties (2323) in Bavaria. Touching upon some of the results of the inquiry in that country, Mr. Fleming stated that the hereditary tendency of the disorder appears to be established in nearly all the reports. In-and-in breeding was a cause assigned in a number of the reports, and in others the consorting of the sexes and the abundant secretion of milk. The general result goes to show that 5·84 out of every 1000 cattle in Bavaria are affected with tuberculosis. In Italy, Holland, Switzerland, and other temperate countries, Mr. Fleming proceeded to remark that tuberculosis makes more or less havoc among bovines; and in Australia, New Zealand, Mexico, and America-States and Canada, it is well known. Strange to say, it does not appear to be a disease of cold climates. There is good reason for thinking that it exists as widely and generally in England as in any other country. Our dairy stock are probably largely infected, and among high-bred cattle it is not only prevalent, but from what he could learn, it is on the increase. Assuming the disease to be as common in this country as in Bavaria, we may reckon 5 per cent. of our bovines as infected. With regard to the pathology of bovine tuberculosis, it seems now to be admitted by all those authorities who are most competent to give an opinion, that it bears the closest analogy to, if it is not absolutely identical with, human tuberculosis: the majority incline to the latter opinion, and anatomically, clinically, and experimentally, as well as etiologically, they must be looked upon as the same. The malady has scarcely been studied in this country, but it has long been known by various local names amongst farmers, farriers, and butchers, while its external manifestations have been looked upon as something akin to scrofula by those veterinarians who have recognised it. Mr. Fleming, fortifying himself by the opinion of eminent authorities, entered into a full pathological description of the disease, observing specially that the lymphatic glands appear to be the peculiar seat of miliary tubercles—a tendency which affords a good aid to diagnosing the presence of the disease in a living animal. Such organs as the lungs and liver sometimes attain great dimensions by the tubercular infiltration, while their density is immensely increased. Mucous, in addition to the serous membranes—the brain, uterus, testicles, kid-

neys, ovaries, heart, &c.—are all liable to be infiltrated with malignant tuberculous formations. As to the frequency of the disease in various tissues and organs, Adam found in 109 bovines the lungs and serous membranes chiefly involved; in 117 the lungs solely affected, and in 28 the serous membranes alone. In all the tuberculous cattle there was more or less affection of the bronchial glands, which were greatly enlarged from the presence of tubercle, and in 60 animals the liver was infected with these formations, while in some instances a number of tubercles were found in the tongue and the udder. They have been found by others in the mucous membrane of the roof of the vagina, and their presence there, as well as in the udder, has been considered useful from a diagnostic point of view. Tuberculosis, then, said Mr. Fleming, in continuation, is an infective disease, and appears to be almost peculiar among the lower animals to the bovine species; it is very rarely seen in the sheep and goat; it is as rare in the horse; in the pig it has been observed, and particularly as the termination of scrofula, with which it is identified; in carnivora it is very infrequent. With regard to the etiology of tuberculosis; very many of the causes which have been supposed to operate in its production do not bear any relation to it, except as predisposing causes of those which facilitate the transmission of its virulent principles. Over-crowding, mal-hygiene, and poverty, are predisposing causes, while they hurry the course of the malady when it is developed. The same may be said of damp and cold, and it may be mentioned that while it prevails in warm and dry as well as cold and damp situations, it is rarely observed in the steppes of Russia and Siberia. Hyper-lactation has been blamed, chiefly, he thought, because milch cows are often affected; but it must be remembered there are two or three times more milch cows than males, so that the latter are probably as much affected as the former. It must not be forgotten, also, that cows are kept alive a longer time than bullocks or bulls, and are, besides, more exposed to infection by cohabitation. Food of different kinds or qualities will not produce the disease, neither will any other antecedent malady. Suppurative diseases, or accidents, are far more common in the horse than in the bovine species, and yet the existence of tuberculosis is scarcely ever noted in the former. The malady is also said to complicate certain diseases, such as pleurisy, pneumonia, bronchitis, catarrh, &c., but they have no relationship to it, and when they are present are only evidence of the disease itself which has produced them. The disease is looked upon as hereditary, and there are strong points which bear in favour of this view; it is certainly a transmissible malady from mother to fœtus. The question of heredity, except entailing predisposition to the disease, is not, however, easily solved, for its transmission by infection only too often complicates the inquiry. Mr. Fleming now came to the, perhaps, most important part of the paper—the infectiousness or contagiousness of tuberculosis. This unfortunate property of this serious disorder had only recently been demonstrated. From the facts before them there is reason to think that, like glanders, which it so much resembles in many points, the disease may, in exceptional circumstances, be conveyed by the breath from diseased to healthy animals. To a certain extent the truth of this has been experimentally demonstrated by Tappoinier, who produced the disease by causing small animals to inhale the dried sputa of phthisical people. On many occasions it has been noted that there was a strange persistency of tuberculosis in certain cattle sheds, which, so far as hygiene was concerned, left little to be desired; while in other sheds, under far less favorable health conditions, but into which the disease

had not been introduced, the cows remained free from it. Haushalter has noticed that when young animals are placed near diseased ones, they readily become infected. The infectiousness of phthisis in mankind, long suspected, is now asserted by high medical authorities. As to the inoculability of the disease, there are now hundreds of positive experiments to prove it. It has been shown in an undeniable manner that, like glanders, tuberculosis can be produced in healthy animals by inoculating them with tuberculous matter from man or other creatures. Transmission can be effected, not only by the tuberculous matter, but also by the bronchial secretions and the blood, the same as the most characteristic virulent maladies, such as glanders. The disease can be produced through the intact mucous membranes—as that of the digestive canal, and this renders this particular disease all the more formidable. Many experimenters (as he had showed) had produced the disease by feeding animals with the human or bovine tubercle, and the flesh and milk of tuberculous animals. The alterations produced were sometimes slight, in others quite startling, and rarely were they negative. Only the other day, he received an account of some most interesting experiments performed by Böllinger, of Munich, on swine, goats, monkeys, and guinea-pigs, with the milk from tuberculous cows. In one instance, three pigs six weeks old were fed with the milk of a cow whose lungs were recognised to be tuberculous, and at whose autopsy these organs were found to be affected with caseous pneumonia, and there was also tuberculosis of the pleura, and bronchial, mediastinal, and mesenteric glands, as well as the uterus. The pigs died early in the experiment, unfortunately, and only in one were the laryngeal lymphatic glands enlarged and softened. In another instance milk was obtained from a cow which, after death, showed tuberculosis of the liver, peritoneum, ovaries, thoracic and abdominal glands, and pleura, with cheesy deposits in the lungs; this milk was given for about ten weeks to four healthy three-weeks old swine, uncooked, and from $1\frac{1}{2}$ to 3 litres daily. During this period the throat glands were observed to enlarge; when from four to five months old they were killed, and found in advanced tuberculosis; more especially were the lungs, liver, and spleen affected, while the throat, bronchial, epigastric, and portal glands were extremely swollen and cheesy. In two of the swine there were small caseous folicular ulcers in the ileum. Controlled swine (same litter, but fed on other food) were healthy. A young pig, fed for fourteen days longer with milk from the same cow, gradually wasted and died, when $3\frac{1}{2}$ months old—three weeks after the termination of this feeding. The autopsy revealed more especially caseous inflammation of the large intestine, an exquisite miliary tuberculosis of the lungs, with great enlargement and caseification of the bronchial glands. In another instance, six pigs of the same litter, from a healthy sow, were experimented upon, four being fed with this cow's milk also, two with uncooked milk, two with cooked, and the other two were kept as controlled animals. After five months the controlled animals were killed, and found to be healthy; those fed with the cooked milk when also killed were affected with severe generalised tuberculosis; while of those fed with uncooked milk, one that died showed caseous (scrofulous) enteritis, and the second, very unwell, was still alive. From these experiments, confirmed by an account of accidental infection of pigs recorded in Walley's work, it would appear that, in swine, scrofula is first developed by the milk, then tuberculosis—the one being only an advanced stage of the other. These startling facts of transmission account for the increasing increase of the disease. Young animals reared upon the milk of tuber-

culous cows will receive the infection, and develop the malady, after a long or short interval, according to circumstances. This impresses the necessity for not breeding from animals tainted with the disease, nor allowing them to suckle young animals, if they are bred from—neither should their milk be given for consumption to any creature; they ought to be killed, and if not much infected certain portions of their flesh allowed for consumption. The dwellings they inhabited should be treated as infected places, and cleansed and disinfected. Very serious risk mankind incur through using the flesh and milk of infected animals. When animals are in good condition, the tubercles localised, and the lymphatic glands not generally involved, then the flesh may be allowed to be used for consumption; but when there is generalised tuberculosis, or even an advanced stage of the disease in any important organs, it should not be consumed as food. More particularly should this be observed when there is emaciation. In any other disease the flesh of emaciated animals is innutritious; in this it is so, and virulent as well. With regard to the milk, this should invariably be condemned as highly dangerous. All dairy stock should be carefully and regularly inspected by thoroughly competent veterinarians, with a view to discovering the earliest indications of the disease, and so preserve not only the lives of animals in contact with them, but also those of the people who consume their milk; for, judging from the close relationship between the pig and mankind, physiologically and anatomically speaking, there cannotbe a doubt that our own species would be as readily affected as the porcine. The conclusions to be drawn from the facts contained in the paper Mr. Fleming left to the consideration of the Association, but of their importance to his mind there could be but one opinion.

Mr. Fleming, in the course of reading his paper, was frequently applauded.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held in the Douglas Hotel, Newcastle-on-Tyne, on Friday, February 25th, 1880.

The President, Mr. D. Dudgeon, Sunderland, in the chair. There were also present, Messrs. H. Hunter, A. Hunter, C. Stephenson, G. Elphick, Newcastle-on-Tyne; J. Gofton, North Shields; F. Niobet, Fence Houses; W. J. Mulvey, Bishop Auckland; M. Hedley, Darlington; and the Secretary.

Mr. W. O. Williams was present as a visitor.

Apologies were received from Prof. Williams, Messrs. W. Awde and J. Malcolm.

Letters were read from the Secretaries of the Liverpool and Lancashire Veterinary Medical Association, with regard to representatives on the Council of the Royal College of Veterinary Surgeons; after considerable discussion it was agreed that the members of this Association, while approving of the re-election of the six retiring members, do not individually bind themselves to vote for each.

Interesting cases were related by Messrs. Hedley, Mulvey, and Niobet, and after remarks on them from several of the members, the discussion on Mr. Mulvey's paper ("Injuries to the Coronet and Feet") was

resumed, each member relating a case on the above subject, a very varied and profitable discussion followed.

The office-bearers for the ensuing year were elected, viz.: Mr. D. Dudgeon, President; Mr. W. F. Mulvey and Mr. H. Hunter, Vice-presidents; Mr. G. R. Dudgeon, Secretary and Treasurer.

A committee being elected to arrange for the annual meeting and dinner, to be held on the 28th May, at which Prof. Pritchard will read a paper on "Some of the Contagious Diseases affecting Cart-horses," the meeting terminated.

G. R. DUDGEON,
Hon. Sec.

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

THE annual general meeting of this Association was held in the London Hotel, Edinburgh, on Wednesday, the 11th February. Mr. Connochie, M.R.C.V.S., Selkirk, President for the current year, occupied the chair, and there was a fair attendance of members.

The *Secretary* submitted a report as to the state of the Society's funds and membership, which was adopted. Some discussion took place concerning advisability of taking united action at the next election of members to the Council of the Royal College of Veterinary Surgeons. Ultimately it was agreed that the Association should take no action in the matter.

Mr. Rutherford, Edinburgh, described a case of puncture of the bowel for tympany, successfully performed on a half-bred harness horse. Mr. Rutherford also mentioned some cases of dumb rabies, which had recently come under his notice.

The *Secretary* stated that he was quite prepared to hear of an outbreak of rabies in Edinburgh, as some time previously a dog, affected with the malady had been brought to the Veterinary College, and it was stated by the owner that it had bitten a great number of dogs.

The *President* then proceeded to deliver his inaugural address as follows:

Gentlemen, on taking the chair on this occasion, I beg to thank you for electing me President of this Association for the year, and to assure you all how highly I appreciate the honour you have conferred upon me. I earnestly hope that the Association may have no retrogressive movement during my term of office. In taking a retrospect of the history of the Association since its inauguration, it cannot but be a source of regret to every member that so little real good work has been accomplished, and that so few of our surrounding professional brethren have seen their way to join us. I frankly admit that circumstances have prevented me from being so regular in attendance at the meetings lately. This I have always regretted, because I can assure you that every meeting I have attended I have been amply repaid for any loss of time or any trouble I may have been put to. But living at a distance between forty and fifty miles from Edinburgh, and having professional work to attend to, it is absolutely impossible to attend every meeting. We have all been somewhat remiss in this respect. Let us resolve that this shall be so no longer. But by more regular attendance at the meetings, by inducing others to join us, and by recording cases of interest, we may make the Association second to none in the kingdom, and worthy of the name of the Scottish Metro-

politan Veterinary Medical Association. In making choice of a subject on which to make a few remarks on the occasion of my occupying the chair for the first time, and which might be of interest to the members, I have fixed upon the disease termed rheumatism. I have been influenced in choosing this subject from the fact of it having occurred more frequently in course of practice, and also because I have had rather painful experience of it myself, having suffered from it, both in its acute and chronic form, since the beginning of November last.

The word rheumatism is of Greek derivation, meaning to flow, or a fluxion; it belongs to the humeral school of pathology, and is a specific constitutional disease, supposed by some to be due to excess of lactic acid in the blood. Rheumatism has engaged the attention of many eminent men in the medical profession from a very remote period; but it is only of comparatively recent date that it has been taken notice of by any author in veterinary science; in fact, it is denied by some that it ever exists as a disease among our domestic animals. Those veterinary surgeons who have been for any length of time in practice without meeting cases of rheumatic disease in all its forms, must be very highly favoured. Truly their "lines have fallen in pleasant places." As it is one of those diseases upon which climatic changes exerts a powerful influence, it follows as a sequence that it will be of greater prevalence in some districts than in others. Yet I doubt much if there is any district, in this country at least, that is altogether exempted. I may here mention that cases of it occurring in my practice among horses are very largely on the increase. I attribute this to the indiscriminate denuding of horses of their natural covering, at all times and seasons, since the introduction of horse-clipping machines. I am of opinion that, as a rule, no horse should be clipped between the 1st of December and the 1st of April.

Since the fact became known that the fibro-serous structures of the heart are so liable to become affected by rheumatism in the acute form, causing such structural change and functional derangement, the study of the disease, as to its nature, has received very much additional importance. And this is not to be wondered at, when it is considered that it is upon the structural soundness and healthy action of this vital organ that the existence and usefulness of the horse depends. Rheumatism is a disease which affects all the fibro-serous textures of the system, and is met with in two forms, which are distinguished as the *acute* and the *chronic*. The first symptom of the acute form is awkward gait, with unwillingness to move, generally accompanied with shivering and staring coat. At this time the pulse may be natural, but frequently languid, with little or no alteration of temperature. By-and-by the pulse quickens, the respirations become accelerated, and the temperature rises to 104° or 105°. I have met with a case when it rose to 107°. The animal will now assume a position very characteristic of this disease—viz., one fore-leg pointed, and one hind one knuckled over at the fetlock joint. In the neighbourhood of the joints will now be observed hot, puffy swellings; and the tendinous part of the muscles in the region of the afflicted joint can be traced to the muscular structure. The joints most liable to become affected in animals are the knees, fetlock, hocks, and stifle joints. It is seldom that we meet with all these affected at the same time; but it will be noticed if one hock or stifle becomes affected, the corresponding joint on the opposite side will soon show signs of being implicated; and, in proportion to the extent and tensity of the swellings, will be evinced the degree of pain the animal is suffering.

The pain is seen to be excruciating on the slightest handling or movement of the affected part. The pulse at this stage is hard and full, and the temperature about 103° or 104°. There is also profuse perspiration, which has not the effect of relieving pain or reducing fever. The bowels are generally constipated, and the urinary organs are in a very torpid or inactive condition. If the urine is collected and allowed to stand for a time, though clear or straw coloured at first, it will be found when cold to have deposited a dirty red-coloured sediment; and the vapours given off from both urine and perspiration will have the same pungent and disagreeable odour. From the first, the horse shows great aversion to assume the recumbent position, but remains standing still until he falls from sheer muscular debility; and, when once down, can never get on to his feet again until assisted. There is this difference to be observed in the course of the disease in different animals, that horses will remain standing as long as possible, when cows or cattle generally take the ground from the first, and cannot by any means be made to assume the standing position. The appearance of the effusions vary according to their situation, but they never take on the suppurative process. The joints of cattle have been observed to suppurate and slough, but this is due to the parts becoming bruised by their continual lying upon them.

Such are some of the appearances presented by animals suffering from acute rheumatism in the external parts. But, as previously mentioned, the heart is very liable to become affected, and, when it is so, presents a group of symptoms peculiarly its own, although they may escape observation until considerable effusion and alteration of structure has taken place in the textures of the heart; and it is only by close watching and auscultation that you become aware of their existence. That the heart has become affected is shown by the animal evincing pain when percussion is applied to, and the intercostal space is pressed upon or near the side. There is also great difficulty of breathing and palpitation when the animal makes the slightest movement. On auscultating the chest, at the commencement of the disease, the regularity of the heart's action may be little altered; but the sounds proceeding from it will become abnormal, and will vary according as the pericardium or the lining membrane of the heart is the seat of the disease. When the endocardium is affected, the hard friction sound continues to the last; but when the pericardium is the seat of the disease, and especially when the disease has made considerable advancement, the sound becomes soft, muffled, or bellows-like. This is due to the effusion and the bands of lymph which are found in the pericardium. It is of importance to distinguish between endocarditis and pericarditis, because I am of opinion that when an animal becomes affected with endocarditis there is such alteration of the lining membrane and valvular structures, causing obstructions to the circulation, that it is impossible that the animal can ever recover to be of any use; whilst, when the disease is confined to the pericardium, there may be considerable effusion and formation of bands of lymph that may terminate in adhesion, and leave the action of the heart very slightly impeded. I have had opportunity of making *post-mortem* examination on three animals that had died from acute rheumatism—viz., one four-year-old gelding and two foals. In the four-year-old, which died on the eighth day from the commencement of the attack, besides the external effusions I found the heart enormously enlarged, and the pericardium distended with lymph mixed with a large quantity of gritty material. On cutting into the substance of the heart I found the lining membrane of the ventricle and auricular ventricular

opening completely studded over with this same gritty material. With the exception of slight symptoms of inflammation of the pleural surface of the near side, all the other organs appeared healthy. I may here mention that this animal had suffered great pain for six days. I saw him every day for seven days, at which time he seemed to be greatly relieved; and I informed the owner that I thought him so much better that I would not require to see him so often. Judge of my surprise when, the following morning, I received a message to say that the horse had died very suddenly, after being seized with a fit of coughing. The appearances presented on opening the chest of the two foals were very similar; but the effusion and deposit of granular matter were entirely confined to the pericardium.

Causes.—May be defined to be predisposing and exciting. The predisposing cause is hereditary tendency. The only exciting cause that I am aware of is cold, which acts with powerful effect when an animal is exposed to currents of cold air when in a heated or perspiring state.

Treatment.—Notwithstanding the claims set up for the preparations of salicine, as a specific for rheumatism, especially in its acute form, I think I may safely assert that, as yet, there is no single remedy known which has the power of cutting short the course of its duration. It really does seem strange, that if the half that is said of its efficacy be true, that there should continue to be a single sufferer from it. Dr. William Squire, in a paper read before the Harveian Society, Nov. 20th, 1879, and reported in the *Lancet* of Dec. 20th, gives details of eight cures of acute rheumatism treated by salicylates, and gives the astonishing result of relief in less than two days, and all convalescent in ten. My own case showed a result very different. I was treated by the same system under very favorable circumstances. My medical attendant, or his assistant, saw me at least twice a day. So soon as the doctor pronounced my disease to be acute rheumatism, he prescribed salicylate of soda and aconite, to be taken every fifteen minutes. I continued to take this until my lips prickled and became so swollen that I could scarcely open my mouth, when the aconite was stopped, and salicylate of soda continued to be taken every two, and then every four, hours. This was continued till the singing in my ears became intolerable, and my head got into such a state that I was not sure if I had a head on my shoulders. During all this time there was no abatement of a single symptom, no relief from pain, no slowing of the pulse or lowering of the temperature. The pulse ranged from 92 to 98, and the temperature from 102 to 104 degs., until the seventh day, when, there being no mitigation of of the affection, the doctor consented to the discontinuance of the acid. But the singing in my ears and peculiar sensations in my head continued for other ten days after everything that medical attention and skill could devise. I am here to-day, after fourteen weeks, only very partially recovered. Gentlemen, I feel that I have trespassed on your time in making these details regarding myself; but I think they go to prove that the treatment of rheumatism by the salicylates is not the infallible remedy that its advocates would lead us to believe. I have tried it somewhat extensively in the treatment of cases of rheumatism, both in the acute and chronic form, without noticing any well-marked benefit. It most undoubtedly possesses the power of lowering the temperature, and thereby reducing fever; but I do not think that its repute as an alleviator of pain has been clearly established. The subject is worthy of further trial and study. Better results may be obtained when more is known of the drug, as to its properties, proper dose, and best mode of administration.

The objects we have to keep in view in the treatment of rheumatism are to relieve pain, the prevention of the spread of the local affections, thereby lessening the chances of their extending to the heart; to subdue inflammation and lessen the amount of inflammatory products within the system, and by direct applications to affected joints prevent it from continuing in a chronic form. The system of treatment that is most likely to accomplish this is, when the case is seen early and the fever is high, bleed moderately; and as the bowels are, as a rule, inactive, give a dose of physic along with ʒj of Pulv. Opii., following up with ʒj Nit. Potass and 10 drops Fleming's tincture of aconite, three times daily, in a little cold water; this the animal will take freely, as the thirst is generally great. As a reliever of pain I set great value upon the hypodermic injections of morphia, repeated at intervals of six or eight hours; administered in this form they are not so likely to set up their constitutional effects. The nitrate of potass should be persistently given, even when the kidneys seem to be acting inordinately, as it is now well known to possess the property of preventing the separation of fibrine from the blood; therefore it is inferred that it lessens the tendency to fibrinous exudation. With regard to the external treatment of affected parts, the application of hot fomentations, and, when applicable, enrolling in flannel bandages, generally affords relief; but when it fails to do so, I have seen great benefit derived from the application, over and around the inflamed part, of a blister, and when the blister has acted, a rubbing in of a liniment, composed of aconite, belladonna, tinct. opii., and a little soda carbonate, three times daily. When any of the symptoms of cardiac disease arise, they are best combated by hot fomentations to the side, the application of blisters, and the rubbing in of the above liniment, with the internal administration of potass iodide and potass nitrate alternately.

Chronic rheumatism is very often the sequel of the acute form; but it often comes on independently of any previous attack, and I believe is much more frequently an attack of influenza. It is distinguished from the acute form by the absence of constitutional disturbance, and less heat and swelling in the affected parts. There are some cases which show much stiffness and lameness in certain joints, where no heat is to be felt nor swelling seen, and which prove very tedious and annoying to the practitioner, and often baffle the best directed treatment. In fact, they are the *approbrium medicorium* of our art. Examples of chronic rheumatism are met with in important joints, such as the navicular fetlocks, knees, stifles, and hocks. It is also observed in the tendinous parts of the muscles on different parts of the body, and there is a form of it worthy of notice, which, when it seizes upon the intercostal muscles, it stimulates an attack of pleurisy, but which may be distinguished from it by the absence of fever and cough, and other symptoms peculiar to pleurisy. Chronic rheumatism, like the acute form, almost always arises from exposure to cold. When there is much effusion and enlargement of joints, the repeated application of blisters composed of equal parts of cantharides and biniodide of mercury is the most efficacious treatment; and where there is much pain, the rubbing into the blistered surface the previously mentioned liniment. As this form of rheumatism also depends upon a vitiated condition of the blood, nitrate of potass, sulphur, arsenic, or iodide of potassium, should be administered internally. The medicine that I have myself received the most benefit from is a decoction of sarsaparilla and iodide of potassium. As I said before, there is no remedy yet known that can claim to be a specific for rheumatism in any of its forms. There is a rich field open for those who have the

time and inclination to investigate the subject. There is the disease; discover an antidote; and you will deserve and receive the blessings of those of your fellows who have been its victims. You will have the satisfaction of having freed from suffering those animals who are the "humbler partners of the mortal pilgrimage." (Applause.)

The discussion of this paper was adjourned.

At the Annual Dinner, held after the business meeting, the *Chairman* (Mr. Connochie), in proposing the toast of "The Association," referred to the arrangement come to between the Royal College and the Highland Society, from which good results were expected. He thought it was now likely that there would be an application to Parliament for a penal clause to protect the interests of their profession from the operations of quacks who assumed the title of V.S. (Hear, hear.)

On the motion of *Principal Walley*, the members drank in silence the toast of "The late Mr. Steel," who was one of the Highland Society's examiners, and the father of the profession in Scotland. After a number of other toasts, the proceedings terminated.

JOHN MCFADYEAN, *Secretary*.

MONTREAL VETERINARY MEDICAL ASSOCIATION.

THE usual fortnightly meeting, held on Thursday evening, Feb. 5th, was unusually interesting. The chair was occupied by Professor McEachran. Mr. Henry Quimby, of Rochester, N.Y., was elected, and Mr. Andrew Metcalf, Hudson, was proposed for membership.

The first paper was read by *Mr. Richard Price*, "On the death of a horse caused by the too free application of coal oil."

Mr. A. W. Harris, Ottawa, read a very interesting paper "On Glanders," in which its contagious nature, incurable character,and communicability from the horse to other animals, cattle excepted, were explained. He also pointed out that not only animals, but men, became inoculated; hence this was a disease which claimed the attention not only of veterinarians, as such, but sanitarians and philanthropists should see that this disease was properly dealt with by the authorities, and wherever it occurs the animals should, after proper examination by competent persons, be destroyed. He pointed out the different diseases which might be mistaken for glanders, and urged his fellow-students to study the disease carefully, as mistakes sometimes occurred by the disease not being recognised, and serious losses entailed by the blunder.

A most interesting discussion ensued, which elicited valuable information.

The *Chairman* being asked what the law of Canada was with regard to this disease, replied that this disease, being a contagious one, was included in the provisions of the "Act to provide against infectious or contagious diseases affecting animals," May 15th, 1879, in which section 2 provides that all such diseases be at once reported to the Minister of Agriculture; and in case of malicious or fraudulent concealment of the existence of such disease, the person so acting is liable to a fine of two hundred dollars.

No. 3 provides that if any person keep or graze any animal known by him to be infected by such a disease, in or upon any forest, wood, moor,

beach, marsh, common, waste land, open field, or roadside, is liable, on conviction, to a fine of two hundred dollars.

No. 4 provides that any person bringing, or attempting to bring, into any market, fair, or other place, any animal known by him to be infected or labouring under such an infectious or contagious disorder, shall, on conviction thereof, forfeit and pay for any such offence a sum not exceeding two hundred dollars.

It will thus be seen that ample provision is made for suppressing and stamping out such diseases.

After the close of the discussion, the following important resolutions were unanimously passed:

Resolved, "That this Association has learned with pleasure that it is intended by the Council of Agriculture to apply to Parliament during the coming session for a bill for the protection of the veterinary profession in this Province, and that it is the unanimous opinion of this Association that such a bill is much needed, and will be the means not only of raising the status of the profession, but will prevent much suffering and injury to animals from the ignorant and cruel practices of quackery."

Resolved, "That this Association recognises the necessity for some steps being taken to form a Dominion Association, so that as a united body, yearly or half-yearly meetings could be held, at which questions relating to the general interests of the profession could be discussed, and further, that in the opinion of this Association the present disunited condition of the profession and the want of a Dominion Association is injurious to it, and not only lessens its influence, but retards its progress."

Resolved, "That circulars be issued by this Association to members of the profession in the several Provinces, asking them to co-operate in the formation of such an Association, and a meeting be called at the City of Ottawa, at as early a date as will suit the convenience of the majority."

After votes of thanks being passed to the essayists, the meeting adjourned.

At next meeting Mr. Brown and Mr. Baker will read papers.

The Association held its regular fortnightly meeting on Thursday evening, Feb. 19th, the Honorary President, Mr. McEachran, F.R.C.V.S., occupying the chair. After the usual business, the Chairman presented to the library on behalf of the author a treatise on 'Laminitis,' by Dr. A. Holcolmb, of the New York Veterinary College. It was moved by Mr. B. D. Prince and seconded by Mr. Wm. McEachran, the thanks of the association be tendered to that gentleman for his kind donation. Carried.

Mr. Fred. Torrance, student, Montreal, described a case of variola equina, which is at present raging extensively among the horses in this city and neighbourhood. Mr. Torrance in connection with his case gave some interesting facts concerning the disease, which by some is considered to be the smallpox of man communicated to the horse. Others again say that it has no relation whatever to that scourge. It is to be hoped that Mr. Torrance will allow his paper to be published in the 'American Veterinary Review,' as this disease, which of late years has become quite common in this country, has not received the notice it should from veterinary writers.

Mr. N. P. Hinkley, Buffalo, N. Y., read a paper on Hygiene, or care of horses in health and disease. He pointed out the absolute necessity of

providing horses with light and well-ventilated, and, at the same time, warm stables; for stables in which too many horses were confined, if they did not actually produce disease, affected the usefulness and beauty, as well as the comfort of the animal. He remarked that no positive rule could be laid down as to the quantity of food a horse should receive, but the quality should be the very best; no forage either musty or dusty ought ever to be given, as it would be liable to produce disease either of the respiratory or digestive organs; water should always be given before feeding; if given after, it might set up colic or enteritis; a good clean bed, good and careful grooming, were necessary not only for look, but also for the health of animals. If attention to these rules was necessary in health, it was much more so in disease, and it was the veterinary surgeon's duty to be thoroughly acquainted with hygiene, and to understand therapeutics.

Mr. Wm. McEachran read a communication received from Dr. C. C. Lyford, Racine, which was very interesting. It was a case of epithelioma in the nasal cavity of a horse. At the next meeting Mr. P. Cummings will read a paper on "Auscultation" and Mr. Wm. Jakeman will describe a case.

After a vote of thanks to essayists and Dr. Lyford, the meeting adjourned.

ONTARIO VETERINARY MEDICAL ASSOCIATION.

This Association was established in Toronto in September, 1874, and has been steadily increasing in the number of its members and the interesting character of its meetings. The Province of Ontario, owing to the success of its veterinary college, through the energy and perseverance of its principal, Professor Smith, is now pretty well supplied with qualified veterinary surgeons; in fact, the old class of practitioners is fast dying out. At the last session of the Provincial Legislature an Act to incorporate the Association was passed, several clauses in which cannot but be beneficial to practitioners, the clause requiring registration especially so.—Any person falsely representing himself to be registered being liable to a heavy fine. There was an Act, before in existence, which is still in force, making it a finable offence for any person to usurp the title of veterinary surgeon, unless he be a graduate of some recognised college.

The annual meeting was held in the Veterinary College, Toronto, as usual, on December 19th, 1879.

Professor Smith, the President, opened the meeting by a short address, congratulating the members on the continued interest they took in the meetings of the Association.

The minutes of the previous meeting in April were read and confirmed.

Secretary and Treasurer's reports were read and adopted, showing a continuous increase in membership, also that the finances, notwithstanding the outlay incurred lately in procuring the Act of Incorporation, was in a favorable state, there being still funds in hand.

Communications were then read, amongst which were letters from the departments of agriculture of the United States and Canada, in reply to communications respecting the spread of contagious diseases of cattle.

A paper on castration was read, with the view of eliciting the opinions

and the experience of practitioners on the different methods adopted in performing that operation. On this a lengthened and animated discussion ensued, the actual cautery, torsion, the clams, both with and without the caustic, and the écraseur, having each strenuous advocates, the majority appearing to favour the caustic clam. At the close of the debate Professor Smith remarked he had performed the operation by all the methods mentioned, and would advise all who were successful in their own method not to change; but he believed that ultimately the écraseur would be the instrument that would come into general use.

Mr. Rutherford related a case of tetanus, and the great benefit derived from the administration of bromide of potassium, believing it to produce anæmia of the cerebro-spinal system.

Mr. Grange related a case of tetanus in the cow yielding to treatment by belladonna; he also related an exceedingly urgent case of flatulent colic, and the immediate relief and ultimate recovery resulting from puncturing.

Mr. Gibb and *Mr. Rutherford* had also been successful with that operation.

Mr. Grange exhibited a plaster-of-paris splint which he had used in a fracture of the radius; the animal made a good recovery. He uses cheese-cloth, putting the plaster on dry, first baking it, he then rolls it up and dips it in water in which a little alum is dissolved.

Mr. Cæsar and *Mr. Gibb* had also used the plaster-of-paris bandage with advantage.

Moved by *Mr. Cæsar*, seconded by *Mr. Neal* and carried, "That the sum of $25 be appropriated for a gold medal, to be competed for by the students of the Ontario Veterinary College at the next spring examinations."

The election of officers for the ensuing year resulted as follows:

Mr. Wilson, of London, *President*. Mr. J. S. Cæsar, Cobourg, *first Vice-President*. Mr. C. Elliot, St. Catharine's, *second Vice-President*. Mr. Sweetapple, Brooklyn, *Secretary*. Mr. Cowan Salt, *Treasurer*. *Directors*—Messrs. Coleman, Duncan, Neal, Grange, Anderson, Standish, Rutherford, and Newton. Professor Smith was unanimously elected an honorary director.

Prof. Smith, on retiring from the chair, warmly thanked the members for his many re-elections. We had had many pleasant reunions, and from the continuous interest taken in the Association he trusted and believed there were many more still before us.

ONTARIO VETERINARY COLLEGE.

THE STUDENTS' ANNUAL DINNER.

Published by special request.

THE annual dinner of the students of the Ontario Veterinary College took place at the Walker House recently, and, as usual, the reunion was in every respect a gratifying success.

Mr. G. Dunphy occupied the chair, and Messrs. Douglas and Whitehead discharged the duties of vice-chairmen. Among the gentlemen present were the President of the College, Dr. Smith, Prof. Buckland, Rev. Mr. Campbell, Drs. Thornburn, Duncan, May, Oldright, Riddle, and Bull, Ald. Close, Messrs. W. B. Hamilton, J. J. Withrow, McGee, W. Rennie, Christie, Doel, Craig, John Ritchie, and John Laidlaw.

After the repast, which was fully in keeping with the well-known

character of the Walker House, the Secretary, *Mr. B. D. Way*, read several letters of apology for their inability to attend.

The *Chairman* then called upon the company to fill their glasses—with Adam's ale—and drink to the health and long life of our gracious Queen (God Save the Queen by the band and company). The other standard toasts were given and duly honoured; after which the health of the President of the United States was given and drank with all the honours.

Mr. Severcool, of Ohio, responded in a neat speech.

The health of the Lieut.-Governor of Ontario was responded to by *Prof. Buckland*, who regretted the absence from the festive board of the members of the Ontario Government, but excused them on account of the meeting of the Legislature, the business of which occupied their time. He might be permitted to state, however, as a humble member of the Administration, that he was very glad to observe the success which had attended the College since its establishment, and he hoped it would go on and prosper.

The toast of the "Army, Navy and Reserves," was responded to in a happy speech by *Surgeon-Major Thorburn.*

Mr. E. P. Westell proposed "Success to the Ontario Veterinary College and Society." (Cheers.)

Dr. Smith, the President, on rising to reply, was received with cheers, and replied in pleasing terms. He reviewed the history of the Veterinary College and alluded to the beneficial results to the agricultural community, by the progress of veterinary science in this country. He alluded in pleasing terms to the encouragement given the College by his esteemed friend and colleague, Prof. Buckland, and also to Dr. Thorburn, Dr. Barratt, Dr. Oldright, and Dr. Duncan. He was glad to be able to say that the College has received students from the most remote parts of the Dominion, and also from New York, Ohio, Pennyslvania, Michigan, Illinois, and even from far-off Alabama. He felt it his duty to thank the Ontario Government for the assistance granted four years ago to the College, and he might say that no objection would be made to a repetition of the kindness (laughter). He thanked the students and friends for the opportunity to address them that evening, and hoped the kindly feeling which existed between himself and his students would long continue.

Speeches of an interesting character were subsequently delivered by Dr. Duncan, Dr. Oldright, Mr. Whitehead, Mr. Craig, Mr. J. J. Withrow, and Dr. Riddel.

Mr. Rennie, in proposing "The health of Dr. May and success to the agricultural interests, representative of Canada at the Paris Exhibition," said he had received recently an order from Moscow, Russia, for a quantity of seed grain, the gentleman applying having received a sample from Dr. May at the Paris Exhibition, which pleased him so much that he decided to secure a supply.

Dr. May replied in suitable terms.

Mr. Jno. Laughman proposed "The health of the American students."

Mr. Groof, of Ohio, replied appropriately, and paid a high tribute to the character of the Ontario Veterinary College.

Ald. Close and other gentlemen having addressed the company, the reunion was brought to a happy conclusion about midnight.

Veterinary Jurisprudence.

DECISION IN THE HULL CASE OF DESTRUCTION OF IMPORTED ANIMALS AFFECTED WITH CATTLE-PLAGUE.

In the Queen's Bench Division, before Justices Lush and Manisty, the case of Nessler and Another *v.* the Corporation of Hull, has just been argued on a special case stated for the opinion of the Court. The question was whether the Corporation should pay compensation for fifty-six cattle from Russia, which, by the order of the Veterinary Surgeons of the Privy Council, were destroyed, the order having been carried out by the Borough Inspector, who had no special authorisation from the Corporation.

Plaintiffs are cattle merchants, carrying on business at Lincoln. On the 16th of July, 1872, the Screw-steamer "Joseph Somes," of Hull, belonging to Brown, Atkinson, and Co., sailed from Cronstadt for Hull, having on board fifty-eight head of cattle belonging to the plaintiffs. They were apparently then in good health. On the 19th July, the Privy Council issued an order that cattle brought from any place in Russia should not be landed in Great Britain. Knowledge of this order came to plaintiffs' agent at Hull on the 20th, and he telegraphed to Wilhelm Nessler at Cronstadt to stop shipments. Johann Adam Nessler also telegraphed from Lincoln to the same effect. The Joseph Somes having sailed on the 16th July, it was impossible to stop her at any intermediate port. Plaintiffs' agent then communicated with the collector of customs at Hull, asking permission, with strict precautions against infection, to land the cattle, which were to be slaughtered within an enclosed area. No communication was made with the defendants, unless the notice to the collector was to be taken as notice to them. The agent also communicated with Mr. Shorten, inspector and veterinary surgeon under the provisions of the Act, who received instructions from the Privy Council, to examine the cattle and report thereon. The Privy Council had also at that time a general veterinary inspector for the department, Professor G. T. Brown. Neither of these officers were connected with or responsible to the defendants.

The "Joseph Somes" arrived on the 25th July, with fifty-six head of cattle, having lost two by bad weather on the voyage. Plaintiffs' agent again applied to the Veterinary Department of the Privy Council, and to Mr. Shorten, for leave to land the cattle. Mr. Shorten reported to the Privy Council that two of the cattle were suffering from what was suspected to be cattle plague. Professors Brown and Simonds were directed to proceed to Hull. On the morning of the 26th it was found that others of the cattle were diseased, and Professors Brown and Simonds, with Mr. Shorten, pronounced twenty-two of them infected, and declared that, under the circumstances, it was necessary the whole number—fifty-six—should be slaughtered, and the carcases destroyed. No certificate as to the existence of the disease, as required by section 33, was, however, given in the case.

On 27th July Professors Brown and Simonds sent for Mr. James Freeman, the inspector for defendants, appointed under section 12 of the Act, and instructed him to have the cattle slaughtered and their carcases placed on lighters and towed out to sea, both carcases and lighters to be sunk. The order was carried out. Plaintiffs' claim is £1037 compen-

sation, £25 being half the value of the two beasts infected on arrival, and £1012 being three-quarters the value of fifty-four beasts under the 69th section.

Mr. Justice Lush, in delivering judgment, said he was of opinion that no such claim could be supported. There was no liability on the part of the Corporation to pay for these cattle. It was quite clear too that the Local Authority had no authority under any order from the Privy Council to make compensation under circumstances such as these. The Corporation had no authority to order the animals to be slaughtered, and he did not think there was any evidence that the Corporation did order them to be slaughtered, the inspector having acted without authority. The Corporation had nothing whatever to do with the matter, and consequently there was no compensation payable out of the borough funds.

Mr. Justice Manisty concurred.

Judgment for defendants.

PARLIAMENTARY INTELLIGENCE.

SHEEP ROT.

HOUSE OF COMMONS, *March 9th.*

Lord G. Hamilton, in reply to *Mr. Paget*, said,—The nature and causes of rot in sheep are so well understood, that it is not likely that any further scientific inquiry could add usefully to our present knowledge on the subject. The results of previous investigations will be found in Professor Simond's treatise, reprinted this year from the 'Journal of the Royal Agricultural Society,' and in Professor Brown's essay in the Bath Society's 'Journal,' 1861.

Wet seasons, by favouring the development of the fluke, which produces liver rot, are the main causes of the disease, and there have been serious outbreaks of it after wet seasons—in 1735, 1747, 1765, 1792, 1809, 1817, 1824, 1830, 1853, 1860, and again in 1879. A dry, hot season is the one thing necessary to arrest the ravages of the disease.

VACCINATION.

Mr. Sclater-Booth.—I will venture to appeal to the hon. member for Glasgow, who has in charge a Bill on the subject of vaccination, which stands first on the orders of the day for to-morrow, and which raises points of some complexity and difficulty. I would ask him whether he thinks it expedient to proceed with the measure under existing circumstances. I can assure the hon. gentleman that the question of the advantages and disadvantages attendant on the use of animal lymph, which have been long engaging the attention of the Local Government Board, are receiving fresh illustration by experiments now going on.

Dr. Cameron thought it was pretty evident that his Bill had little chance of becoming law this session, and therefore he would not proceed with it.

GLANDERED HORSES.

March 15th.

In reply to *Sir W. Fraser*, who asked whether his attention had been drawn to a statement made on March 3rd in the Kensington Vestry to the effect that no less than 116 glandered horses had been slaughtered in that parish during the last six months.

Lord G. Hamilton said,—Sixty cases of glanders and fifty of farcy have been returned in the period named. No facilities exist in the metro-

polis for burying carcases. The local authority, under license from the Privy Council, cause the carcases to be disinfected and removed under charge of one of their officers to a "knacker's" (approved by the Privy Council), where they are destroyed by boiling. The increase in the number is probably due not so much to any increase in the disease as to greater activity on the part of the local authority in prosecuting persons under the Contagious Diseases (Animals) Act for not giving notice of disease.

TRICHINOSIS ON BOARD THE "CORNWALL."

HOUSE OF LORDS, *March 22nd.*

IN reply to Lord Thurlow,

Earl Beauchamp stated that there were 262 boys on board the ship "Cornwall," and that there were 43 cases of sickness. One boy died, as was supposed, of fever. The body, however, was subsequently exhumed, and a *post-mortem* examination showed that the body was infected with trichinæ, and gave none of the ordinary evidences of fever. A further review of the whole matter led to the belief that the outbreak of disease was due to trichinosis.

ARMY APPOINTMENTS.

VETERINARY DEPARTMENT, WAR OFFICE,
March 5th.

Veterinary Surgeon, First Class, Charles Steel, from the 16th Lancers, to be Inspecting Veterinary Surgeon, *vice* W. Death, retired on half-pay.

Veterinary Surgeon W. Boyd retires upon temporary half-pay.

George Aitken, gent., to be Veterinary Surgeon on probation.

March 12th.

Veterinary Surgeon John Baldock, from the 3rd Hussars, to be Veterinary Surgeon First Class.

Inspecting Veterinary Surgeon T. P. Gudgin, has accepted the Distinguised Service Reward of £50 per annum, in recognition of his services in the Zulu campaign.

COMMUNICATION ON THE TITLE OF M.R.C.V.S.

GENTLEMEN,—In the district in which I reside there is a gentleman who, holding a Highland and Agricultural Society's Veterinary Certificate, has lately obtained the Diploma of the R.C.V.S. by special arrangement between the two bodies. This gentleman adds to his legal title (as you will observe by the enclosed card) the words *London and Edinburgh*. Will you or any of your readers kindly explain the meaning of these two words?

The public in this locality believe he has passed at both the London and Edinburgh colleges. I met a friend of mine the other night, and he remarked: "Did you not tell me that Mr. —— was not qualified?" My reply was, "Yes;" but he has lately been granted the Diploma of the R.C.V.S. I asked him if he knew the meaning of "London and Edinburgh" on this gentleman's card, and I found his opinion to be that the person alluded to was a member of two colleges.

We are all aware that the title of Veterinary Surgeon is greatly abused; and I may add that where it is illegally or unfairly used in a country district, fully half the public believe that the individual has

passed, and it is difficult to get many to believe to the contrary. I think you will agree with me that it is high time we had a protective clause, to prevent both the illegal use of the name M.R.C.V.S., and of the use of empty words being added thereto.

Trusting you will kindly allow me space in your valuable Journal for my few remarks,

I am, &c.,

To the Editors of the 'Veterinarian.'

PRO BONO PUBLICO.

OBITUARY.

WE deeply regret to have to record the death of Mr. Jno. Cuthbert, M.R.C.V.S., Leeds, on the 16th of March, aged 53. Mr. Cuthbert, who was a member of the Council of the Royal College of Veterinary Surgeons, obtained his diploma May 11th, 1848.

Also, on the 16th March, at Bromley, Kent, William Frederick Chattell, M.R.C.V.S., from blood-poisoning, contracted in performing an operation. Aged 36.

In the demise of the late John Steele, of Biggar, the profession has lost, with one exception, its oldest member. Few, indeed, there are, in any profession, of whom it can be said that for a period of half a century their energies were devoted to its practice and to its advancement. Graduating at the Edinburgh Veterinary College, John Steele obtained the veterinary certificate of the Highland and Agricultural Society, Scotland, in 1831, along with seven other students, the occasion referred to being the fourth examination held under the auspices of the Society. He also obtained the diploma of the Royal College of Veterinary Surgeons in the same year. At intervals for the last forty-eight, and continuously for the last thirty years, Mr. Steele attended the veterinary examination of the Highland Society, and for many years he was one of the most valued, and valuable, members of its examining board. Well versed in the nature of the diseases of all the domestic animals his especial forte was cattle pathology, and it was always a pleasure and a profit to the bystander to hear the shrewd practical questions put to the students by Mr. Steele and the late Mr. Aitken, of Kilmanock—one of his oldest friends—alternately; nothing pleasing them better than a plain practical answer to a plain practical question, and of them it may truly be said that they dealt not in catch questions or rejected a student if he did not know their crotchets. Beloved by his immediate relatives and friends, revered and honoured by his neighbours and clients, John Steele passed away on the 26th day of January, after much and acute suffering, at the ripe age of 74, and in the full possession of his intellectual faculties, regretting the day before his death that he would never again be able to attend the veterinary examination of the Highland Society. He was one of the closest friends and most ardent admirers of the late Professor Dick.

ERRATA.

IN last month's *Veterinarian* several typographical errors occurred in pages 215, 216, and 217, in the names of contributors to the Benevolent and Mutual Defence Society. They should be read as follows:—D. E. Rattee, G. H. Pyatt and Brothers, W. A. Taylor, James Martin, Richard Roberts, T. Aubrey, R. C. Trigger, E. H. Leach, W. Hy. McCaldon, Phillip Deighton, Henry Hogben, J. Osborn Hill, and J. H. Ferguson.

THE

VETERINARIAN.

VOL. LIII. No. 629. | MAY, 1880. | Fourth Series, No. 305.

Communications and Cases.

SYNOPSIS OF CONTINENTAL VETERINARY JOURNALS.

By John Henry Steel, M.R.C.V.S., F.Z.S., Demonstrator of Anatomy at the Royal Veterinary College.

The works of *M. Toussaint* on Anthrax and Fowl Cholera, which have been carefully placed before our readers as soon as possible after their publication have been deemed by the French Academy of Sciences worthy of the "Bréant prize," value 5000 francs. On the 29th of March last the learned professor presented to the Academy a contribution to the study of the transmission of tuberculosis. His experiments on pigs confirm the observations of those German authorities, notably Bollinger and Gerlach, who have most carefully investigated the matter. The name of *Dr. Davaine* also is well known to those who are familiar with the present rapid strides of the study of the various forms of parasites. He was the first to observe the *Anthrax bacillus*, and thus to initiate one of the most fruitful phases of modern pathological work. He had been accorded the "Lacaze prize" of 10,000 francs. *Dr. Joseph Leidy*, Professor of Anatomy in the University of Pennsylvania at Philadelphia, has been awarded the "Great Walker prize," which was specially doubled in value by the Council of the Natural History

Society of Boston, for his natural history researches, not the least valuable of which are on the subject of Trichina. This gentleman takes a lively interest in diseases of animals, and the just acknowledgment of his high merit must prove a source of satisfaction to us all. Death has been removing leading members of the profession in France and Italy. In the former country, *M. Lecoq*, late Director of the Lyons Veterinary School, and also Inspector General of the Veterinary Schools, died on the 14th February last, and an oration over his tomb was made by Professor St. Cyr, who studied under him. He was an author of high ability; the work on the *Anatomy of the Exterior of Domesticated Animals*, which he wrote, remains the standard volume on the subject. In Italy the Director of the Parma Veterinary School, *Professor Pietro Delprato*, died on the 29th of January last. He was instrumental in giving to the veterinary profession the high position which it occupies in Italy. The announcement of this serious loss is made on an extra leaf of a new Italian Journal, *La Veterinaria*, which appeared as a successor to the *Studente Veterinario*, which had been carried on by *Professor Ardenghi*, one of the editors of the new publication. Associated with him in this new venture is *Dottore Giacento Fogliata*, of Pisa. We may reasonably expect that under the auspices of these able scientists a valuable addition will be made to the already excellent Italian veterinary periodicals. The January number contains the programme with five original mémoires, synopses of Italian, Austrian, and French journals, together with reviews, notes and news, &c., making a neat number of considerably over 100 pages. The original work comprises a description of certain diseases prevalent in a commune near Pisa, also a paper by one of the editors of Trichinosis, in which the labours of English and American observers are duly acknowledged. Among others, those of the above mentioned Dr. J. Leidy, who, in 1847, detected Trichinæ in a pig, thus showing the source of the parasite which Hilton and "il sommo zoologico inglese Riccardo Owen" had found and examined in man. The extracts in the Italian review are from the *Giornale di Anatomia, fisiologia e pathologia degli animali domestici*, published in Pisa and *La Clinica Veterinaria* of Milan. We hope this Italian namesake will retain the high standard exhibited in its first number, and wish it a long and successful career. A most useful work has reached a second edition, a *Treatise on the Inspection of Butchers' Meat, considered in its relations with Zootechny, Veterinary Medicine, and Public Hygiene*, by

M. Baillet, the distinguished Veterinary Surgeon to the Municipality of Bordeaux, and Inspector General of the Department of Meat Inspection. The first edition appeared in 1871. M. Baillet has been working on untrodden ground and "not by any means the least merit of the work is that it has enlarged the field where the veterinary profession may perform its useful part." In the *Recueil de Médecine Vétérinaire*, 15th March, 1880, is a useful *Modification of the Surgical Treatment of Purulent Collections in the Facial Sinuses*, as read before the Society of Practical Veterinary Medicine, on the 11th of February, by M. Friez, Veterinary Surgeon to the General Carriage Company of Paris. "The ordinary operation may be usefully modified and replaced by a much more simple method, which for many years past has been adopted by M. Thiébaut, a colleague of mine. This new method of treatment consists in suppression of the two openings made with the trephine and throwing injection into the cavity of the sinus through the small opening necessarily made in exploration of the diseased parts. This I make at about 1 inch above the zygomatic crest, and at about 1½ in. from its inferior extremity. As wounds of the face close very rapidly, and as losses of substance in that region become repaired with great facility, whence the wound cicatrises too rapidly, I find it necessary to make cross cuts in lines through the skin, meeting at the perforation into the diseased sinus; this crucial incision results in the formation of four flaps of skin, which retracts during healing, leaving the bone and the perforation through it uncovered. I then introduce into the opening a small peg of aloes cut level with the skin; this serves to prevent closure of the opening through the bone and exerts an astringent influence upon the wound, and prevents it from bleeding every time an injection is made through it. The first injection consists of slightly warmed water to wash out the sinus; this is especially necessary in long-standing cases, when the pus has acquired a certain amount of consistence which prevents its escape before it has been somewhat diluted; next must be thrown in the fluid which is intended to alter the secretions of the mucous membranes.

Camphorated alcohol (10—100) gives good results, but I prefer a mixture of equal parts of water and glycerin, with a small quantity of carbolic acid. When the secretion commences to flow, the employment of glycerin in a pure state will sometimes cause it to disappear, as if by enchantment, in the course of a few days. I hit upon this glycerin treatment quite by accident. These injections I throw in two or

three times per diem, and habitually do so by means of a syringe of capacity 100—150 grammes, with a short canula, whereby no injury is inflicted on the mucous membrane opposite the opening. The duration of treatment varies from twenty-five to thirty-five days. Since my entry into the company I have radically cured five cases by this means, which has the following advantages:—(1) It gives a rapid and complete cure. (2) The animal can be used throughout the whole time of treatment. (3) Unsightly wounds are avoided. (4) The operation is very simple, and does not necessitate throwing the animal. (5) This treatment may be easily performed, even by one man, if he takes care to put on the fixed switch. (6) The cure having been effected, the work of cicatrization takes place more easily than does healing of the parts after removal of a portion of bone; for in the latter case the process of reparation of bone causes irritation of the subjacent mucous membrane." In the *Revue Vétérinaire* for April, 1880, is a paper by M. Molinié, of Lavaur, "On the Use of a Bottle as a Pessary in Cases of Prolapsus of the Vagina and Uterus." He says: "A great number of pessaries, more or less complicated in their characters, are made use of by practitioners in cases of prolapsus uteri, to oppose a fresh displacement of the organ after they have been returned to their normal position. These are not always to hand when they are required, and are open to other objections, which have been indicated by various authors. They irritate the generative organs, cause violent expulsive efforts, and often cause return of the accident they are designed to prevent. The use of the bottle is open to none of these objections, and I have always obtained the best results from it. It is in order to recall attention of veterinarians to this old and now neglected method that I have thought it right, through the *Revue*, to make known my method of procedure. Reduction of the vagina and uterus having been accomplished, I apply the cord bandage which is used by almost all the practitioners of the middle of France. The cords of the bandage having been well stretched, I chose a bottle of the Bordeaux form, to the neck of which I fix a band of sufficiently strong thread, having two ends of the length of about 6—8 in. each. The bottle having been inserted into the vagina, I find the point of the cords which corresponds to the transverse diameter of the vulvar opening and fix there the bands around the neck of the bottle. An assistant untwists one of the cords to the point indicated, and by means of a peg of wood he assists the passage of an end of the band of thread. The opposite cord is corre-

spondingly fixed. I now let go the bottle, and grasp the two bands of thread, which I bring to the point where the cords of the bandage embrace the neck of the bottle, and I fix them there by a double knot. The employment of this pessary, while easy and convenient, has always enabled me to retain the vagina or uterus after return without presenting any of those inconveniences which attend the use of other forms. But there are certain cases where a glass bottle does not do; when the mucous membrane of the uterus is bruised and torn, its employment would give rise to formidable metritis. In such a case it is necessary to make use of a bottle of smooth wood with its bottom pierced. The opening which corresponds to the neck of the uterus allows various fluids and the *débris* of the torn and mortified mucous membrane to escape in consequence of the expulsive efforts which the animal makes to relieve itself of them. This arrangement also enables me to inject liquids into the womb with facility, so as to hasten the elimination of products which might tend to accumulate there. The advantages of the procedure with the bottle are:—(1) By its volume, which plugs the vaginal canal through two thirds of its length, it almost instantaneously paralyses the expulsive efforts of the subject of the operation. (2) By its form it does not prove a preventive to the expulsion of urine, for the meatus urinarius corresponds to the narrowing of the neck. (3) Its smooth surface can neither tear nor injure the vaginal walls. (4) It can without inconvenience be left in for five days, or even a month, for it causes no irritation of the organ with which it is in contact. In ordinary cases twenty-four to forty-eight hours suffice to counteract the return of the prolapsus." In the same number *Professor Mauri*, having discussed the question—"Ought we to consider Leucocythæmia as a disease *per se?*" comes to the conclusions:—"1st. That leucocythæmia is not a particular morbid entity. 2nd. That it is only one inconstant form of a pathological condition of clearly ascertained clinical nature. 3rd. That *lymphatic anæmia* of Hodgkin and *leucocythæmia* are only two forms of the same morbid state."

M. Serres, in the *Recueil* for the 30th March, 1880, recommends *injection of ether in cases of tympanitis of the horse.* He supports this plan of treatment by enumeration of three cases:—"I. In the month of May, at Batna, we were called into the town to see a young, well-furnished Arab horse, which belonged to a carriage proprietor. The animal was affected with acute colic of unknown cause, with no very marked symptoms, except abdominal distension,

which rapidly increased. We immediately commenced the following treatment:—Enemas of ordinary water, with eighty grammes of ether; cold enema, with ether and ammonia; frictions with oil of turpentine to the fore extremities, over the loins, and the abdomen. The tympanitis constantly increasing, and asphyxia becoming imminent, we had recourse to puncture. Immediately there escaped through the canula a great quantity of gas, which for the time relieved the animal; but twenty-five minutes had scarcely elapsed when the accumulation again commenced, and threatened to bring about speedy death. We then determined to inject directly into the intestine, through the canula, about ℥vij of pure ether. This scarcely entered the intestine when the tympany became diminished, and the breathing less laborious. This change for the better became more and more marked, and after three quarters of an hour the animal commenced to eat. The colicky pains did not again come on. II. On the 17th January following this case, a horse of our own was affected with severe colic, complicated from the commencement with tympany. We tried ordinary treatment ineffectually. The respiration became more difficult, so we punctured, and awaited the result. But the state of the animal continuing alarming, encouraged by our first success, we injected about ℥v of ether. As in the other case, the swelling disappeared as if by enchantment, and about an hour after the injection the animal had regained his normal condition. III. On the 14th March the same horse again became affected with very violent colic and marked tympany. We employed ordinary drinks, injections, and surface stimulation, but in vain. The respiration became impaired, so we had recourse to puncture. The swelling subsided very considerably, and we thought for the moment that the case was cured, for the patient remained quiet, and his pains had disappeared. But an hour had scarcely elapsed when the swelling reappeared, and the state of the animal became more and more critical. We decided then to again try the injection of ether, and threw in—not without great difficulty, in consequence of the disordered movements of the animal — about ℥vij. At the end of a few minutes the swelling and pain had diminished very much, and every sign of the disorder had disappeared in an hour and a half. We will not seek the method in which the ether acts, but rather will refer to those authors more competent than ourselves, who have investigated this question—notably Prévost, Lafore, Royer,

Tingry, de Genéve, Delafond, &c. We simply state the results we have obtained."

On the 26th February, 1880, before the Societé Centrale de Médecine Vétérinaire, *M. Nocard,* in the report of the committee appointed to examine a paper by *M. Humbert,* of the 22nd Regiment of Artillery, entitled, "Practical Essay on the Progress and State of the Temperature in the Principal Stages of Strangles," says:—"The field in which M. Humbert has collected the elements of his work was highly favorable to this kind of research, the author having at that time been attached to the Remount Depôt of Caen. All the horses who remain at that depôt during the active period of purchase are of the Norman race more or less improved; they vary in age from three and a half to four years. Most of them have undergone that detestable and fatal management which cannot be too much condemned, known as 'preparation for sale.' Once at the depôt, they were subjected to absolutely the same conditions of feeding, temperature, grooming, and daily exercises. Thus, we can understand that results obtained from them have the highest importance. If we add that all the temperature readings were taken at the rectum, all at the same hours—8 a.m. and 3 p.m.—by means of a maximum thermometer, recording $\frac{1}{10}$ degree, that the first precaution of the author was to carefully determine the normal temperature of the horses on which he made his observations, we shall then be able to appreciate the real value of the work. The conclusions thus obtained are:—(1) Strangle diseases are characterised, from a thermometric point of view, by extreme variability of internal temperature. (2) The frequent and extensive oscillations of the curve are especially remarkable at the commencement of the attack in the most simple form when there is general febrile disturbance without localisation in any particular internal organ. (3) The thermic curve becomes regular, constant, and hence typical, only in cases where the disease assumes the form of pneumonia, pleuro-pneumonia, or typhoid fever. Except in these, when the curve depends rather upon the local complications than upon the general strangles, the traces are too variable to be cited as characteristic of any special morbid state. (4) The changes in temperature do not then prove useful in the distinction of one form of strangles from another. It is a symptomatic element which in some degree gives a measure of the intensity of the existing fever, but has no marked diagnostic value. (5) It is otherwise from the prognostic point of view. Generally a high temperature is an indi-

cation of grave conditions. When a rapid rise to 41° occurs, and the reading remains at that point for several days, life is seriously threatened; if it continues to rise, even slowly, death is imminent. It is necessary to know how to interpret the rise, often rapid and considerable, which the curve undergoes in the simple forms of strangles under the influence of the development of a simple abscess in the intermaxillary spaces in the parotid gland or the muscles, and often, let us add, in the absence of any abscess. These variations resemble those which occur during the secondary eruptions of smallpox. The curve falls when the abscess has been opened. When the fall of the curve is regular and gradual, the prognosis is favorable. A rapid decline to below the normal indicates a fatal result; in the few minutes before death the curve perhaps rises above 42°, or, on the other hand, falls suddenly to below 37°. (6) Thermometry controls and rectifies the important but often false indications which are given by the pulse and the respirations, for these are easily modified in their rhythm and frequency by comparatively slight causes. The indications which it affords cannot replace others, but they supplement and increase their value when they agree with them, while they excite increased attention when they are not in accord. Indeed, when a marked discord exists between the indications of the thermometer and those of the pulse, serious complications and a fatal result may be anticipated." M. Humbert affixes to his mémoire thirty-five graphic tracings of temperature, each of which is a beautiful and valuable observation. Finally, gentlemen, allow us to say that M. Humbert has taken a valuable step, and his example ought, in our opinion, to be followed by his colleagues in the army. No one is in a better position than the military veterinary surgeon to make good thermometric observations in any particular group of diseases. It is easy for him every day at a fixed hour to take the temperature of his patients—at the morning visit, and at the evening feeding time, for instance. He has at his disposal a precious instance of animals of the same age, breed, and work, subjected to similar surrounding conditions. What could be more favorable to operations of this nature? Could not the thermometric curves of diseases of the lungs, pleura, articulations, the intestines, heart, nervous centres, &c., be thus definitely fixed? Can nothing in this direction be done in cases of colic, which are so frequent and so fatal, and so varied in their causes among troop horses? And, without confining themselves to thermometric observations, could not our army colleegues try to apply to the pathology

of the horse those researches on clinical urinology which are so valuable in human pathology that no one thinks of examining a sick man and of arriving at a diagnosis without taking into consideration the condition of the urine." These opinions of the committee, of which M. Nocard was the representative, should not be taken to apply to army veterinary surgeons of France alone.

ON PLANTS IN RELATION TO ANIMALS.

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

(*Continued from p.* 237.)

HAVING already pointed out the uses of some of the more prominent of that division of the *Cruciferæ*, to which the name of the old order *Siliquosa*, or long-podded forms, belong, we now proceed to illustrate the economic history of the *Siliquolosa*, another Linnæan order depending upon the seed vessels, possessing very short pods or little pouches.

The more important genera which will claim our attention are as follows:

1. COCHLEAREA .	. Petals entire, pod inflated, many seeded.
2. CAMELINA .	. Tall herb, cauline leaves sessile, auricled.
3. CAPSELLA .	. Pod dehiscent, many seeded.
4. THLASPI .	. Pod notched, petals equal, filaments without scales.
5. IBERIS .	. Pod ovate, petals very unequal, filaments without scales.
6. ISATIS .	. Pod indehiscent, 1-celled, 1-seeded.

1. COCHLEAREA (*Scurvy-grass*) is well known for a series of herbs which at one time were extensively used as antiscorbutics. They are mostly natives of the sea-side, which, though partaken of by straying animals, have never yet been cultivated for their use, though in old houses some of them were grown in the physic gardens for the celebrity they had acquired in scurvy, a disease now happily as rare as it was one time common.

The more representative of the genus is the *Cochlearea*

armoracea, known as horseradish, the economy of which is so well expressed in the following extract:

"The long, rough, snail-eaten leaves of the horseradish are not uncommonly seen on the banks of our rivers, but it is somewhat doubtful whether the plant is a native of our island, or has escaped from some of the gardens where it is so commonly grown as a condiment to our national dish of roast beef. From ancient times it seems to have been valued as a herb medicine, and in the days of Gerarde it was used at table, as we gather from his account of it. He says: 'Horseradish, for the most part, groweth and is planted in gardens, yet I have found it wild in sundrie places, as at Nantwich, in Cheshire, in a place called the Milne Eye, as also at a small village neare London called Hogsden, in the field next to a farm-house leading to Kingsland, where my very good friend Mr. Bredwel, practitioner in physicke, a learned and diligent searcher of simples, and Mr. William Martin, one of the fellowship of Barber Surgeons, my deare and lovinge friende, in company with him, found it, and gave me knowledge of the place, where it flourishes to this day.' He adds: 'Horseradish stamped, with a little vinegar put thereto, is commonly used among the Germans for sauce to eat fish with, and such like meats as we do mustard; but this kind of sauce doth heat the stomach better, and causeth better digestion than mustard.' In the following century it was employed in England as a condiment; for Robert Turner, in his 'British Physician,' published in 1687, after informing us that this herb is 'under the dominion of Mars, and is hot and dry in the third degree,' says it is eaten with 'fish' and 'other meats' like mustard. The whole plant contains the essential oil to which its pungency is due, but it abounds chiefly in the root, which was formerly in great repute as a vermifuge for children. Gerarde and Coles both recommend it; Boerhaave speaks highly of it in scurvy; it is also said to have been useful in many chronic disorders, and was employed in dropsies and diseases of the kidneys. Thomas Bertholini affirms that the juice of horseradish dissolved a calculus of stony concretion that was taken out of the human body.

"An infusion of the root in cold milk makes one of the safest and best cosmetics. Einhoff discovered that the acrimony of horseradish is owing to a volatile oil of a pale yellow colour, which has the consistence of oil of cinnamon. The liquid obtained from the root gives traces of sulphur by distillation. The tincture deposits crystals of sulphur, which are of a yellow colour, and when exposed to flame exhales a

peculiar sulphuric odour; this is no doubt the case with all cruciferous plants, which contain more or less sulphur in their tissues.

The resemblance of the horseradish root to that of the monkshood (*Aconitum napellus*) has often led to fatal mistakes. The root of the aconite is much darker than that of horseradish, and is more given to produce fibrillæ and secondary rootlets."*

The mistake referred to, curiously enough, has been so much a source of mischief, that few winters pass without the eating of monkshood for horseradish occurring, and yet they are so widely different. The monkshood has a black outer rind, and is a soft, almost tuberous root, while the horseradish is of a yellowish-white colour externally, and the sticky root scrapes up into delicate white shavings, whereas scraped monkshood is pulpy, as would a potato. Horseradish may be employed as a stimulating poultice, and its use as a condiment is well known.

2. Camelina (*Gold of Pleasure*) is the only *native* representative of the genus, if, indeed, this be not wholly an intruded plant. It is common to Europe and Asia, and with us it finds its way about farms from its introduction in flax seed.

At one time it was grown to a considerable extent for the use of the oil which is extracted from the seeds. This oil, however, is not available for many purposes, as it has some of the stimulating character of the oil of mustard, and is, besides, very apt to turn rancid; its chief use is in soap-making.

But, besides the value of the seed as an oil producer, it is highly extolled as food for poultry, and the cake is used for feeding cattle. It is, therefore, of little consequence that linseed so often has the gold of pleasure as one of its most constant weeds, as it is not found to injure the oil or the cake.

3. Capsella Bursa-pastoris (*Shepherd's Purse*), again offers a single specific representation of the genus. This, too, is in all probability a weed of cultivation. Be this as it may, there is scarcely an arable field or a garden that does not furnish specimens. It has no known use. Its strong smell and acrid flavour preclude it from being partaken of by cattle. It is entirely devoid of any value, and, as it is not ornamental, we can only look upon it as a weed pest, to be ruthlessly cut down wherever found.

4. Thlaspi (*Penny-cress*).—This is represented by three

* 'English Botany,' vol. i, p. 183-4.

species, all of which are probably introduced from Asia. One species, the *T. arvense,* is common to our corn-fields, where, as in arable fields in the States, it has doubtless been introduced in foreign seeds.

Its common name of Mithridate mustard "was prefixed to it," so we learn from Mrs. Lankester, "because Mithridate, King of Pontus, was a famous mediciner, who compounded poison-resisting draughts, and gave them to himself."

Its name of Penny-cress is due to the rounded flat seed-vessels. It is very nauseous to the taste, arising from the acidity of its juices, and when the herbage is crushed it gives out an odour resembling garlic, in which it resembles the common Jack-by-the-hedge, or sauce alone.

The plant in question is of no value, though, perhaps, in older times it might have been esteemed on account of its strong smell; it is not now of any service, as not even the doctrine of signatures helps it to any position.

It is, however, well that it should be destroyed, as an ill-flavoured weed which no animal will eat.

5. IBERIS AMARA (*Bitter Candytuft*) is best known as a garden plant, as it is capable of establishing several varieties, remarkable for its increase in the size of its flowers, and for a variety of gay colouring.

It is only found in corn-fields, and then but in a few counties. It is reputed as a bitter and purgative, though not now at all used. Cattle refuse to eat it, and therefore it can in the wild state be only considered in the light of a weed.

6. ISATIS TINCTORIA (*Dyer's Woad*).—This is an exceedingly interesting plant, from its past history. Dr. Syme says of its localities as follows:

"In cultivated fields and in chalk-pits, but certainly not native, and scarcely even naturalised, except in chalk-pits near Guildford, Surrey."

We have, however, been accustomed to find it on an elevated knoll on the banks of the Severn, called the "Mythe Tout," a name which connects the plant with the Celtic inhabitants of our island, it will, therefore, be expected that its history and folke-lore will be more than usually interesting, and as the following notes by Mrs. Lankester are so much to the point we cannot forbear quoting them.

DYER'S WOAD.

Pastel des Teinturiers, French.

Färber-Waid, German.

"The history of woad as a British plant commences with

that of this island, when Cæsar found the natives stained with it.

"At this time it must have been a plentiful inhabitant of the country, but afterwards, probably from its extensive use, it became less common, and we find our Saxon forefathers importing woad to dye their homespun cloth. Their name for it was wad, or waad, whence the English word in use for the colour itself.

"The plant is still cultivated in this country on account of its colouring properties, chiefly in Lincolnshire, and is used not so much to produce a blue colour on cloths, as to form a base or mordant for a black dye.

"The cultivation of woad was formerly carried on by people who devoted themselves entirely to it; and, as crops of the plant are not successful for more than two years on the same piece of land, they never stayed long in one place, but, hiring land in various districts, led a wandering life with their families, and gained their living by their crops; now, however, many farmers devote a portion of their land to the growth of woad, alternating the spots year after year. The foliage is the part of the plant used; the leaves are picked off just when the herb is in flower, the lower ones being taken just when turning yellowish; the gathering is repeated three or four times, at intervals of a few weeks; but the first picking is the best.

"The leaves are dried a little in the sun, when they are ground in a mill to a pasty mass, which is formed into heaps exposed to the air, but protected from rain, until it ferments. A crust which forms over it is carefully prevented from breaking, and when fermentation is complete—usually in about a fortnight—the mass is again mixed up and formed into cakes.

"Before being used by the dyer these cakes have to be again broken up, moistened, and subjected to further fermentation; much of the quality of the dye is said to depend on the way in which this operation is performed. The colour is brought out by mixing an infusion of the woad thus prepared with lime water. The best woad is worth £20 or more a ton, although its price has declined since the extensive introduction of indigo, to which it is inferior in richness of colour, but is more permanent. Some time ago the woad was recommended as a fodder plant, and has been so employed in France and Belgium, but our farmers do not consider it a remunerative investment in comparison with our own root and leaf crops. The interest of this plant is considerable, when we consider the antiquity of its use and its

connection with the earliest attempts at personal decoration by our forefathers, to whom it supplied, according to historians and poets, all the requirements of a fashionable toilette."

This last remark points to great differences in the manners and customs of our island. Formerly, when the natives painted themselves, more sober colouring sufficed, but now dyes are the order of the day these require stronger pigments, and the fine dark blues of different articles of clothing are better and cheaper obtained from indigo.

PRACTICAL HINTS ON STABLE MANAGEMENT IN INDIA.

A Second Edition, revised and enlarged, of a Lecture written by J. B. W. SKOULDING, Veterinary Surgeon First Class, Royal Horse Artillery, the prototype having been written and delivered by him when in charge of B. F. R. H. A. at Campbellpore, in November, 1875. Meerut, 1878.

(*Continued from* p. 244.)

D. *Water.*—The water supplied to horses should be soft, fresh, sweet, and free from floating particles of extraneous matter, and the allowance should be ample, *i. e.* as much as he will drink. To ensure this, whenever it can be arranged, it is advisable to have a supply constantly within reach of the animal. This should certainly be the case in the sick box, for the ability to cool his parched and fevered mouth by dabbling in a bucket of water will afford inestimable comfort to the patient, and assist very much in bringing about that which is so much to be desired, a speedy restoration to health. It is a well-known fact that horses having water at will drink less and are not so likely to overfill themselves as those watered at set hours. This is a great advantage where horses are liable to be wanted suddenly for fast work. If the water be given at stated intervals, these should never number less than three times daily, and should be fixed so as to precede the hours for feeding, for water taken directly after food will in all probability produce undesirable results, not, as many suppose, by causing the grain eaten actually to swell, but by mixing with and increasing the mass already in the stomach, and by carrying portions of the food through the stomach into the intestines in an undigested state, thereby causing intestinal irritation.

When a number of horses are watered at the same trough or watering-place, the watering of them should be carried out under the supervision of a responsible and careful agent, and he should see that no more horses be led or brought to the trough at one time than there be full standing room for, so that the most timid may not be deterred from coming up to drink, for some horses will not force themselves into a crowd. Again, horses should not be watered in couples, for if the syce takes two to water at the same time, one horse will in all probability have satisfied his thirst more quickly than the other; and, being allowed by the syce to leave the trough, he drags the less fortunate and still thirsty horse with him. This is apt to lead to the sufferer drinking more than is good for him at the next opportunity, thereby earning for himself an attack of colic.

Horses should never be allowed a large quantity of cold water when sweating after work, but may be fully watered as soon as they are cooled and dried.

With reference to the general character of potable waters, I may remark that the water of Meerut has been proved by analysis to be unexceptionable.

E. *Warmth.*—The next point is warmth, and I still proclaim this (through good and ill report) to be a *sine quâ non* for the well-being of all animals, and that, although the heat of the climate in which we reside be naturally at certain seasons excessive, it is at all times imperative that we protect ourselves, and the animals of every species under our care, by artificial warmth, from the ill effects that may arise from the sudden and great ranges of temperature which occur in it, especially during the rains and the cold months of the year, as, from the neglect of this precaution, I have seen mortality run riot to a fearful extent among horses and cattle, though it was checked at once by the protective means employed for the safety of the survivors (viz. keeping them clothed and protected from draughts), but to occur again as soon as these agents, "warmth" and "clothing," were discarded.

To create warmth we have recourse to shelter and clothing, and whenever the former be either wanting or inadequate, the demand for the latter is increased accordingly.

The theorist on the subject may assert that shelter and clothing are luxuries, and declare, in support of his theory, that wild horses live without stables, or any clothing beyond the hairy covering supplied by nature. This, of course, no one will deny; but, be this as it may, it is evident that nature has provided the tame horse, at any rate, with the instinct of self-preservation that leads him, if loose, to avail himself of any shelter he can find on an inclement day; and it is also certain that the coat is heavier

during the cold season than at any other time of the year. From reading these signs correctly, man was in the first instance induced to provide adequate shelter and extra clothing for horses, for by so doing he is, in reality, applying the lesson taught by Nature herself, and we can inflict no greater slight on the dame than by persuading ourselves that in neglecting our four-footed friends in any way we are acting in obedience to her laws.

Shelter.—That horses appreciate the comfort of a stable I have had ample proof on various occasions, for I have seen them, time after time, rush in a body to gain the shelter of the stable, after having been loose in the paddock about two hours, and they were with difficulty kept out until the regulation hour arrived at which they were allowed to enter, their freedom, simulating as it did the wild state they are supposed to enjoy so much, having evidently palled on them, or they had sense enough to know what was best for their health.

Again, see any trooper loose, or a remount break away while en route to join his regiment, and note how frequently the one will at once gallop back to his lines, and the other to the depôt stables from whence he started, although he may in some instances have to retravel a considerable distance, and had not been stabled there beyond a single year.

Clothing.—I have already mentioned the building with the appliances necessary to render that perfect as a shelter, and will now speak of that valuable accessory to stable régime, "horse clothing."

In this land we use the woollen blanket of native manufacture as a covering for both horses and bullocks, while at home, as we all know, horse clothing is made of various materials cut in suits.

Materials.—The materials used are as follows:

1. Kersey, a species of woollen cloth.
2. Prince's check, a cloth stamped with a variegated pattern.
3. White linen.
4. A woollen fabric known as horse blanketing.

Suits.—A suit of horse clothing, of any material, comprises body cloth, with quarter, breast, and pad cloths, a body roller or surcingle, and a hood.

Country blankets.—For army purposes two large country blankets are allowed for each horse, and are used in the rough; but it would be better if one of these articles were cut out to fit the horse like the English body cloth, then lined with doosootie, and covered externally with tât or sacking; this will convert it into a comfortable, durable, warm, and inexpensive cloth. The cloth thus converted (both being in use) should be put on over

the other, so as to prevent it from slipping back off the neck and shoulders, and in this way render each more efficient.

The native-made blankets are of two kinds—grey and black; the former is the closer, heavier, and better blanket of the two.

Grey.—The grey blanket weighs from 6½ lbs. to 8 lbs., is 14 ft. 6 in. in length, and 5 ft. 10 in. wide.

Black.—The black weighs about 6 lbs., is 14 ft. 2 in. long, and 6 ft. 4 in. wide.

A third blanket is, or should be, allowed when horses are out in camp. There should also be a lighter blanket for summer wear.

With reference to the use of clothing for the protection of animals from chills and colds, there is one evil connected with it that has its origin and flourishes in India, viz. the custom of stripping horses hours before the morning air has become warm, and leaving them to stand and shiver in the cold.

For instance, the horse has been warmly clothed, and so far comfortable during the night, but at break of day or, on awaking, let the morning be never so cold, the syce will, if left to his own devices, strip the poor horse, wrap himself in the blanket, and sit down before an impromptu fire of bedding, straw, or leaves, for a smoke, prior to further stable operations. This practice should not be permitted, for through it the health of the horse is very liable to suffer serious derangement. I should like to hear that an order had been issued for troop horses, when harnessed, to have a blanket thrown over them till ready to march during the cold weather, should the hour for marching be fixed prior to sunrise, as allowing them to stand uncovered for some time on parade will be equally liable to be productive of serious mischief. This arrangement would involve a little extra trouble, but the result would repay that in due course, by helping to keep the horses in health.

Again, it is the custom to leave horses without clothing at night much too early in each year. This I hold to be a mistake, as though the day may be hot, the night will be chilly, and continue so till sunrise, sometimes up to the end of May; and these sudden ranges of temperature are always liable to have a deleterious effect on animals, for which reason one blanket at least should be available at all times throughout the year, so that it may be thrown over the horse immediately any perceptible lowering of the temperature occurs during the day or night (and especially in the rainy season), and should be allowed to remain till the temperature rises again, unless the animals sweats too profusely under it.

Bandages, flannel; bedding.—For giving warmth to the legs flannel bandages are also very useful, and we must not omit to

provide, when procurable, a plentiful supply of clean soft bedding, either of straw or grass.

F. *Exercise.*—The last on the roll stand exercise, and it is also a necessary for the well doing of man and animals as any of those principles of which I have already written, as through it the task of purifying the blood, and rendering that fluid fit for the renovation of the ever-decaying animal tissues, is equally divided amongst the organs created for that purpose (viz. the lungs, skin, intestines, kidneys, liver, &c.), and it ensures an ample supply of the blood so purified being sent to every part of the frame.

Under its influence the nerves are braced, the muscular system more highly developed, and strength increased in some instances to a fabulous extent, for we all know what powers of endurance both man and horse will acquire when they have been scientifically and judiciously trained.

The horses with which we have chiefly to do are in regular work during the cold weather, and they have a fair amount during the hot season also; but for the horse kept for ordinary purposes four hours' walking exercise is necessary when not otherwise employed.

(*To be continued.*)

VETERINARY SCIENCE IN AMERICA.

To the Editors of the 'Veterinarian.'

Dear Sirs,—In the January number of the *Veterinarian* for 1880 I noticed a paper, contributed by John H. Steel, M.R.C.V.S., F.Z.S., &c., which finished up as follows:—"If any American reader notes errors let him be assured that we shall be anxious to correct our statements when proven to be in the wrong." Thanks for the privilege. That the writer has been misled by the unjust, unfair, and prejudicial statements of the editor of the *American Veterinary Review* is quite apparent. That errors and omissions occur will readily be detected by the impartial "American reader." I very willingly accord all due credit to Prof. A. Liautard for his praiseworthy efforts in the advancement of veterinary science in this country. It should be recollected, however, that at the time he came to the United States the rough road travelled by his predecessors was made comparatively smooth, leaving him an easy victory. That I may present the subject fairly and impartially to the readers of the *Veterinarian*, permit me to go back to the early history of veterinary advancement in the City of Philadelphia. My

father, Robert Jennings, was the first to publicly advocate the cause of veterinary science in this country. He was not a graduated veterinary surgeon, but had read medicine for several years, and being well posted in comparative anatomy, commenced in the winter of 1846 a course of veterinary lectures to a class of medical students in the City of Philadelphia, which were continued during the sessions of the medical colleges for several years. In 1850 he conceived the idea of organising a veterinary college. He made known his plans to Austin Miller, M.R.C.V.S., and John Scott, M.R.C.V.S. (the only graduated V.S. in the city), both of whom regarded the movement as premature, giving it the cold shoulder. He now laid his scheme before Prof. Wm. Gibson, of the Pennsylvania Medical University, and Prof. James Bryan, of the Philadelphia Medical College, both of whom not only encouraged the measure, but personally solicited and obtained the names of the following prominent citizens of Pennsylvania to a petition asking the State Legislature for an Act of Incorporation for the Veterinary College of Philadelphia:—Gen. George Cadwalader, Wm. Gibson, M.D., John Philips, M.D., Alfred L. Elwyn, M.D., James Bryan, M.D., Hon. Frederick Watts, Gen. George McKeim, James Gowan, Hon. Geo. W. Woodward, Stetchley Morton, Alonzo Potter, D.D., and L. L. Ward, which charter was granted without delay, and duly signed as follows:—"John S. Rhey, *Speaker of the House of Representatives*, John H. Walker, *Speaker of the Senate*. Approved—The Fifteenth day of April, A.D. One thousand eight hundred and fifty-two, Wm. Bigler, *Governor of the State of Pennsylvania*." This, the first veterinary college chartered in America, the date fully proves. Robert Jennings having been the recipient of an honorary diploma from the board of directors, was placed at the head of the new institution. Early in 1853 he presented the following as the faculty of the college:—W. W. Fraley, Prof. of Materia Medica and Therapeutics, T. J. Corbyn, Prof. of Pathology and Surgery, John Scott, M.R.C.V.S., Prof. of Practice of Medicine with reference to all domestic animals. Geo. W. Bowler, Prof. of Medical Chemistry and Pharmacy, Robt. Jennings, Prof. of Anatomy, Physiology, and Operative Surgery. Negotiations were entered into for the building of a veterinary college, the plan for which had been prepared by an architect, Mr. John Notman, a cousin of my father's. While these negotiations were pending Drs. Corbyn, Fraley, and Scott, tendered their resignations as members of the faculty. This was a stunning blow to the

new enterprise, and for the time stopped further progress. This blow, severe as it was, did not discourage my father. He now directed his efforts in harmonising the graduated and non-graduated veterinary surgeons, calling a meeting of such at his office, April 5th, 1854, urging the formation of a veterinary association for mutual improvement, T. J. Corbyn, W. W. Fraley, G. W. Bowler, M. Roberts, John Scott, Robt. Jennings, A. Tegtmeier, and R. Evans being present, Evans and Scott being the only graduated surgeons. After discussing the merits of the question, it was resolved to meet at the same place on the evening of May 7th, for the purpose of permanent organisation. At the appointed time there were no absentees. Professors Wm. Gibson and James Bryan were present as patrons of the new society, to be known as the American Veterinary Association. The meeting was called to order by Prof. Bryan taking the chair, and M. Roberts acting as secretary, when the following officers were elected:—President, T. J. Corbyn; Vice-Presidents, James Bryan, M.D., and W. W. Fraley; Secretary, M. Roberts; Corresponding Secretary, John Scott; Treasurer, R. Jennings; Librarian, A. Tegtmeier. The objects: the cultivation of fraternal feelings among veterinary practitioners and the elevation of veterinary science. Ere the infant was six months old it was recognised by the Pennsylvania State Agricultural Society awarding it a silver medal for its fine display of anatomical and pathological specimens at the State Fair, September 29th, 1854, an engraving of which I send you. Notice of this organisation will be found in the first volume of the *American Veterinary Journal*, published in Boston in 1855, p. 242. In the same volume, p. 341, Dr. C. M. Wood, of Boston, says: "I noticed an article on p. 242 by Mr. Jennings, V.S. I subscribe to most of the opinions and views expressed by Dr. J., and unite with him in the satisfaction he manifests for the recent progress of veterinary science in this country." He says further, p. 342: "Dr. Jennings, the writer of the paper named at the head of this article, has done much towards dispersing the popular delusion in regard to the treatment of our domestic animals." Again (same page): "We rejoice to find by Dr. R. Jennings' paper that a spirit of emulation animates all parts of our country at this time in regard to this subject. That in the great State of New York efforts are making to establish a veterinary college. In Philadelphia there has been formed an 'American Veterinary Association,' which is already distinguished. Boston is ahead of New York at the present, but that giant city

has only to will it and she surpasses all others." In the fall of 1854 my father was called to Cleveland to fill the veterinary chair in the State Agricultural College of Ohio, which position he held until the suspension of the college in the spring of 1857, when he returned to Philadelphia again to engage in the interest of the college movement. Shortly after his return he presented to the board of directors the following faculty :—W. W. Fraley, Prof. of Materia Medica and Therapeutics ; J. J. Corbyn, Prof. of Pathology, Surgery, and Practice of Medicine, in reference to all domestic animals ; G. W. Bowler, Prof. of Medical Chemistry and Pharmacy ; R. Jennings, Prof. of Anatomy, Physiology, and Operative Surgery ; which was accepted. A building was rented at the corner of Sixth and Master Streets, fitted up with a spacious museum, in which was deposited nearly 2000 specimens, among which was an articulated skeleton of a horse, a pony, a mule, a cow, a hog, and a dog, a lecture room, library, laboratory, dissecting room, and infirmary, which were thrown open to the public on Tuesday evening of each week, at which time free lectures were delivered in the lecture room during the winter months. Free clinics were held at the infirmary every Wednesday and Saturday, from November 1st to March 1st. Unfortunately for the institution Drs. Fraley and Corbyn resigned from the faculty before the first course of lectures were over ; my father and Dr. Bowler, however, continued the course to the end, delivering lectures which should have been done by others. There were no fees attached to these positions, the current expenses being paid by the faculty and trustees. The following year an appeal was made to the Philadelphia Agricultural Society, which was referred to the executive committee, who at the following meeting of the society made the following report :—" That they had visited the museum and library of the Veterinary College and were surprised to find it so valuable and interesting. They were so favorably impressed that they ceased to doubt the propriety of the application," and therefore offered the following resolution:—" That the use of the rooms of the Agricultural Society be granted to the Veterinary College of Philadelphia for holding their lectures the coming winter." Dr. A. L. Elwyn, seconded the resolution, and spoke earnestly in favour of inviting the faculty of the college to deliver their " course of lectures upon horseology, under the auspices of this Society," which received the unanimous vote of the Society. Dr. Bowler resigned after the session of 1859-60 ended, returning to Cincinnati, where he left a lucrative practice to

assist in this worthy enterprise. Robt. McClure was then appointed to fill the vacancy. In 1860 the following letter was received from the Veterinary College of Alfort, France, addressed to my father, which I have had translated:

Imperial Veterinary School of Alfort. ALFORT, *March 7th*, 1860.

DEAR SIR AND BROTHER,—My colleagues, the Professors of the School of Alfort, and I are very thankful to you for the honour that you are well pleased to do us in proposing us to be members of the Veterinary College of Philadelphia.

Therefore it is with pleasure that I send you, as you wish it, my name, giving the names also of the five professors, my colleagues, who are sending to you and to your honorable brothers their best respects and most sincere thanks.

Please accept, dear sir and brother, the expression of my own gratitude and of my most distinguished feelings.

(Signed) ENG. RENAULT,
Director of the School of Alfort.

Messrs.	Renault, Eng. Thos. Eli .	Director.
	Delafond, Henry Mam. On. .	Professor.
	Bouley, Henri Marie . .	,,
	Magne, Jean Henry . .	,,
	Goubaux, Arm. Chas. . .	,,
	Sannier, Jos. . . .	,,

The college enjoyed the privileges extended by the Philadelphia Agricultural Society until 1866, when it suspended further operations, retiring from active service without a stain upon its character, the graduates of which hold legal diplomas, which are protected by law, as are those legally issued by other medical institutions. My father was the principal of the college from its commencement to the end, in which no irregularities were known, and to say: "*Prof. McClure, M.D., V.S., who was the Veterinary College of Philadelphia, as the Officers and Prof. of the School by the authority vested in us by the sovereign power of the State of Pennsylvania confer the degree of veterinary medicine and surgery.*" *Unfortunately he appended to the diploma announcing this a signature not his own, and so experienced the sovereignty of his state under the form of a visit from a constable, and resulting in incarceration.*" The impartial reader will fail to recognise the above statement as true, when it bears upon its face the fact that "incarceration" was not the result of issuing bogus diplomas, but from the fact of one of the officers of the college having his name

upon the worthless sheet without his having put it there, upon which the conviction took place, proving the charge as above, that he, "McClure, was the Veterinary College of Philadelphia," false, if not malicious. At the time these irregularities occurred the college doors had been closed ten years, therefore such statements are not only unjust, but grossly untrue. The name of A. L. Elwyn, M.D., was upon all legal diplomas issued by the college, as was also my father's, but his name did not appear upon the worthless sheets, neither was the seal of the college upon them, but instead a seal purporting to be of the Merchants' Veterinary College, an institution unknown to the veterinary profession. The above facts Prof. Liautard ought to have known, and not unjustly stigmatise the graduates of a college labouring under difficulties which had been removed previous to his coming to the United States. The first effort to establish a veterinary college in the City of New York, though backed by many and energetic professors, Capt. Rolston, and Dr. John Busteed, proves this fact.

"Philadelphia has an unenviable notoriety in veterinary history in connection with the 'bogus degrees,' the fame of which, extending to this side of the Atlantic, has rendered us suspicious of qualifications." This conclusion appears more in the form of gossip or malice than of fact. Had the writer connected the 'bogus' reputation with human medicine he would have been correct. It was from this source, and not the veterinary, that Philadelphia became so notorious. The proof is given as follows in the *Philadelphia Record*:—"There is a badge of fraud in the very selection of the name of the bogus diploma factory recently exposed in these columns. It is so closely similar to that of the University of Pennsylvania, known and honoured throughout the world, as to be easily confounded with it in the minds of the unwary. The title of the fraudulent institution now commanding so considerable a degree of public attention was probably adopted with a deliberate purpose of deception. Like colourable imitation of trade marks and copyrights, it is a manifest counterfeit. The University of Pennsylvania is located in Philadelphia, and it annually graduates a large number of physicians. The 'Philadelphia University of Medicine' might easily pass for it at a distance from the city, and a degree given by this miserable make-believe concern might readily be mistaken for the *imprimatur* of what is recognised as one of the foremost of the great medical schools of the United States. Evidently the main object of this swindle, apart from the pecuniary purpose it

subserves to those who run it, is to supply credentials to intending quacks, by which these villainous cheats may be helped to impose upon the public. The wickedness of such a fraud it is not needful to enlarge upon. The injury done to properly instructed and reputable practitioners of the healing art and the disgrace brought upon the fair fame of this city by its existence here are sufficiently bad results; but worse than these is the sending forth to work havoc upon the community at large of licensed murderers, whose pills and powders are potent only to kill such patients as may fall into their hands. A sad feature of this discreditable business is the connection with it of several ministers of the Gospel. Some of these are perhaps amenable rather to the charge of thoughtlessness and indiscretion than of deliberate and conscious criminality. The facility with which names of the highest respectability are obtained as 'trustees,' 'visitors,' &c., of unworthy institutions and enterprises of questionable character has become a great abuse. It would be a point gained if the easy-going gentlemen who lend their credit to these improper uses could be made to realise their responsibility, and an occasional recoil upon them of their good-natured folly is not altogether to be regretted. The ecclesiastical authority to which the clergymen alluded to are answerable has already taken steps towards an investigation of their connection with the counterfeit 'degree' mill. There is no reason to suspect that there will be any whitewashing in the case. Such of the persons implicated as are found to have a guilty knowledge of the fraud will, no doubt, be duly punished." Is the above evidence sufficient to prove the error made in placing the "bogus diploma" business at the closed doors of the veterinary schools of Philadelphia?

The Pennsylvania College of Veterinary Surgeons, chartered in 1866 to take the place of the old school, was in the interest of and under the exclusive control of veterinary surgeons. The name of McClure does not appear among the corporators, neither will it be found associated with the faculty of the college, as you will see by the announcement and a copy of the charter, which I send you. These facts should prove his unpopularity among the veterinary profession in the City of Philadelphia. This institution fitted up a hall at No. 256, North Fifth Street, where two winter courses of lectures were delivered by the faculty. The finances of the college being in a healthy condition, it was decided to fit up a building better adapted to the purposes of a veterinary college. A building was rented and fitted up

at the corner of Sixth Street and Columbia Avenue, which exhausted the treasury, compelling a direct tax upon each individual member. Two courses of lectures were delivered in this building, when to save expense the doors were closed in 1870, since which time quarterly meetings have been held in Diligent Hall. No effort as yet has been made to reorganise the college. In connection with this college the writer says: "In 1866 the Pennsylvania College of Veterinary Surgeons was granted a charter. It announced six officers, among them Isaiah Michener, one of the leading men of his state. It had no buildings, gave few, if any, lectures; we may, therefore, conclude all Pennsylvania veterinary diplomas as worthless." To refute such slanderous statements I have only to say that the veterinary colleges of Philadelphia held their annual commencements in public; the exercises, together with the names of the graduating classes, were regularly reported in all the daily papers in Philadelphia, as are those of other legitimate medical colleges. If such evidence is not sufficient to wipe out the infamous charges made by the enemies of the Philadelphia veterinary schools, I can furnish recorded evidence from other sources, which are too voluminous to offer at this time. No charge was ever made in the City of Philadelphia against either of these institutions, the charges being wholly of an individual character against McClure. From these facts, which we assert to be true in every particular, the impartial reader will readily acknowledge the injustice done these schools, but more particularly to their graduates. The first or January number of the *American Veterinary Review* I did not see, or I would have answered the calumny at once.

In the list of American veterinary works mentioned by the editor of the *American Veterinary Review* I notice "works by Jennings and McClure." Now, I do not wish to charge Prof. Liautard with maliciously associating these names, but rather attribute it to want of information upon the subject. My father's works, 'The Horse and his Diseases,' published in 1860, 'Cattle and their Diseases,' in 1862, 'Sheep, Swine, and Poultry,' in 1863, and 'Horse Training made Easy,' in 1865, have no other name associated with them, nor is my father's name associated in any manner with any of McClure's publications. The works themselves prove the assertion. A review of my father's first work, by Prof. John Gamgee, will be found in vol. iii of the *Edinburgh Veterinary Review,* 1861, in which he says: "The above work favorably contrasts with other American

publications on veterinary science. It indicates care in preparation and knowledge on many subjects connected with veterinary science. It is not quite up to the day when compared with many European works, and on some subjects remarkable deficiencies are observed." It is quite as remarkable that Prof. Gamgee should expect an humble author in a new country, where veterinary colleges hardly had a foothold, to compare with European authors, who have the advantage of more than half a century. He finishes his review as follows:—"We repeat that, on the whole, Mr. Jennings has proved in advance of his countrymen." Considering that Prof. Gamgee is one of the most severe critics known to the world, I regard it as very complimentary to my father. The United States Veterinary Medical Association was also planned and organised through the efforts of my father, proof of which is at your own door in an article that appeared in the *North American and United States Gazette of Philadelphia,* March 5th, 1863, and copied in the *Edinburgh Veterinary Review* of 1863, page 253. As the article is a long one, we simply make one or two quotations. It reads as follows:—"The faculty and graduates at the commencement of the Philadelphia Veterinary College met afterwards at the Wetherill House to partake of a collation and indulge in social consultation. Though the subject was 'Horseology,' it was full of interest. The college is the first in this country; its faculty are men of superior intelligence—Robert Jennings, Robert McClure, Charles M. Wood, and A. S. Copeman. For this reason the Agricultural Society of Philadelphia recognised and encouraged the institution from its inception." An error occurs in the above regarding Profs. Wood and Copeman. At the time the college was negotiating with these gentlemen to place their names with the faculty, their decision not yet having been received, is where the mistake has been made. Continuing: "Mr. Jennings suggested that this college, with its graduates during the last five years, should establish a national veterinary association, and ultimately establish a veterinary journal." Thus recording the facts in advance of its organisation. Dr. C. M. Wood writes:

BOSTON; *June 30th,* 1859.

FRIEND JENNINGS,—Yours of the 11th of April, unanswered, is now before me. As to the "National Association," I fully agree with you, and both myself and friends here will hold ourselves in readiness to attend a meeting in New York City, for the purpose of such an organisation, at

any time that will best suit the convenience of parties desirous to unite with us in the cause. Perhaps you had better consult with your friends on the subject and inform us of their views, either Copeman or myself, and we will attend to it in our parts of this union. "*Union*," did I say? Yes, that is just what we want.

I remain, with respect,
Yours truly,
CHAS. M. WOOD.

BOSTON; *May* 14*th*, 1863.
(*Four years later.*)

DR. JENNINGS.

DEAR SIR,—Your letter of May 2nd has come to hand, and reminds me of a previous one which has been accidentally laid aside and forgotten. I am aware of the necessity of co-operation of all the veterinary practitioners to give strength and efficiency to their order, but permit me to say that I beg to be informed as to what are the qualifications required in such as may form the proposed convention. There are many persons who have taken up the practice of veterinary medicine and surgery who have had no proper instructions in those subjects, and are entirely ignorant of the principles on which they are founded. They have assumed the title and duties of professional men only for the name and the living which may be received from it. Now, my dear sir, these are such men as I do not desire to associate with. I do not say this to depreciate your efforts in the cause of veterinary medicine and surgical science, but there are such *men* as I have described, and you know there are. At a meeting of our vets. here last evening it was voted for several to come. But we must wait your reply to this for information.

I remain, friend Jennings,
Yours truly,
CHAS. M. WOOD.

OYSTER BAY, LONG ISLAND;
May 13*th*, 1863.

FRIEND JENNINGS,—I have just returned from New York. I called upon Chas. Stetson, Esq., of Astor House, and communicated to him our proposed plans for the National Convention to be held on the 9th June. He is a great admirer of the profession, and is willing to lend us all the assistance that may lay in his power. He offered me gratuitously the use of a large parlour, to accommodate seventy-five or one hundred gentlemen. I now submit his kind offer to you. I called upon Dr. Busteed. He thinks well of this. To give the thing tone and respectability, we

must go to a respectable place, and the Astor House has a wide-spread reputation as such. Bring all the vets. along; do not let one of them back out. Answer by return mail, and give me your views, but do not have the call published until I make the arrangements with Mr. Stetson.

Yours truly,
WM. J. McCONN.

NEW YORK, *March 28th*, 1863.
407, FOURTH AVENUE.

DEAR SIR,—I observed in a recent number of *Wilkes' Spirit of the Times* that at a meeting of veterinary surgeons lately held in Philadelphia, it was proposed to form a "National Veterinary Association;" that resolutions to try and effect that purpose had been adopted; that Mr. Wisdom and yourself were requested to correspond with "such members of the profession as they may be acquainted with, soliciting their *aid* in support of the proposed measure and their attendance at the Convention when held." The wording of the resolutions would seem to debar all who are not veterinary surgeons from taking any part or interest in the formation of the association. Although not a veterinary surgeon, I am deeply interested in all that pertains to that much (in this country) neglected and important science. I have been for some years trying to elevate that branch of comparative anatomy to a more eminent position than it occupies at present. It will afford me much pleasure if I can in any manner assist you or your associates in perfecting the object proposed. I think with you that the time has come for veterinary surgeons and others practising or interested in the art to claim for themselves a status to which they are, when properly educated, entitled. I think New York would be the most appropriate place for the first meeting, and that Agassiz would be the most suitable person to deliver the introductory lecture. I believe my suggestion would meet the views of our mutual friend Mr. Copeman. Hoping that your "long cherished desire" may be speedily accomplished,

I remain, very respectfully,
JOHN BUSTEED.

R. JENNINGS, ESQ.,
Veterinary Surgeon.

124, MACDOUGAL STREET;
NEW YORK, *May 4th*, 1863.

DEAR SIR,—In answer to your letter of May 2nd for your kindness in appointing me as one of a committee for forming a National Association to advance veterinary science in this

country, where it is greatly needed, I am obliged to decline the honour, as my health is very much impaired by close attention to the duties of my profession, and I think of going to Europe with the hope of recuperating myself by a little rest. I must convey to you my best wishes for your success in so praiseworthy an undertaking even at this late date.

I remain,

Yours truly,

R. JENNINGS, V.S. CHAS. C. GRICE, M.R.C.V.S.

UTICA, N. Y.; *April 4th*, 1863.

DEAR SIR,—In acknowledging the receipt of your favour of yesterday I beg to present for the earnest consideration of yourself and associates the propriety of making some alteration in the name or title, "National Veterinary Association." You too well know the bitter enmity, strong prejudice, and mean petty jealousy now existing among veterinary surgeons in the V. S. Now it occurs to me that a plan can be devised by which all opposition may be neutralised, if not entirely overcome. The title, "National Veterinary Association," in my humble opinion, is another specimen of "lofty tumbling," of which we have already had too many. I know the delicate nature of this matter, and shall content myself with a simple statement of fact. If the gentlemen would consent to change the *title* of the association, say to the "*National Society for the Advancement of Veterinary Science*," or knowledge, a door would at once be opened for the admission of all competent and honorable workmen, all true patrons of our art as well as those who admire knowledge simply for its real worth and power. By adopting such a *name* all petty feeling and strife may be prevented. Doctors know the value of this term; proper rules would effectually exclude all *unworthy* persons. "I for one" am anxious to see "free trade" principles adopted. The number of veterinary surgeons, "graduates" of European colleges, are but a mere fraction of those practising under that title in our cities and towns, and to be candid I must admit that some of these "home-made vets.," by years of patient study, close and untiring observation, added to a long and extensive experience, in many respects are better "qualified to practise" than some of the "two lesson" (graduates) from "abroad." Let a liberal *code* be adopted that will bring together a large portion of the "working-class" of our profession. By all means hold the first meeting in New York City. Before preparing any remarks for the public, I should be pleased to get the views of yourself and colleagues upon the "amendment" to title herein

advocated. Trusting that you will favour me by an early notice, I remain,

Truly yours,

To Robt. Jennings, V.S. A. S. Copeman.

179, Lexington Avenue,
New York; 15*th May*, 1863.

Dear Sir,—I received yours of the 14th inst. appointing me to confer with the members of the veterinary profession in this city in making arrangements for a meeting to be held here on the 9th of June next. My acquaintance with my professional brethren is exceedingly limited, having been myself but a short time resident in America. I will, however, be most happy to confer with them upon any subject pertaining to the advancement of veterinary education and science. I remain, dear sir,

Yours obediently,

R. Jennings, Esq. A. Liautard.

College Place, Brooklyn, N. Y.

R. Jennings, Esq.

Dear Sir,—I have just received your letter, the objects of which I highly approve, but as I have been out of practice some years, and am much engaged in other business, I am compelled to decline serving on the committee, at the same time I would suggest my adopted son, Alfred Large, veterinary surgeon and member of the R.C.V.S. of London, in my place. If this alteration meets the views of yourself and friends, write me by return of post, and he will attend to the matter without delay.

Yours very respectfully,

R. M. Curtis.

May 15*th*, 1863.

98, East Thirteenth Street, New York;
R. Jennings, Esq. *May* 15*th*, 1863.

Sir,—I am in receipt of your favour of the 14th inst., and would most respectfully decline the honour you would confer upon me by appointing me upon a committee for the diffusion and advancement of veterinary knowledge. My business and other engagements are such at this particular time that it precludes me from taking any active share in this very meritorious work. Hoping my refusing to act may not seriously incommode you in your undertaking, I am, yours very respectfully,

W. W. A. M. Lockhart, V.S.

The preceding letters are copied verbatim. Many others of a similar character were received by my father upon the

same subject. My object in offering them is to give credit to whom it belongs, which our New York and Boston friends would rob Philadelphia of, which I presume they will not attempt to deny.

Very respectfully yours,

ROBERT JENNINGS, Jun.

PITTSBURG, PENNSYLVANIA.

RARE LUSUS NATURÆ.

Case communicated by J. S. DARWELL, V.S., Leigh, near Manchester.

I HAVE this day forwarded to you at the Royal Veterinary College a monstrosity, thinking it worthy of a place in the College Museum, and the publication of the particulars in the *Veterinarian*. I was called to deliver a cow a day or two ago, which had been in labour for twelve hours prior to my visit, and found she had twin calves. The first I delivered was perfect in form and fully developed, but it was dead, and was lying in the uterus with its head turned towards its side. The second was the lusus naturæ which I send; the fracture of the limb I caused in extracting it. After extracting the dead calf I found one hind leg of the remaining one, and I tried to secure the other leg and deliver by the breech, but without success. I then corded the leg within reach with the intention of dismembering it; but owing to the traction on the leg it fractured, which, altering the position, assisted in its delivery, the throes being also very strong. Nothing was known of the nature of the case before my visit. The mother is doing well; indeed, she is convalescent.

We are indebted to Mr. Steel, Lecturer on Anatomy, R.V.C., for the following account of the monstrosity:

The specimen consists of two fairly-formed hind limbs, united together by an oval mass, which is flattened from above downwards. The upper surface is uniformly smooth and covered with brown curly hair. The under surface presents posteriorly a smooth hairless space, extending downwards and forwards until it terminates in a rounded opening, which has long hairs around its lower margin, and seems to be the urino-generative aperture. In front of this, on each side, may be observed rudimentary mammæ, with two small teats on each side. The remainder of the under surface bulges, and presents centrally an umbilicus, from which an umbilical cord hangs. Length of the specimen six inches; thickness at centre three inches; width from one stifle-joint to

the other nine inches. An incision having been made longitudinally from before backwards on the under surface, it was found that a small peritoneal sac, of about two ounces capacity, existed in front of the brim of the pelvis. All the muscles were in a state of fatty degeneration; their nerves had disappeared or never been present. The inferior extremity of the femur has normal condyles, but only a single non-articular, prominent ridge. There is no patella; upper extremity of the femur very small, firmly bound into the acetabulum by the remains of the muscles. Pubis, ischium, and lower part of ilium well formed, but proportioned in size to the upper extremity of the femur. Crista, spinous processes, and superior third of ventral surfaces of ilia united together by a very firm, fibro-cartilaginous union, the anterior part of which forms a flat and rounded prominence of about the size of a florin, while from the posterior an indefinite fibrous band passes a short way backwards, affording attachment to the imperfectly-formed sacro-sciatic ligaments. The pelvis, as formed by these ossa innominata, is fairly wide posteriorly, but anteriorly presents an inlet of about three inches from above downwards, and not half an inch wide. The viscera consist of a sac extending inwards for a little more than an inch from the urino-generative aperture; from it a muscular band, representing the bladder, extends to the umbilicus, where it forms the urachus, which, with the umbilical artery and vein, extended into the umbilical cord. On the floor of the aperture, about half an inch in, are two small openings terminating in closed extremities. The umbilical, femoral, and two vesicular arteries meet at a large triangular dilatation, the walls of which seemed rather red. This was situated at about an inch above the umbilicus. Further careful dissection showed the remnants of the uterus and ovary situated above the bladder, and partially surrounded by peritoneum. The veins corresponded in every respect to the arteries.

In this remarkable specimen we see the following defects of formation:—The *epiblast*, it may seem, did not become unfolded to produce a cerebro-spinal nervous centrum; it simply produced a well-formed cuticle, investing the hind limbs and the central mass. The *hypoblast* developed only at its extreme posterior part, where it, however, is only doubtfully present, as the lining of the urino-genital aperture may have been derived from the epiblast. The *mesoblast* seems to have undergone development, in so far as the state of the other layers would allow it, to have produced bones, muscles, blood-vessels, and probably nerves, and also, in so

far as it could, a peritoneal sac, by splitting up into somato-pleure and splanchno-pleure. The muscles developed fairly so long as they were independent of the central nervous system, but, failing the latter source of stimulation, degenerated. The nerves still earlier disappeared, for want of central connection. The blood-vessels, after the manner of these useful nourishment-carriers, adapted themselves to circumstances. A special part of the arteries (perhaps) developed red muscular fibres, and took upon itself the duties of the heart; but it seems that capillary influences in the tissues of the fœtus and the fœtal membranes sufficed to bring about the slight circulation necessary to the existence of the monstrosity. Thus, it seems, we can trace this perversion of development back to the early changes of the blastoderm before the production of the mesoblast. At that time some influence apparently led to the removal of much of the hypoblast, and of the anterior part of the epiblast, with obliteration of the primitive groove. This influence may have been pressure obliquely backwards and outwards on the area germinativa, perhaps as a result of development simultaneously of another ovum, or from the twin fœtus and the monster being produced from a double egg, the monstrosity being worsted in the struggle for existence.

Respiration can only have been performed by the fœtal membranes. Birth, therefore, meant termination of its existence; of course, the monster could not breathe. Cutaneous excretion must have purified the small amount of blood present in its body.

INTESTINAL CALCULI AND RUPTURED INTESTINE.

By Samuel Gill, M.R.C.V.S., Hastings.

Having attended professionally from time to time a bay mare for the last three years for what appeared to be attacks of ordinary colic, generally administering antispasmodic draughts during the repeated attacks, I have had the satisfaction again and again of affording her relief, and sending her to work for a few months. The last attack, in 1879, was exceptionally severe; but after her recovery she again fed well and was put to her usual hard work. My last visit a few days ago was, however, the climax. I found the poor animal in a profuse perspiration, with a running down of the pulse, and in such violent pain that it was most difficult to get near her. Applications of mustard to the body, in addition to the

usual anodyne draughts, proved of no avail, and in a few hours she commenced throwing herself several times violently on the ground, seemingly unconscious, till at length she was totally unable to rise. My opinion was, that the symptoms as a *whole* indicated the existence of calculi.

The result of the *post-mortem* examination showed that the large intestine was ruptured, and a round "dung-ball" was found in the abdominal cavity, having escaped through the laceration. As the mare expired almost directly she fell the last time, I am inclined to attribute the rupture to the fall rather than to the pressure of the calculus. The kidneys were enlarged and inflamed; but *no* lesion of any other part existed. The other calculi which I send you were found within the intestine. Her age was eleven.

COMMENTS ON PASSING EVENTS AND VETERINARY PRACTICE.

By "Trebble Ex."

[We print the following extraordinary production *verbatim et literatim*, as it contains matter for thought.]

Dere Mr. Hedditur,—I daresay youl be verry much surprised to receve a note from me, stil no mattur, I must first tell you Ime a verry hold reder of your verry valabel work & look forrard heverry month for is comeing hout, I verry much wish your Hopponent the Vetenary Jurnal wud not print at same time as yourn, if one cum on the 15 the month twoud be better for yure readers and no wos for neither of ye:

I ave red your book a grate many yers and ave got a good dele of good from out of it:

I must tel you ime a hold member of the perfesshun and I sometimes blush wen I think how you as all ben lookd in the Mouth by that yankey, farmer Mills, he certanly as hopperated for rigs wich our qualifide members didnt serve to think abote afore, but Mr. Hedditur he gives advise abote wat the hold members of the Perfesshun aught to now sumthing:

I shud verry much like to se him hopperate and also use the crasur, I thote sum of hour hold members wuld tell us, wich his the best way of hopperating, I se in hontaryo the yankeys dont now wich his the best, one rekummens one plan & one a nother, and one says do wat you think best: I ham gettin a hold man and hopperate on a good number of hanimals every year hoccasenly loosing one, has I suppose

all hopperators do, and wen I see Letters abote the crasur and a lad of 8 or 10 yers hopperating on hunnards and never loosing heny, I think that his *Bosh.* I hopperate with the Hirons and Clams & altho a grate many of my Colts hav never been alterd I think of aving them doun and hup agane in abote 5 minutes: I shud like to se farmer Mills andle sum of my pashents, I can tell you Mr. Hedditur ime verry fond of hopperatin, and if i ad more hedecashun, I shud ave made a valeble member of hour perfesshun: I alwus huse a rope made a purpus and ave a lup at the middel and shud like to see farmer Mills or eney other Perfesser puting hobles on sum of my pashents:

I ham aferd Mr. Hedditur that Mr. Flemming, & sum tothers are thinking to much of hedicashun and to littel of practise; hall our members cant live in touns and who his to doctor the hold wimmens Cows? les time at hedecashun and more Practise that his my motto.

I now Mr. Hedditur that Ime short of a medikel heddecashun still I try to himprove mysel, I keep a medikel Wokabbelary and wen I see what I cant make hout I serch in the Book; Ive been rather pusseld how to use the barometur; I see it helps to dyagnose disese, so horderd one from my drug man, it cum in a smal box, I thote I wuld try to use it the fust hoppertunity, it did not anser my expextashuns; I had a Bullock bad under my care & thote now his the time for to try the barometur, I had herd hit must be put hup behind, one man held is nose and another is tale, the man with the Tale laffed and said twas a quere clyster I proceded to hexplane to him the use of the hinsterment; the man with the nose thote I was giving him Quicksilver backherds, the bruit kiked out and I thote wuld spile my hinsterment, I hat last got it in and lost it and had a dele of trubble to get it out agin, and sinse that time I have given up the use of the hinsterment and dyagnose without it:

I se sum ar cumplaning abote the running Doctors hand the Quaks, there is no many abote here, I wuld certenly put um done altho has I sed in the lattter part of my letter, who is to Doctor the hold Wimmens Cows? Ime sure Mr. Hedditur has a famely man you now how nessesary it is to plese the Wimmen as well has to Doctor the Cow: but Sir, hafter workin hard hat the Cow and makin her alright, one has a wash and sets done and as a cup of bo-he with her and then she generally purduces a Bottel of temperrance creme and I can tell you Mr. Hedditur that his not to be

despiced; I used to smoke but giv hit hup has considerd it louring the dignety of the Perfesshun wich I try to hup-hold, and I do think if I dont now who shud?

I have practisd 35 yers in 1 Distric & think I have obtanid the respex of my naybours, as well as my payshents and clyents:

I have a hopponent who his a member of our Perfesshun who Ime aferd his not much respected. our County hawthoritis tuk is hoffice from him; the chefe cunstable and 2 or 3 more of my neybering Magistrates wated on me and haskd me to hallow myself to be kall'd in by the hinspecturs in Kases of Plura, wich I did, hand me hand the hawthoritis have never had but one falhout sinse Ive had the honner of bein kall'd in:

I never bled now in influensa! I used to bled a dele and make huse of a spring Flem & it looks well when you kan hopperate well and kwickly hand has I sed afore, Ime fond of hopperating; I now make use of stimmelants I find most payshents do best with stimmelants:

! Belly-ake agin!—yes Il hattend drectly; I hattended find a Kase of Flattelent Colic, give a Dose of my Mixture, hand sundry clisters, happlied ot Cloths to his habdomen (has rekummended by my frend Gamgee) hand he was curd; hand Ime sure the howner will think no other can cure Flattellant Colic like yure umble Servent:

I nede not tell you Mr. Hedditur that Flattellant Colic looks a verry serus cumplant, hand by lookin serus the howner thinks he as had a narrer escape and will think & speke well of yure umble Servent, has a grand currer of Flattellant Colic:

I send with this heffushun of mine a coppy of a bill put hout some yers sinse, a hopponent of mine and it tuk sume time to drive him away, Ive ad it framed and hung in my Surgary for the Members to see what Quakery wuld do, still his plan was not a bad un, if you had but one payshent; he usd to stop with the payshent and borro money from the howner to pay for Physic & etc. & etc. & drink till the beast dide.

I shud like to see Quakery dun away with, hand wen we have the penel Clawse hadded to hour Charter twil be a bad time for them Quaks: but we havt to drive them hout by our superier attanements and show the Payshents and Howners who thay shud employ: If Mr. Hedditur you think my heffushun will be of use to the yunger Members of the Perfesshun & that my idears are not to much in hadvance of the times, I culd give you a ceres of Papers, on

Kweer Kases and ardships gone thro, wilst labering for the Perfesshun: a wurd from you in yure next number will be enuff for your Frend XXX. TREBBLE EX.

P.S.—Ime in-cog!

Verbatim Copy.

JOHN LARVIN, Farrier and Cow Doctor, better known as the Irish Cow Doctor.

John Larvin begs to inform Cowkeepers, Farmers, and Publicans generally that he has received a valuable mixture for the cure of cattle suffering under Milk Fever, Dry Murrain and other diseases. Any Cow dying while under his treatment, will pay for the damage, if he does not tell the cause of death, before examination by opening.

Why don't you Farmers set a working-man to mow your meadows, and do good work, and charge for his time? No, the working-man must tell you what he will do it for before you set him on, and do good work. Why should you set College Men, Farriers, Cow Doctors, or Skilful Men on your dumb animals without knowing what you are to pay for doing good work? It is enough for you to lose your time and rest, to lose the food, and the dumb animal at the end. If he wants too much for doing it, pay him off;—there are plenty more in the country.

May 18th, 1872.

This is to certify that I had a cow very bad of the turn in the head and inflammation of the kidneys. In this case I applied to John Larvin, Farrier and Cow Doctor, who resides at the Bull's Head, St. Edward Street, who made a perfect cure of her in a short time.

Mr. Robert Bagshaw, Ferry Hill, Cockitt.

June 2nd, 1872.

This is to certify that I had a cow bad of the Diarhea and relax. In this case I applied to John Larvin, Farrier, and Cow Doctor (better known by the name of the Irish Cow Doctor), who resides at the Bull's Head Inn, ... who has made a perfect cure of her. She can be seen by applying to

Mr. ———, Barn Field, near Station.

April 26th, 1872.

I had a cow that had been down three days and three nights, by what the skilful men called milk fever. They applied brandy, and other medicine by other skilful men, which was of no use, but still worse. In this case I applied to John Larvin, Farrier, and Cow Doctor, at the Bull's

Head Inn, St. Edward Street, who said that the cow had no more the milk Fever than the Dog had; but that she was uncoupled. He applied a cart rope, and lapped it round her, and tightened it in a form that no man who stood by had ever seen before. She jumped up and ran out of doors, and has been well ever since.

Mr. Charles Smith, Lask-edge, Holbein.

April 9th, 1872.

This is to certify that I had a cow with inflamation of the lungs and relax. In this case I applied to John Larvin, Farrier and Cow Doctor, who resides at the Bull's Head Inn, St. Edward Street, who has made a perfect cure of her.

Mr. John Forster, Bluestone Farm, Brown Hedge.

March 16th, 1872.

I had a cow very bad of relax and diarhea. In this case I applied to John Larvin, Farrier and Cow Doctor, who resides at the Bull's Head Inn, St. Edward Street, who has made a perfect cure of her in a short time, and can be seen on application to

Mr. James Bourne, Bemersley, Newton-in-the-Moors.

Take Notice.—Farmers, Cowkeepers, and Publican's generally, who have Cattle suffering under any Farrier, Cow Doctor, or Skilful Men, are requested to observe, that John Larvin's principle is, *No Cure, No Pay.*

Pathological Contributions.

CATTLE PLAGUE.

This disease continues in those provinces in Russia which were mentioned in our Journal of last month. The Austro-Hungarian dominions still continue free from cattle plague.

In Turkey in Europe the cattle plague has appeared in two places in Thessaly.

PLEURO-PNEUMONIA.

For the first time for many years pleuro-pneumonia is reported to have appeared in Denmark. The disease was detected among a herd of sixty cattle. The whole herd was slaughtered, and exportation of cattle was prohibited from the Island of Fünen when the outbreak occurred.

In the Netherlands this disease appears to be confined to

the Province of South Holland; but an outbreak was detected in the Province of Friesland, in a herd of sixty-four cattle. The whole of the herd was forthwith slaughtered.

In England returns of the existence of pleuro-pneumonia have been received from twenty counties during the first quarter of this year, while nineteen have remained free; no case has been reported from Wales. There have been 210 outbreaks, making 522 cases in all, of pleuro-pneumonia which have occurred during this period in England. This is a considerable diminution on the number returned during the corresponding quarter of last year.

FOOT-AND-MOUTH DISEASE.

During the first quarter of the year the reported outbreaks of foot-and-mouth disease amounted to four: four animals only being attacked. In the corresponding quarter of last year the outbreaks were sixteen, and the attacks numbered 2312.

Facts and Observations.

Appearance of Œstrum in a Mare shortly before Parturition. Mr. Richard Bell, of the Cobham Stud Company, writes:—The thorough-bred mare, Lady Gower, foaled on April 12. The foal was a very small one, and only lived for a short time. During the period of utero-gestation there was nothing to call for remark until March 5th, five weeks before the mare was delivered of the foal. On this date the symptoms of œstrum were most marked, and she was put to the horse, no suspicion being then entertained that she was in foal. What is still more remarkable, however, is the fact of the recurrence of œstrum on April 7 and April 11, on both of which dates the mare was served, parturition taking place the day after the last service.

Composition of "Grains" from Malt. By A. Markl (*Bied. Centr.*, 1879, 388).—Malt, weakly dried; gives "grains" richer in starch than when it has been more strongly dried. 100 parts of grains obtained by the infusion process contained:—

	Fresh.		
	From gently.	Stronger.	Strongly dried malt.
Water . .	79·3	79·1	78·6
Albumin . .	4·1	4·7	5·4
Fat . . .	0·4	0·3	0·4
Fibre . .	6·2	7·8	9·4
Starch . .	9·5	6·7	5·3
Ash . . .	1·1	1·3	1·2

—J. K. C.—*Journ. of the Chemical Society.*

THE VETERINARIAN, MAY 1, 1880.

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

DEVELOPMENT OF THE FLUKE.

ANY experiments which would throw light on whatever mystery remains in the life-history of the parasite which has been and is now doing such serious mischief to our flocks, would be accepted at their full value by scientific and practical men. Helminthologists have demonstrated that certain varities of flukes pass through stages of development before they become sufficiently advanced to occupy the alimentary organs of warm-blooded animals, and although it has not been shown that the liver fluke which infests the sheep undergoes the same series of transition in its progress from the egg to the tailed cercarian form and final maturity, as other members of the family, there is nothing in its habits or constitution to suggest a doubt that the creature is subject to the developmental laws which govern its fellows. At any rate the contrary cannot be lightly assumed.

Public interest has been exercised to an unusual degree by the accounts of severe losses which our flock masters have recently sustained, and every one has been anxious to suggest a remedy for the evil. As Mr. Howard recently said at an Agricultural Meeting: "If the farmer does not know his business it is not for the want of teachers from all classes of society." There is, however, the consolation that no one is compelled to take the advice which is so very liberally offered on all sides.

Opinions as to the cause, nature, treatment, and prevention of "rot," have been freely scattered in the pages of the daily press, and generally they have been of the usual haphazard character, and have doubtless been received by those for whose benefit they were intended with the usual amount of inattention, but a statement contained in a letter to the *Times* a few weeks ago, by Dr. John Harley, deserves a passing notice, on account of its contemptuous disregard of the results which have been arrived at by the distin-

guished *savants* who have made parasitism a special object of study and research.

Referring to the theory, as he called it, of the development of *distoma*, Dr. Harley adds: "This error may be recognised by any farmer who will take the trouble to feed a new-born lamb with a few flukes taken direct from the body of a recently killed sheep, and before they have discharged their eggs, and keeping the lamb free from further infection; in a few weeks then examine the alimentary canal and liver, when he will find the parasites in increased numbers in the body of the lamb."

We pass over the suggestion that the farmer should undertake such an inquiry as the writer probably intended to be figurative and not literal. He must have known that in the event of flukes being developed from the ova of the parent worm they would be necessarily minute objects at the end of a *few weeks*, and therefore not discoverable by a person who was unaccustomed to pathological investigations. But we feel justified in remarking that the statement ought not to have been made by a scientific man on any less positive ground than that of his own observations. We tried the experiment repeatedly many years ago, and, as a matter of course, without result; but the statement of a medical authority would be accepted without question by people who knew nothing about the subject, and if no harm is done, no good can possibly arise.

Dr. Cobbold, in his letter of reply to Dr. Harley, simply contents himself with flatly denying the writer's statement, apparently not deeming the matter worth discussion. Dr. Crisp refers, we presume, ironically to Dr. Harley's *important discovery*, and asks for details of his experiments, which, it is needless to say, he does not get. Meanwhile one professional friend is conducting some experiments in order to determine whether or not lambs may be infected by the droppings from the dams, and another has arrived at the astounding conclusion that flukes are the growth of a day, a simple consequence, he solemnly assures us, of the very magnificent law which regulates the world—the law of spontaneous development!

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Monthly Council, Wednesday, April 7th, 1880. Present, the Duke of Bedford, President, in the chair.

CHEMICAL COMMITTEE.

Mr. Wells (chairman) presented the quarterly report of the committee, and recommended that it be published in the agricultural newspapers. Among the cases of interest was the following:

Poisoning of Animals by Castor Cake.

Mr. Rowland Taylor, M.R.C.V.S., Queen Street, Colchester, on the 8th December, sent a sample of linseed-cake, stating at the same time that he had lost several sheep fed on the cake, and attributed his loss to a poison in the cake.

The subjoined report shows that the cake was adulterated with castor bean cake, and extremely poisonous. No information respecting the vendor and price of this cake could be obtained.

Laboratory, 12, Hanover Square,
December 19th, 1879.

Dear Sir,—I have the pleasure of enclosing an analysis of the sample of cake which you sent to me a short time ago. The cake, I regret to say, is not a genuine linseed-cake, and contains niger cake and *castor-bean cake*, and in my judgment is rank poison to sheep or cattle. It has a foul smell, like that of rotten tea-leaves and similar vegetable substances, and contains dark-coloured bits of vegetable matter, not found in genuine linseed cake. Unlike good linseed-cake, it does not get nearly as mucilaginous when mixed in a powdered state with water as linseed-cake of fair average quality, and it has a nasty taste and disgusting smell.

The most serious contamination of the cake is that with castor-cake, the presence of which I have unmistakably verified by repeated microscopical observations. I have also found castor-cake in the meal or powdered cake which accompanied the bits of cake you sent me, and as far as I can judge the powdered cake is of the same character as the unbroken cake. Castor-cake might have been accidentally mixed with linseed-cake in shipping, in which case the powdered cake would contain castor-cake powder, whilst the linseed-cake itself might be free from castor. As the determination of this point is of importance, I examined the meal and the unbroken bits of cake separately, and find castor-bean husks in the interior of the unbroken pieces of cake; it is clear, therefore, that in the making of the cake castor-beans have been crushed along with the linseed, and that castor-cake did not merely accidentally get mixed up with linseed-cake in the shipping.

My experience with regard to castor-bean cake is that, whilst castor oil, as you well know, is a purgative which may be given to man or beast in considerable quantities, the expressed bean is a most virulent irritating poison. A single bean is enough to cause vomiting, purging, and utter prostration, from which the patient does not recover for days. I have, therefore, no hesitation in declaring the cake as very poisonous. Probably less than 1 lb. will cause the death of a sheep.—Believe me, yours faithfully,

Aug. Voelcker.

R. Taylor, Esq.

Dr. Voelcker also directed attention to several samples of oats which had been sent to him for examination, and which he found had been subjected to sulphur fumes with a view of bleaching or brightening discoloured unsound old oats, and giving them the appearance of sound new oats.

VETERINARY COMMITTEE.

Sir Brandreth Gibbs reported that the Committee had received a letter from the Secretary of the Royal Veterinary College approving of the new schedule of veterinary privileges as approved by the Council; and the Committee recommended that the same be now printed, and issued to the members of the Society in the usual manner. The Committee had also received the following letter from the Highland and Agricultural Society of Scotland:

"The Directors have to-day had the report of the Veterinary Committee before them on the subject of joining with your Society in giving prizes to veterinary students, and after careful consideration they have arrived at the resolution not to alter the present arrangement of giving prizes in the three veterinary schools in Scotland, and also at our examinations. The sum required for these prizes in as much as the Society can devote to veterinary encouragement, and, therefore, the Board determined to-day not to join with your Society in the scheme proposed in your letter of the 30th January—at any rate, not till after our examinations cease, viz. in 1881."

Dr. Greenfield, of the Brown Institution, Wandsworth Road, S.W., had expressed his desire to have sent to him any animals or fowls suffering from the epidemic diseases now so fatal in many districts, and Prof. Simonds had also expressed a similar desire on behalf of the Royal Veterinary College.

This report was adopted.

A letter was also read from the Foreign Office, transmitting a dispatch from Her Majesty's High Commissioner in Cyprus, respecting the "Sirivil" insect, accompanied by specimens of it preserved in spirit, and asking for advice as to the best manner of destroying this insect.

On the motion of *Mr. Wells*, seconded by *Sir Brandreth Gibbs*, the matter was referred to the Society's Consulting Naturalist (Mr. Carruthers).

ROYAL COLLEGE OF VETERINARY SURGEONS.

MEETING OF COUNCIL, HELD APRIL 9TH, 1880.

The PRESIDENT in the Chair.

Present:—Professors Walley and Pritchard; Major-Gen. Sir F. Fitzwygram; Messrs. Blakeway, Taylor, Reynolds, Greaves, Freeman, Anderton, Gowing, Whittle, Dray, Moon, Batt, Fleming, Morgan, Harpley, Cartledge, G. Williams, Cartwright, and the Secretary.

The minutes of last meeting were read and confirmed.

The *Secretary* read a letter from Prof. McCall regretting his inability to attend the meeting. Also a letter from Mr. John Roalfe Cox, acknowledging with thanks the honour of his election as a member of the Court of Examiners.

The *Secretary* announced that Gen. Sir Frederick Fitzwygram had presented to the museum some specimens of grasses, which had been classified and arranged by Dr. Cobbold.

On the motion of *Mr. Dray*, seconded by *Prof. Walley*, a vote of thanks was accorded to the donor.

Mr. Fleming presented to the museum a fractured os corona of a pony and some amphistomes from the stomach of a horse, received [illegible] India.

On the motion of *Mr. Dray*, seconded by *Mr. Gowing*, a vot[illegible] was accorded to Mr. Fleming for his presentation.

A letter was received from a chemist residing in Boston, Lincolnshire, accompanying some specimens of œgrophiles, said to be from the stomach of a ewe sheep.

On the motion of *Mr. Cartledge*, a vote of thanks was awarded to the donor.

The *Secretary* announced that a letter had been received from Sir James Gell, Attorney-General, Castletown, Isle of Man, in which he expressed a wish to be furnished with a register of qualified members; and that a copy of the register had been sent to him accordingly.

The *Secretary* also intimated that a long letter had been received from the same gentleman with reference to the sale of poisons. Some conversation arose on this subject, and it was considered that it had more reference to the Pharmaceutical Society than to the College of Veterinary Surgeons.

On the motion of *Mr. Reynolds*, seconded by *Prof. Pritchard*, it was resolved to refer the subject to the Royal Pharmaceutical Society.

The Retiring Secretary.

Mr. Dray, referring to the retirement of Mr. Coates, said that after his long services as Secretary, which had been very faithfully performed, and looking to the high moral integrity characterising Mr. Coates, he would propose that £30 be granted to him annually for the term of his natural life.

Mr. Fleming said he had great pleasure in seconding the motion.

Mr. Gowing explained that Mr. Coates's salary was £150, and that the salary of the new secretary was fixed at £120; according to this arrangement, therefore, he thought that the pension for the retiring secretary could be amply provided for.

Mr. Morgan questioned whether it would be legal for the Council to grant an annuity. He had nothing to say, except in favour of Mr. Coates and the manner in which he had performed his duties; but it would be dangerous to establish a precedent such as was now proposed.

Mr. Dray said he was quite willing to modify his resolution. If the Council thought proper to grant a sum annually, he would be quite willing to agree to it.

Mr. Fleming pointed out that there was nothing in the charter to prevent the Council granting an annuity. It rested with the Council whether it should be an annuity or an annual grant. Perhaps it would be safer to make it an annual grant.

Mr. Harpley suggested that it would, perhaps, be better to make a grant to Mr. Coates at once of a hundred guineas, by way of bonus. He merely threw out that suggestion for discussion. He had a desire, as he had no doubt the other members of the Council had, to do something for the benefit of Mr. Coates on his retirement, considering that he had served them so well.

Mr. Morgan seconded Mr. Harpley's proposal.

Professor Walley said he was anxious that something should be done in recognition of Mr. Coates's services, but if he were granted an annuity of £30, the new secretary would stand no possible chance of improving his position as time went on.

Mr. Fleming pointed out that a hundred guineas was a very small sum to award to the secretary, considering his long services.

Mr. Gowing said that he would willingly hold up his hand for [illegible]but the question was whether or not the Council could afford it.

[illegible] *Taylor* thought that long and faithful services were worthy of [illegible] He wished to ask on what ground the late Mr. Gabriel [illegible] whether it was annual; and he should like to know

whether Mr. Coates would wish a certain sum presented to him at once, or whether he would desire an annual presentation.

Mr. Dray pointed out that, for some years, Mr. Coates performed the duties of secretary at only £100 a year. This, he thought, ought to be taken into consideration in considering what remuneration the Council should give to Mr. Coates on his retirement.

Mr. Harpley deprecated taking the allowance to the retiring secretary from the salary of the incoming one. On the last occasion it was an annual vote, and not a vote for life.

Sir F. Fitzwygram thought the feeling of the Council seemed to be in favour of an annual grant to the secretary; but he suggested that counsel's opinion should be taken whether the Council could legally make such grant.

The *President* then put Mr. Harpley's amendment, "That the sum of one hundred guineas be given to Mr. Coates on his retirement."

On a show of hands being taken, four voted for the amendment.

The *President* then put the motion, "That the sum of £30 per annum be given to Mr. Coates for his long services, if such a grant can be made legally." The motion was carried.

Mr. Coates, the retiring secretary (who had been absent during the discussion), was called in and apprised of the result. He expressed his gratitude for the kindness shown to him by the Council, and said that they had granted to him more than his past services gave him any right to expect.

Letters were read from several applicants for the post of secretary; and a report was read from the committee appointed to consider the subject recommending the appointment of Mr. Arthur Wm. Hill. On the motion of *Prof. Walley*, seconded by *Mr. Gowing*, the recommendation of the committee was agreed to.

Mr. Dray said, that in severing the connection of the Council with Mr. Coates, they ought not to separate without giving an unanimous expression of their approval of his long and faithful services; and he begged to move a resolution to that effect.

Mr. Gowing seconded the motion, which was supported by *Mr. Greaves*, and carried unanimously.

Mr. Hill, the new Secretary, was called in and informed that he had been elected by the Council. He briefly returned thanks for his election.

Royal Agricultural Society.

The *Secretary* read the following report in reference to the examinations in connection with the Royal Agricultural Society:

To the President and Council of the Royal College of Veterinary Surgeons.

GENTLEMEN,—We have the honour to report that the examination for the prizes offered by the Royal Agricultural Society took place on Thursday, the 22nd inst., at the Islington Cattle Market, and the Royal College of Veterinary Surgeons, 10, Red Lion Square.

Six candidates were eligible for competition. Of these one declined; one, in consequence of the regiment in which he holds his appointment having been removed from Aldershot to Leeds, did not receive his notice until too late, and one sent no reply,

Three presented themselves, and these having afforded such proofs of their practical acquaintance with the subjects brought under their notice, we adjudicate the prizes in the following order:

1st prize	William Alston Edgar	1000	marks,
2nd ,,	William Frank Smith	875	,,
3rd ,,	Nicholson Almond	735	,,

out of a maximum of 1200 marks.

It is a subject for great regret that the liberal inducements offered by the Royal Agricultural Society have not been more appreciated by the recent graduates of the profession; possibly this may in some measure arise from the expenses occasioned by a journey to London, and we should therefore suggest that some allowance for travelling expenses might overcome the difficulty.

(Signed) Thos. Walton Mayer.
D. Gresswell.
Jan. 23rd, 1880. Wm. Duguid.

The *President* said that in connection with this matter he had called on Mr. Jenkins, the Secretary, and he was agreeable to do all he could to further the arrangements between the Highland Society and the Royal Agricultural Society. He had also called on Mr. Menzies, in Scotland, and he believed that the matter was now before the committee of the Highland Society. He expected that before the next meeting some arrangements might be made.

Mr. Harpley said he had attended a meeting of the Royal Agricultural Society, and he was sorry to say, from what he had observed, that the scheme had for the present broken through.

The *Secretary* reported that at a special meeting of the Court of Examiners for the Fellowship Degree, held February 7th, 1880, the candidates present underwent their examination and were admitted Fellows of the Royal College of Veterinary Surgeons.

At a meeting of the Court of Examiners for the Pass Examination, held on March 30th, March 31st, and April 1st, thirty-three candidates were passed and one was rejected.

At a meeting of the Court of Examiners for the Second Examination, held April 2nd, 3rd, 5th, and 6th, thirty-one were passed and seven were rejected.

At a meeting of the Court of Examiners for the First Examination, held April 7th and 8th, fourteen candidates were passed and seven rejected.

A question arose as to the qualifications of one of the candidates, Mr. Simmons.

After some discussion it was arranged that the Medical Diploma of Mr. Simmons's qualifications should be obtained through one of the schools.

The *Secretary* stated that twenty-two candidates holding the Highland and Agricultural Society's certificate had paid the required fee, and a list of names had been submitted to the Principals of different schools; and he asked for the sanction of the Council that these candidates should obtain the diploma of the Royal College of Veterinary Surgeons.

The sanction was granted.

The *Secretary* said that he had received three certificates, dated April 7th, 1880, from the Principal of the Edinburgh Veterinary College, of candidates holding the Highland and Agricultural Society's Certificate, and proposing to remit the fee of seven guineas to the Royal College of Veterinary Surgeons. It was agreed that the three applicants should be admitted members of the College as asked by them.

On the application of the Secretary, it was agreed that 200 diplomas be printed between now and July next.

The obituary notice was read.

Mr. Dray referred to the death of Mr. Cuthbert, one of the members of Council, and proposed that a letter of condolence be sent to Mrs. Cuthbert and family, sympathising with them in their bereavement.

Mr. P. Taylor seconded the motion, which was carried unanimously.

The *Secretary* read a letter from Prof. McCall, in which he asked, with

reference to Mr. Crozier's examination, whether the first half of his examination under the old rules would be accounted to him, or whether he would have to stand a first, second, or third examination.

The *President* said that if the applicant failed under the old rules he must commence *de novo*.

The *Secretary* stated that a letter had been received from Mr. Glover, from the Veterinary College, Camden Town, stating that in consequence of illness he was prevented from coming up for examination in January last. He was told he could not come up again until the following Christmas, which he considered a great hardship.

It was decided that unless a certificate was received from the Principal of the Veterinary College in which Mr. Glover had been educated he should go up in July.

The *Secretary* announced that a letter had been received from Dr. Dunsmure, asking to be furnished with the requisite diplomas and papers for examination commencing April 9th, and that they should be extended to the 14th, 15th, 16th, 19th and 20th.

The *Secretary* intimated that the diplomas had been sent.

The *Secretary* announced that a letter had been received from Mr. Moore, dated the 3rd of February, 1880, in answer to a letter from the President of the Royal College, in which the writer stated that the letter had been laid before the Practitioners' Committee, and that they considered it a most evasive answer to the requisition to call a meeting in the rooms of the Royal College.

Another letter, dated April 2nd, referring to the same subject, was read from Mr. Moore.

A letter was read from Mr. J. C. Rutherford, asking his name to be entered as a candidate for the Fitzwygram prizes if it was not too late.

Sir F. Fitzwygram said that as soon as he knew the date of the Scotch Examinations he would fix the date for the Fitzwygram Prize Examinations.

Finance Committee.

The vouchers and receipts for payments during the preceding quarter were examined and found correct. The present liabilities amounted to £110 18s. 7d., which the Committee recommended should be discharged.

New Register.

The *Secretary* asked permission for a new Register to be printed, so as to include the new members of the profession.

On the motion of *Mr. Fleming*, a committee, consisting of Mr. Collins, Mr. Harpley, and Mr. Fleming, was appointed to look into the matter prior to the new Register being printed.

The Annual Report.

The President and Mr. Dray were appointed, with the Secretary, to draw up the annual report.

Mr. Batt and Mr. Banham were appointed auditors.

The Secretary read a list of names that had been proposed as members of Council.

A new financial journal was ordered to be purchased.

Mr. Fleming moved a resolution, of which he had previously given notice, "That steps be immediately taken by the Royal College of Veterinary Surgeons to obtain an Act of Parliament for the protection of the title of veterinary surgeon, or other title conferred by Royal Charter." Mr. Fleming reiterated his views in regard to the motion, which views he explained at length on a former occasion.

Professor Walley seconded the motion, and, in doing so, expressed his entire concurrence with the ideas set forth by Mr. Fleming.

Mr. Greaves and *Mr. Blakeway* supported the motion, which, on being put to the vote, was carried.

This concluded the business of the Quarterly Meeting.

A SPECIAL MEETING

was afterwards held.

Sir Frederick Fitzwygram brought forward a motion which, he said, was not carried at the last special meeting, in consequence of there not being a quorum. It was for the purpose of amending the rules in relation to the appointment of scrutineers. It was felt desirable to appoint the scrutineers prior to the meeting, so that, after their business was finished as scrutineers, they could take part in the transaction of any subsequent business. His proposal was to expunge the words that required the scrutineers to be appointed at the General Meeting, and to add, "At the meeting prior to the Annual Meeting the Council shall choose from among the members of the profession not less than six persons, to act as scrutineers in the election of members of the Council."

Mr Whittle seconded the motion.

On the motion of *Professor Pritchard*, seconded by *Mr. Reynolds*, and supported by *Professor Walley*, an amendment was carried to the effect, "That the scrutineers be the first parties to deal with the voting papers."

Sir F. Fitzwygram observed that this would throw a great burden on the scrutineers, and that he did not see the slightest objection to the secretary arranging the papers.

Mr. Fleming, on behalf of Mr. Collins, brought forward a motion for the amendment of a bye-law, submitted on a former occasion, to enable veterinary surgeons abroad to vote for members of Council at the annual meetings. He explained that Mr. Collins did not wish the motion to be put that evening; and he would move, in accordance with Mr. Collins's wish, "That a small committee be formed to take into consideration the best means for enabling the members of the profession who are abroad to vote for members of Council."

Mr. Whittle seconded the motion, which was carried.

A committee, consisting of the President, Sir Frederick Fitzwygram, and Mr. Fleming, was then appointed to carry into effect the spirit of the resolution.

Mr. Fleming then moved the adoption of the following resolution, which he said had been discussed some months ago, viz. "That in case any student, after having attended the prescribed course, is prevented by any cause—the fault not being his own—from presenting himself for the first or second examination, he shall, after having passed that examination, be allowed to present himself for the one immediately following, by studying one term less than he would by the Bye-laws 31 and 32, provided the full number of terms shall have been complied with."

Professor Walley seconded the motion, which was carried.

Mr. Fleming then moved a new bye-law, "That no student receive the diploma of the Royal College of Veterinary Surgeons until he shall have attained the age of twenty-one years." He explained that the effect of the bye-law would be that no student could receive a diploma unless he was twenty-one years of age, and gave his views on the subject to the same effect as he had given them at a previous meeting of Council.

Mr. Whittle seconded the motion, which was opposed by *Mr. P. Taylor* and *Professor Walley*.

Mr. Taylor moved an amendment, and *Professor Walley* seconded it, "That no student shall receive the diploma of the Royal College of Veterinary Surgeons until he shall have attained the age of twenty years."

The motion and the amendment were put to the meeting, when fourteen voted for the amendment, and four for the motion. The amendment was therefore declared carried.

Professor Walley moved certain alterations in Bye-laws 32, 33, 35, and 47; but, after discussion, amendments were carried, allowing the bye-laws to remain as they were at present.

The proceedings then terminated.

SPECIAL MEETING OF THE COUNCIL, HELD 16TH APRIL, 1880.

In the absence of the President, on the motion of *Mr. Coates*, seconded by *Mr. Batt*,

E. C. Dray, Esq., Vice-President, took the Chair.

Present:—Professors Pritchard and Axe; Messrs. Batt, Coates, Collins, Dray, Morgan, Proctor, Williams, and the Secretary.

The minutes of the last quarterly and special meetings were read and confirmed.

The *Secretary* stated that letters expressing regret at their inability to attend the meeting had been received from Mr. P. Taylor, Mr. Whittle, and Mr. Moon.

On the motion of *Mr. Morgan*, seconded by *Prof. Pritchard*, the amended Bye-law No. 7, proposed by Sir Frederick Fitzwygram, was confirmed, signed, and sealed, in accordance with the provisions of the charter.

On the motion of *Mr. Morgan*, seconded by *Mr. Batt*, the new "Bye-law," to follow No. 32, proposed by Mr. Fleming, was also confirmed, signed, and sealed, in accordance with the provisions of the charter.

The *Secretary* announced the receipt of a letter from Mr. C. A. Green-Armytage, Durban, Natal, acknowledging the arrival of a certificate in lieu of his original diploma which he had lost.

The following letter was read from Major-General Sir Frederick Fitzwygram:

"Dear Mr. Coates.—I fix Tuesday, May 4th, for the competition for my prizes. The examination will be held as usual in London and Edinburgh."

The *Secretary* stated that a letter had also been received from Mr. Archer, who stated that he had passed his first examination, and requested to be informed whether he must attend both a summer and a winter session to be eligible for the second examination next April.

The subject was directed to be referred to the principal of the Royal Veterinary College.

The *Secretary* read the draft annual report.

On the motion of *Mr. Batt*, seconded by *Mr. Collins*, the report was received.

Mr. Collins asked if it were intended to act on the resolution passed at the last annual meeting, and circulate the report prior to the next annual meeting.

Mr. Coates said it was intended to act in accordance with that resolution.

Prof. Axe said he doubted whether that was a matter with which the annual meeting had power to deal.

Prof. Pritchard said the distribution of the report entailed expenditure, and therefore was solely a matter for the consideration of the Council. The annual meeting could only make a suggestion to the Council.

Mr. Collins said although no formal resolution had been passed by the Council with regard to this matter, the decision of the annual meeting had been tacitly accepted by the Council.

Prof. Axe thought that nothing should be taken as accepted. It ought to have come before the Council.

Mr. Collins moved "That the report, including the treasurer's annual balance sheet, be adopted.

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

Prof. Pritchard moved, and *Prof. Axe* seconded, "That the annual report be printed and circulated with the voting papers."

The resolution was agreed to.

The *Secretary* stated that letters had been received from Prof. Williams and Prof. McCall nominating scrutineers for the annual meeting. Prof. M'Call nominated Mr. Archibald Robinson, Mr. Robert Mitchell, and Mr. Wm. Anderson; Prof. Williams nominated Prof. Vaughan, Mr. R. Rutherford, Mr. E. Grey, Mr. Reekie, and Mr C. Cunningham.

Mr. Coates said he had written to the principals of the three Scotch schools, asking them to nominate some gentlemen resident in Scotland, who would officiate as scrutineers at the annual meeting.

On the motion of *Mr. Collins*, seconded by *Prof. Pritchard*, the eight gentlemen nominated were appointed scrutineers.

The *Secretary* read the house committee's report, which, on the motion of *Prof. Axe*, seconded by *Mr. Proctor*, was received.

Prof. Axe said he should be glad to contribute interesting specimens to the Museum if the College would provide the necessary cases and accommodation.

Mr. Collins said he thought that a proposal to provide cases was agreed to months ago.

Mr. Coates said Mr. Harpley did propose such a resolution, and it was carried, but in consequence of the proposed removal to Fitzroy Square the matter remained in abeyance. As a member of the Council he would move that a sum of money not exceeding £50 should be laid out for the improvement of the Museum.

Mr. Collins thought that a detailed estimate of the costs should first be prepared.

Prof. Axe suggested the appointment of a Museum Committee. At present there were no specimens by which students could be examined.

On the motion of the *Chairman*, seconded by *Mr. Batt*, a Museum Committee was appointed, consisting of Prof. Axe, Prof. Pritchard, and Mr. Fleming, with instructions to prepare an estimate of the necessary outlay.

On the motion of *Prof. Axe*, seconded by *Mr. Collins*, the house committee's report was adopted.

A cheque was ordered to be drawn for £12 to meet the cost of fixtures, &c., paid by the retiring secretary.

Mr. Coates said he had about twenty guineas in hand, consisting of fees paid by the Highland and Agricultural Society's members. He wished to know whether he should pay the money to the treasurer or to the bankers.

It was decided that it should be paid into the bank.

A vote of thanks to the Chairman was proposed by *Prof. Pritchard*, seconded by *Prof. Axe*, and agreed to.

ROYAL VETERINARY COLLEGE.

REPORT OF THE COMMITTEE APPOINTED TO CONFER WITH A DEPUTATION OF VETERINARY SURGEONS.

Your Committee, by appointment, met to-day, Feb. 9th, a Deputation from the London and Provincial Veterinary Surgeons, who feel aggrieved at what they term "the unfair competition of the Royal Veterinary College with them in their ordinary practice."

The Deputation was numerous, and comprised, among others, Messrs. J. Moore, T. Moore, J. Howe, J. I. Lupton, W. Hunting, W. Helmore, and R. Ward.

The Committee invited the members of the Deputation to express, either collectively or individually, their grounds of complaint and the remedies which they would suggest.

It soon became obvious that the grounds of complaint were divided into two heads, viz.—1st. The injury done to private practitioners by the privileges enjoyed by Subscribers, as sanctioned by the Rules of the Royal Veterinary College; and 2nd. The injury also done to them by the alleged practice of the Professors of the College among the public.

The Committee beg to state that the complaints were very temperately and fairly stated.

With regard to the first ground of complaint—namely, the privileges of Subscribers—it was urged by the Deputation that though the great majority of the Subscribers did not avail themselves of their privileges to any unfair extent, yet there were a certain number of dealers and large firms who did so, and who thus received advantages at the expense of the College, at great loss of time to the Professors and to the injury of private practitioners, which was not warranted by the amount of their subscribtions.

The Committee think that this complaint is not unreasonable, and suggest, for the consideration of the Governors, that the privileges of Subscribers should not be taken advantage of to such an extent as to afford fair grounds of complaint.

The object of the College is not profit, but the promotion of Veterinary education. It is right that those gentlemen who are kind enough to subscribe towards this desirable object should receive in return some advantages. But it is certainly not the object or wish of the Governors to injure or interfere with the fair rights of the Veterinary Profession.

The Committee think that these abuses might be checked without any detriment to the Subscribers by restricting the number of horses to be examined in a year to five without fee, or to ten on payment of an additional sum of £2 2s., or at a charge of 10s. 6d. for each horse above five.

The Committee also recommend that the charges per night per horse should be raised from 3s. 6d. to 4s.

The Deputation complained of the very low charge made for the visit of a Professor in serious outbreaks of disease, viz. £2 2s.

The ground of this complaint was not that such visits interfered with the practice of the Local Veterinary Surgeon, for in such cases his daily attendance would, of course, be still required; but the fact that the services of an eminent Professor from London could be obtained for £2 2s. caused much discontent, and interfered with the usual and indeed proper charge of the Local Veterinary Surgeon.

There is no doubt a good deal of truth in this argument, but, on the

other hand, it is desirable, in the best interest of Agriculture, that Farmers and others should be supplied at a low charge with the best professional advice on the occurrence of serious outbreaks of disease, and the Committee therefore do not recommend any alteration in the charge either to the Subscribers to the College or to the Members of the Royal Agricultural Society; but to Non-Subscribers the Committee recommend that the charge should be raised to £5 5s.

The Committee think that the Profession would be satisfied with these changes; and as they will not affect injuriously, but rather otherwise, the financial interests of the College, they recommend them to the favorable consideration of the Governors.

It will be observed that the complaints are not directed against the College generally, but against certain abuses, or, if abuse be too strong a word, against undue advantage being taken by certain individual Subscribers.

As regards the College generally, the data collected by Mr. Collins and the Secretary from the books show that there is no ground for any charge of "underselling" the Profession.

It appears from those data that in the year past 2052 patients were treated, and 1447 Horses were examined. In addition to the charge for keep, the subscriptions paid gave an average of £1 1*s.* for each Horse examined, and 9*s.* for cost of medical treatment for each case.

As regards the second ground of complaint, viz. the practice of the Professors in visiting and examining animals outside the College, which was stated to be frequent, no specific instances were brought forward in a way so as to admit of immediate investigation.

The Committee could only assure the Deputation that any such practice was most strictly prohibited by the terms of the engagement of the Professors, and that any cases which they could prove would be visited with the severest penalty. With this assurance the Deputation appeared perfectly satisfied.

The Deputation also objected to the Professors constantly appearing in Law Courts as witnesses or experts, as interfering with the legitimate practice of the Profession.

The Committee assured the Deputation that the Governors were much opposed to the valuable time of their Professors being taken up, sometimes for days together, in the Law Courts; but that a subpœna compelled attendance.

The Committee recommend, with a view of discouraging this practice, that the fees received for such attendance be paid into the College Fund.

The Deputation likewise objected to the employment of the Professors at the Smithfield and Royal Agricultural Shows at a low fee; but on explanation that it was for the good of the public service that the inspectors at these shows should be totally unconnected with breeders and dealers, and also specially skilled in a knowledge of dentition of animals, so as to command public confidence, the Deputation withdrew their objection.

The Deputation then pressed their objection to the employment of the Professors at the Islington and Alexandra and other Horse Shows.

As these Shows are private speculations of Limited Liability Companies, the Committee think that the Profession have fair grounds for their objection. When a Company make a profit, they may fairly be called on to pay the usual rates. Where a Society makes no profit, as the Smithfield Club and Royal Agricultural Society, it is right that the College should afford them every assistance.

The Deputation did not in any way object to the cheap practice lately instituted by the Governors.

The Deputation made a suggestion that private Veterinary Surgeons should be allowed to send interesting cases into the College Infirmary *free of charge*. It was stated that there were many interesting cases which would not pay the owner to have treated on the chance of recovery, and which would therefore be sent to the knackers; but which would be most interesting to keep for further treatment.*

The Committee think that there would be a difficulty in doing this, but they are also of opinion that it would be very desirable if it could be arranged. As a matter of fact, there are very few severe cases in the Infirmary. The horses belonging to gentlemen are generally treated before the cases become serious, and again, this class of horse seldom meets with the severe accidents so common among a lower class.

The Deputation spoke throughout in a very fair and friendly manner, and expressed a cordial wish to work with the Royal Veterinary College.

F. W. Fitzwygram, *Chairman.*
Arthur Somerset.
M. J. Harpley.

Adoption.

At a meeting of the Governors on March 16th, 1880, this Report of the Committee was presented and agreed to, subject to certain necessary alterations in the Bye-laws and Regulations.

By Order. Richard A. N. Powys, *Secretary.*

ROYAL VETERINARY COLLEGE.

The usual Quarterly Meeting of the General Purposes Committee was held in the Board Room of the College on Tuesday, April 13th.

Present.—Sir Paul Hunter, Bart. (Chairman), Col. Kingscote, C.B., M.P., Sir F. Fitzwygram, Bart., Mr. R. B. Berens, Lord Arthur Somerset, Sir James Tyler.

After the Accountant had read the Quarterly Statement of Receipts and Expenditure, the names of fifty-seven new Subscribers were submitted to the meeting and declared elected.

The Principal's Quarterly Report was then read, from which it appeared that, owing to the resignation of Professor Pritchard, it had become necessary to make provision for conducting the Infirmary and Establishment duties hitherto undertaken by him—and also for filling the vacancy in the Scholastic Department of the College. The Principal reported that satisfactory arrangements had been made.

It was further reported that 226 horses and 10 dogs had been admitted nto the Infimary during the three months ending March 31st.

Of the 226 horses, 92 were affected with lameness of various kinds, and 22 were admitted for special examination as to their general soundness, 71 suffered from illness mainly affecting the respiratory or digestive organs, 16 were the subjects of lacerated wounds, 9 were affected with farcy or glanders, and 8 with diseases of the skin.

The dogs were mostly the subjects of distemper, skin diseases, or injuries.

With regard to the School, the Report stated that the attendance and

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* All animals so admitted will become the property of the College; but any animal, if cured, may be reclaimed by its former owner on paying for its keep while under treatment.

conduct of the Students had been, on the whole, satisfactory; and that at the Examinations just concluded out of thirty-four Students, who presented themselves for the Diploma of the Royal College of Veterinary Surgeons, thirty-three had passed, fifteen having done so with great credit.

The Report, which concluded with a statement of the professional services rendered to members of the Royal Agricultural Society, was considered in every respect satisfactory.

After some further business of a formal character had been transacted, the meeting terminated.

CENTRAL VETERINARY MEDICAL SOCIETY.

THE ADVISABILITY OF ESTABLISHING SUITABLE AND ADEQUATE CONVENIENCE FOR VETERINARIANS TO MAKE *POST-MORTEM* EXAMINATIONS, &c.*

By George A. Banham, M.R.C.V.S.

Mr. President and Gentlemen,—As there is little business or matter for discussion to-night, I beg, with your permission, to bring before you a subject which has more or less occupied my thoughts ever since I entered the veterinary profession. It is one, I have no doubt, which will meet with strong disapproval, but I hope you will excuse me for venturing to bring it before you, for if you approve of the idea, and consider it worthy of discussion, I shall be satisfied, and if you think it useless and unprofitable I shall have the satisfaction of knowing that what I think as useful others much better able to judge than myself consider otherwise, and *I* shall have learned something, and hope, therefore, that if one member only profits by a meeting it cannot be said to be wasted. Moreover, I consider we are all bound as members of this Society, to lay before the meetings any suggestion that we consider worthy for the members to hear, and obtain the value of their opinions on the matter, and so arrive at satisfactory conclusions. Therefore, gentlemen, with this apology I will lay the subject in question before you for discussion. It is mainly based upon the following questions :—1st. What convenience have the London practitioners for properly carrying out a *post-mortem* examination? 2nd. What means is there for the destruction of animals suffering from contagious diseases? 3rd. How may these objects best be obtained.

I may say that ever since I have had any connection with veterinary science I have always found a difficulty in being able to obtain proper and adequate facilities to educate myself to recognise the appearances and *post-mortem* lesions of diseases in our patients. May I ask, whether we have learned sufficient morbid anatomy and know all the *post-mortem* lesions presented in our animals at the end of our collegiate education? Answering for myself I say decidedly no, but that we are only then in the position to profitably commence making autopsies. Therefore, in order that practitioners may become thoroughly acquainted with *post-mortem* lesions, the utility of which, I think, few will deny, we ought to continue our microscopic examinations of all the subjects which die

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* Read before the Fellows of the Central Veterinary Medical Society on April 15th, 1880. The discussion was adjourned till next night of meeting.

under our charge so far as we possibly can, and "follow up" our case so that ultimately we may arrive at some satisfactory conclusions.

This, gentlemen, would not only educate us to recognise the lesions, and be more in unison with each other relative to those found, but, I think we should also find that, in some cases at least, our treatment would be materially altered, and it would tend to increase our diagnostic and prognostic power for similar cases in future. It is useless for me to comment further upon the utility of the subject, for it is better known to you, perhaps, than myself; so I will pass on to consider what conveniences practitioners have for educating themselves in this direction after they have left their *Alma Mater*. These are very few and inconvenient. Thus the only three sources open to us are—1st, the knacker's yard. 2nd, our client's stable or yard: and 3rd, our own. The knacker's yards are not very enticing, as far as I know them. We usually find the knacker puts as many obstacles and objections in our way as possible. For instance, I have frequently sent word that I would call at a certain time to look at a certain horse, and when I have called, I have invariably found the animal already cut up, and in the copper, and a few pieces which looked "rotten" and "black" saved for my inspection, with the epithet, "That's what's amiss, Sir."

I know that a great number of *post-mortem* examinations end in the same way; and I will leave you to say how much the wiser we are for such information. Even if the carcase is saved, we have to stand about in a cold, draughty, wet yard, and be very careful how long we keep the men, and what we ask them to do, or we are censured for wasting the men's time on the one hand, and for spoiling the carcase on the other; and if we are not extremely careful what we say, we are scarcely treated with civility, and, finally, we have to pay the men well into the bargain, which to most practitioners is so much lost; for I am told few practitioners charge for *post-mortem* examinations. Moreover, by resorting to such places we are, in my humble opinion, lowering ourselves in public estimation. This we cannot very well afford to do at present; this seems to be an age when people like to see things done nicely and how much nicer it would sound if we told our client, that if he would allow his animal to go to the "veterinary *post-mortem* room" or "mortuary" (or whatever name you care to give it) we would make a *post-mortem* examination.

As far as using our clients' or our own stables or yards for such purposes is concerned, I will simply leave it to your own consciences to say whether either place is adapted for the purpose. These, then, gentlemen, are the means at our disposal for our work.

Now, must we continue in this dirty, cold, wretched manner, and be always dependent upon these uncivil horse-slaughterers for any little aid we require in scientific investigation? or has the time arrived when London practitioners, at least, should begin to see a way to improvement?

Looking at the second question, viz. the means for destroying animals affected with contagious diseases, I must say, so far as I am acquainted with them, they are very inadequate. If a horse, for instance, suffering from glanders, is taken to the knacker's yard, he is killed, boiled, and sold for cats' meat, in the usual way, and, I believe, the hides and bones are also utilised. If I am wrong in this matter I ask you, who have had more experience in these matters than I have, to correct me. I will not dwell upon the good or evil effects of this method, but I ask you to give free ventilation to your valuable opinions upon this matter for the benefit of our members. I believe the Privy Council orders are that they should be burned, or subjected to air of a certain temperature for a fixed time; but is this ever done? If not, ought we not, for example's

sake, to establish such a furnace, where animals affected with contagious diseases could be "cremated" at a nominal cost to the owner?

We have already too often seen that Government authorities seldom, if ever, take up our cause. If this could be done would it not bring us under their notice, by showing them that we have the good of the public at heart, and endeavour to advance without their aid, if we can only do so without a great pecuniary loss?

These, gentlemen, are the points I wish to discuss with you to-night, and I will provisionally draw your attention to the following questions, which I hope I shall be able to show you are fully substantiated, and worthy of your consideration.

The questions are, Are there any means by which the London practitioners can provide a suitable room and convenience for carrying out their *post-mortem* examinations? and also for the proper destruction of animals affected with contagious diseases? I will, for argument's sake, answer both these questions in the affirmative, and will endeavour to substantiate this answer by picturing an establishment which might be formed, and then point out the *pro et con* arguments as they present themselves to me.

Thus, a limited company could be formed and a suitable piece of land (or even one of the existing knacker's premises) purchased, upon which suitable buildings should be erected, and filled with all the necessaries for properly conducting and carrying out the business of horse-slaughtering. It should also be fitted with proper conveniences for the destruction of animals affected with contagious diseases, and a room where practitioners could make a *post-mortem* examination with all the comfort that such circumstances will allow.

The arguments in favour of such an establishment as this are numerous, thus:

a. Practitioners would have a convenient and properly-fitted place for examining dead animals.

b. It would also serve as a place for procuring pathological and physiological specimens, both for veterinary and human medical science and teaching schools.

c. It would serve as a place where the veterinary students at the Camden Town School could be brought by their teachers to have *practical demonstrations on morbid anatomy, and learn what to look for and how to find post-mortem lesions*—a branch of veterinary science which, I think, you will all agree with me, is too much neglected.

d. It would serve as a place where subjects could be obtained and students brought to have practical lessons in operative surgery upon the *dead* animal. This would be the means of teaching them how to handle and use their instruments, and properly perform most of the ordinary operations—a branch of science which, in itself, is well worth erecting a building for, and I am sure it would be well appreciated by our younger members and students.

e. It would be a place where students would be able to obtain any bones or parts of the animal (such as brains, &c.) which they might require for any special study at a nominal cost.

f. Such a place would render us independent of the present wretched knacker establishments, which, to my mind, would be a great advantage.

g. For the purpose of properly destroying all contagious diseased animals (especially glanders), and it would be well to petition the local authorities to enforce persons to send such to this establishment, and that only; thus forming a centre for their destruction.

h. Last, but not least, I think it would be a very good establishment

for practitioners to invest their money in, for, if properly conducted, it could not help paying a very good per centage, especially if members of the profession would make it a point to advise their clients to send their dead animals to the establishment, which, of course, they would do if they wished to make a *post mortem*, or had shares in it.

i. There is one other addition which might be added with great benefit, and I may say it would not be complete without it, and that is, that a *paid veterinary post-mortem examiner* should be connected with it, whose duty would be to communicate the *post-mortem* changes to any of the shareholders who particularly asked him to do so; and in this way practitioners who were unfortunate enough to live a great distance from the establishment would be able to have the autopsy made for them, and also to take notes of any extraordinary pathological or other changes which attracted his attention in the animals brought during the daily routine of business.

These, gentlemen, are most of the advantages which at present strike me that might acrue from such an establishment.

We will now look on the other side of the question, and see what disadvantages such an institution might present.

Thus, some may think that our connection with such an establishment would be degrading to our profession, and lower us in public estimation. If I thought this for one moment I would give up all idea or hope of our having anything to do with such a scheme, but when I look on the matter in its proper light all such drawbacks vanish, and I think it would be the same with the public at large, or, at any rate, with unprejudiced thinking men, who, in my humble opinion, would neither think it degrading nor useless to the profession, but would, on the contrary, praise and give us credit for the steps we had taken to advance pathological research, &c., in veterinary science. Again, some might say, as it was suggested to me, that it looks rather like a "*doctor setting up as an undertaker;*" and, I must confess, when viewed superficially, it does; but when we consider what inadequate means there are for veterinary surgeons and students to obtain conveniences for veterinary research, and that such bad regulations are in existence for the destruction of animals affected with contagious diseases, I think most people would forgive us, and look at it in the same light that we do.

We might even be accused of killing animals for the purpose of obtaining the carcase for its pathological value, and so forth; but here, again, I must say this is only a supposition, and requires to be authenticated before we ought to entertain such ideas, and, if we found such to be the case, I have not the slightest doubt we could face and correct the difficulty with just as much efficacy as those who promulgated such accusations against us, although I am fully aware that such false statements are often very difficult to rectify.

Lastly, some of the local practitioners might say that they would be put to a great deal of inconvenience by their local horse-slaughterers refusing them the use of their yards, especially if the knacker happened to find out that the veterinary surgeon was a shareholder; but this, I think, is a very paltry excuse for withholding such a useful establishment, for there can be little doubt that such petty enmity would soon be overcome by time and custom.

Now, gentlemen, I have given the reasons for and against the establishment of such an institution or company, and my reasons for bringing this matter before you; therefore I hope you will give free ventilation to your opinions. Of course, those who care little about making *post-mortem* examinations, pathological research, and providing means for

teaching our students, or places for our younger members to learn it, will, I have no doubt, *pooh-pooh* the idea, and say it is useless; these I would ask to keep their eyes steadily on the pecuniary side of the question. But, gentlemen, I hope there are none of our members who entertain such ideas of advancement in our profession, and, therefore, I trust that those gentlemen who have their profession at heart, and are willing to provide, and be provided with, suitable and adequate premises for such investigation will side with me, and assist in solving the problem I have laid before you to-night, or suggest a more professional and profitable plan to supersede it, by which we could overcome our difficulty and advance veterinary pathology in this country.

Thanking you, Mr. President and gentlemen, for your kind attention, and I hope that my efforts may lead to a profitable discussion, although I must own they are rather short and insufficient; but yet I trust I have sufficiently conveyed my meaning and ideas.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The usual quarterly meeting of the above Association was held at the Blackfriars Hotel, Manchester, on Tuesday, the 13th April, 1880. W. Dacre, Esq., President, in the chair.

The following members and friends were present:—Messrs. T. Greaves, P. Taylor, A. Lawson, W. A. Taylor, J. B. Wolstenholme, T. Taylor, E. Faulkner, of Manchester; W. Woods, Wigan; Messrs. T. & A. W. Briggs, and A. Polding, Bury; Mr. C. Challinor, Pendlebury; Mr. Litt, Bolton; Messrs. Morgan, Elam, and Reynolds, of Liverpool; Mr. Bunnell, Oldham; Mr. W. Whittle, Mosley, Mr. Fergusson, Warrington; and the Secretary.

Letters of excuse were received from Prof. Pritchard, Messrs. John Lawson, W. G. Schofield, and M. E. Naylor.

The minutes of the last meeting were duly read and confirmed, after which

Mr. C. E. Challinor proposed as a member of this Association Mr. T. Stone, of Walkden. *Mr. Litt*, of Bolton, seconded the proposition, which was carried. *Mr. Challinor* also nominated Mr. A. W. Briggs, of Bury. *Mr. A. Polding* nominated *Mr. James Polding*, of Burnley.

An adjourned discussion then took place on the president's address, bearing principally upon the penal clause; exemption from serving on juries; and the desirability of students serving an apprenticeship.

The discussion was very animated, in which the following gentlemen took part: Messrs. P. Taylor, T. Greaves, T. Taylor, W. A. Taylor, W. Whittle, W. Woods, C. Elam, G. Morgan, R. Reynolds, and the president, all being of opinion that the carrying out of such measures would be to the advantage and advancement of the profession.

The following resolution was then proposed by *Mr. W. A. Taylor*, seconded by *Mr. T. Taylor*, supported by *Mr. T. Greaves*, and passed unanimously:

"That this Society views with great pleasure the action already taken by the Council of the Royal College of Veterinary Surgeons, in order to endeavour to obtain for the profession a penal clause; and further, this Society hereby wishes to record its willingness to render hearty support, pecuniarily (if necessary) and otherwise, to the Council, in their efforts to procure the object in view."

Mr. T. Briggs then read an interesting paper on "Some of the Products of Inflammation."

Mr. President, Vice-President, and Gentlemen,—At the last meeting of this Association our energetic secretary, Mr. Locke, insisted upon my reading the paper of this evening as an earnest of willingness to contribute my quota.

As a junior member of the society I decided upon a scientific subject, in the belief that the selection of a treatise of such principles as underlie our daily experiences would be an appropriate method of calling forth the valued observations and experiences of our senior members in the subsequent discussion. At first I mapped out more than I have since thought it wise to attempt to exhaust.

I propose to describe and illustrate to you the anatomy of inflamed tissues as generators of pus, together with a brief sketch of the nature of repair by inflammatory new formations. At the outset I must acknowledge the assistance of my brother, Mr. A. W. Briggs, who undertook to illustrate the subject by this series of diagrams.

In discussing suppuration as one of the products of inflammatory action, it is necessary to allude briefly to the properties and composition of pus.

Healthy or laudable pus is defined as a creamy, thick, opaque, and homogeneous fluid, communicating an unctuous feeling when rubbed between the fingers, and to be of a yellowish tint, sweetish taste or insipid, and while warm to give off a peculiar mawkish smell. If allowed to stand in a test-tube it separates into an upper thin, clear layer, and a lower yellow sediment. The latter consists chiefly of pus-corpuscles, the former being a fluid intercellular substance.

On examination under the microscope, pus-corpuscles assume an appearance of finely-punctated globules, containing three or four dark nuclei. Ascetic acid dissolves the pale granules of the protoplasm, and brings into view the nuclei which are not acted upon by the acid. Alkalies readily dissolve the pus-globules, and afford a confirmatory test of the nature of urinary and other purulent deposits. Von Recklinghausen described the above characters as exhibited by dead pus-cells under the microscope. Max Schultze observed, however, that pus-cells in a moist heated chamber exhibited amœboid movements, like other clumps of living protoplasm.

The diagram No. 1 is intended to show the three different conditions of pus-cells. The chemical examination of pus has proved that it consists of water, proteid substances, fatty matter (including cholesterin), salts, and so-called extractives. Dr. Walshe remarks the peculiar property of pus in resisting decomposition, and that while it retards the putrefaction of substances immersed in it, it would appear to actually dissolve a piece of muscle without putrefaction.

In treating of the source of pus I must again refer to the separation on standing into serum and corpuscles. The agreement of the former, or liquor puris, with blood serum in its characters, has led authorities to regard it as exuded liquor sanguinis. The origin of pus-corpuscles has been the subject of much controversy.

I will not enter into a lengthy discussion of the theories advanced by the different pathologists. In our search for the origin of pus-corpuscles it is well to take a comprehensive view of the tissues in which cells, agreeing more or less with many of the characters of pus-corpuscles, are to be found. For example:

Firstly.—Corpuscles largely circulating in the blood-vessels, known as

white blood-corpuscles, and in lymphatics as lymph-corpuscles, present characters closely resembling pus-cells.

Secondly.—Connective tissue, bone, and cartilage, consist of cellular and intercellular elements, the former are granular nucleated masses of protoplasm with or without branches, known in connective tissue as connective-tissue corpuscles, in cartilage as cartilage cells, and in bone as osseous corpuscles. In addition to these, in the fixed or stationary corpuscles, there exists in connective tissues certain cells named wandering cells, first described by Recklinghausen. The so-called wandering cells are identical with blood- and lymph-corpuscles.

Thirdly.—There are also entering into the formation of skin and mucous membranes cells constituting a distinct layer on the surface, known in the skin as epidermis, and in mucous membranes as epithelium.

Fourthly.—The cells occurring in the various glandular organs forming the actively secreting or excreting elements, in many cases of the epithelial type, should be enunciated amongst groups presenting some points of resemblance to pus-cells.

In 1876 Professor Cohnheim, of Berlin, minutely described the process of emigration of leucocytes or white blood-corpuscles. In the diagram No. 2, which is copied from one by Dr. Caton in the *Journal of Anatomy and Physiology*, 1871, a blood capillary and small veins are represented, and you observe the white blood-corpuscles in contact with the walls of the vessels; some of them with small processes, others with larger processes, piercing the wall until at last the whole corpuscle becomes extra vascular. Thus we have introduced into inflamed tissue cellular emigrants from the blood-vessels.

Although two Englishmen, Dr. Addison, in 1842, and Dr. Augustus Waller, in 1846, had detailed similar phenomena, it was not until after Cohnheim's investigations that this migratory process occupied an important place in pathology.

Inflammation of connective tissue tending to suppuration has been long known as phlegmonous inflammation. Direct anatomical examination has disclosed certain naked-eye characters presented by the affected part when superficial, but to these I need not do more than cursorily allude, such as swelling, redness, &c. Microscopic investigation has shown that the cells increase in number at the expense of the fibrillar intercellular substance, which gradually disappears.

This diagram, No. 3, will render the formation of abscess in connective tissue more clear. You notice that the young cells are collected in patches corresponding to the site of the original connective-tissue corpuscles, and that in the middle of the drawing the smaller collections have become fused. It can be readily seen how these groups may extend irregularly in their circumference.

Formerly Virchow, in his cellular pathology, asserted that the groups of pus cells were produced by the multiplication of the previously existing connective-tissue corpuscles, but, taking into consideration Cohnheim's researches, we can now assert that many, if not all, of these cells are leucocytes escaped from the blood-vessels of the tissues. I may here allude to the circumstance, of which I shall speak more fully hereafter, that by artificial injection capillary vessels have been shown to exist in the form of loops around these collections. Thus is demonstrated the practical fact that the pyogenic membrane of the older writers consists of the circumferential layer of young cells or leucocytes lying amongst loops of capillaries. By the aid of diagrams 4 and 5, you may gather more clearly what I wish to convey. The pyogenic membrane, in short, consists of granulation tissue.

The best illustrations of proliferation of tissue corpuscles can obviously be obtained by studying the process of inflammation in the least vascular tissues, such as cartilage and cornea. Redfern, in the *Edinburgh Medical Journal*, 1849, described in minute detail the changes observed in ulceration of articular cartilage. He recognised that after the introduction of a seton, the first departure from health consisted in an enlargement of the cartilage cells, which became five or six times their natural size, at the same time they became irregular in their distribution in the cartilage. The diagram, No. 6, representing the changes seen in inflamed cartilage, is copied from one by Corneil and Ranvier. The normal cartilage cells are represented at the left hand corner, and a little to the right the cells enlarged with many nuclei; still further you see the cells multiplied within their capsules; at the extreme right hand a mass of young cells are illustrated, now occupying the extent of the original corpuscles and matrix. The matrix, represented with a bluish tint in the diagram, gradually breaks down and disappears. Redfern thought that the young cells thus produced did not become pus cells, but Weber subsequently showed that pus cells may thus be generated. The series of changes I have briefly sketched, constitutes an important step in the doctrine of parenchymatous inflammation. Similar phenomena have been recorded in inflammation of the non-vascular cornea by Strube and His, also by Virchow.

Acute catarrhal inflammation, or inflammation of a mucous membrane, has afforded examples of suppuration on epithelial surfaces. This diagram, No. 7, after Rindfleisch, is intended to represent the appearances presented by inflamed conjunctiva on a vertical section. You recognise the epithelial elements tinted yellow, and underneath these the submucous connective tissue. The generation of pus from the actual elements may have a double source. If the pus cells on the free surface of the epithelium in the diagram are produced by proliferation of the epithelial cells themselves, it is evident that pus may be formed without abrasion of the surface. If, however, the pus cells owe their origin to multiplication of the deeper connective-tissue corpuscles ulceration of the superjacent epithelium must ensue. It is now maintained that pus cells take origin by proliferation of the deeper epithelial cells. In the same diagram some large so-called mother-cells are displayed with their contained broods which are expelled as pus corpuscles. It has been suggested by Volkmann that these mother-cells have simply derived their contents from the young cells of the underlying connective tissue. The mother-cells, therefore, are capable of a double interpretation, that is to say, the young cells are taken up by an epithelial cell from without, or produced by endogenous multiplication in the epithelial cell itself.

The origin of pus in glandular abscess has been ascribed to multiplication of the proper glandular cells, and to the connective-tissue corpuscles having a similar double source, on which I need not dilate.

Having brought before you some points in connection with the formation of pus in abscess, and on mucous surfaces, I will now allude to the connection of pus with granulation tissue, as seen in wounds. Before commencing this portion of my subject, let me shortly describe the structure of granulation tissue.

Inflammatory new formation, or ordinary cellular tissue, as observed in the healing of wounds, was designated by Virchow "granulation tissue," and by Rindfleisch "germ tissue." It consists of a greater or less number of cells agreeing with the leucocytes of the blood or the wandering cells of connective tissue. By a reference to the diagrams 4 and 5, you notice

the round cells surrounding fine capillary loops tinted red. The bright redness of granulation tissue is due to the blood shining through the transparent young cells. The tissue is very vascular. A granulating surface is not even and smooth, but presents minute granular or papillary eminences due to miniature heaps of the cells. Let us now inquire whence these young cells come? Cohnheim made some interesting observations with the view of determining this point. I have spoken of the migration of white blood-corpuscles as illustrated in diagram No. 2. Cohnheim introduced aniline into the lymph sac on the back of a frog, and after cauterising the cornea of the animal, he found at the irritated spot, wandering cells exhibiting the aniline staining. He, therefore, came to the conclusion that the inflammatory cellular infiltration consists of emigrated white blood-corpuscles.

It now remains for me to direct your attention to certain connections between granulations and the healing process. Let me recall to your recollection some of the chief naked-eye appearances which are observed in a gaping wound, or a wound attended with loss of substance. After the first twenty-four hours the margins are slightly reddened, somewhat swollen and sensitive to the touch, the same symptoms as in closed wounds. For the first day or two the surface looks grey and gelatinous with, perhaps, a trace of redness. Small fragments of dead tissue are adherent to the surface. On the third day the wound "cleans off," and, if examined with a lens of low magnifying power, fleshy warts, or granulations are seen. For the few subsequent days the granulations become greatly developed, and the fluid flowing from the surface of creamy consistence presents the characters of pus already described, and in the words of the old authors—*pus bonum et laudabile.*

The changes I have just enumerated are susceptible of great variation, according to the size of the dead masses of texture, the loosening of larger masses requires a longer time, but the pathological process is in all cases the same, the line of separation exhibiting groups of small cells. In diagram No. 8, which illustrates the separation of a slough, you recognise by difference in colour the living textures below, the dead textures above, and in the boundary line between the two the active cellular elements which, by a process of absorption, loosen the dead from the living. I cannot do better than ask you to inspect the diagram No. 4, which is taken from Billroth's work on 'Surgical Pathology.' A section of a granulating wound is shown, and, in order to bring out the distinctions between the pus and the granulation tissue cells, the former are represented as having been acted upon by acetic acid, and forming a layer on the surface of the granulation cells. You observe the capillary loops are tinted red, and groups of young cells are seen lying amongst them.

From these remarks you will gather that pus is one of the products of granulation cells. When granulation tissue grows rapidly, owing to irritation or other causes, pus formation is more marked. Early in my paper I followed the mode of formation of abscess in connective tissue. May I ask you to compare the appearances presented by the so-called pyogenic membrane and the healthy granulating surface by reference to diagrams 4 and 5. The pyogenic membrane has the similar small-celled structure and the similar capillary loops. In the main the great practical difference is this, that the pyogenic membrane in the recent condition forms a complete retention sac, whereas the granulation surface of a wound is open.

We naturally ask ourselves, How is it that an abscess continually grows larger by increase of contents? Unless some foreign or dead body,

as dead bone or slough, is present, the irritation of the granulation tissue of the pyogenic membrane is kept up principally by the tension of its contents. Of this we have proof by the physical signs and the pain of which the animal gives evidence. The young cells exert a disintegrating action on surrounding structures following the direction of least resistance until the abscess "points" at some free surface. Poultices and other forms of moist heat favour the dissolution of the textures by rendering them more permeable to fluids. Antiseptic surgery, by its results, has shown that when such a collection of pus is laid freely open and the tension removed, the granulations of the pyogenic membrane behave as do those of the ordinary healthy healing wound to which I have directed your attention. That is to say, where the sac-like pyogenic membrane is opened out its purulent discharge gets free vent, and it is reduced, somewhat imperfectly, to the condition of an ordinary granulating surface, as in a healthy ulcer.

The opening of an abscess removes the irritation produced by tension, and if external irritating conditions be kept out, as by appropriate antiseptic dressings, granulations have been seen to grow without the production of an atom of pus. So far, the cells of granulation tissue have been conclusively shown to be derived from emigrated blood-corpuscles and proliferated tissue-cells. The relation of granulation tissue to the healing of wounds and the secretion of pus, together with the modifying influence exerted by irritation on pus formation has been established.

A question now arises: Is pus the only product of granulation tissue? Granulation tissue grows; and suppose the process of growth went on we should find a fleshy tumour, consisting of small round cells like white blood-corpuscles, with little intercellular substance; in fact, we have in granulation tissue an identity in structure with what is known as a round-celled sarcoma. It is needless for me to draw your attention to the fact that these round cells of granulation tissue are of the same structure as the embryonic cells, from which all tissues are primarily developed. In the diagram No. 9 these young spherical cells are represented in a healing sore, and at the right hand corner you observe coloured yellow a formation of cuticle or epidermis; deeper you notice some of the cells of the tissue become spindle shaped, and develop into fibrous tissue; simultaneously with these changes the secretion of pus commences to disappear. At the right hand corner the cuticular formation is represented.

Why does epidermis in places where the skin has been wholly destroyed form only at the edges? This has been a tedious problem to most observers. The fact that a successful graft leads to an island of developing epidermis is capable of two explanations. The newly-planted epidermic cells, like those at the edges of the wound, may themselves proliferate, and develop a progeny of scales by their multiplication, or, to speak more definitely, epithelial scales arise by multiplication of previously existing epithelial cells. The second interpretation suggests that the young cells of the granulation tissue are influenced by the nature of the surrounding texture. The skin graft acts, we may say, as a decoy, leading the young cells of the granulation tissue to develop like unto it into epidermic scales of the cicatrix. Similarly, the deeper connective-tissue elements may be looked upon as exerting the influence of their presence on the deeper cells leading to the development of them into connective tissue.

It is extremely interesting to find that granulation cells, formed to repair a breach of osseous tissue, such as after fracture, necrosis, or abscess, develop into bone. In the development of granulation cells into

bone, however, it is of the highest importance that absolute immobility be maintained by some suitable means; the reason seems to be that bone normally is inflexible and passive, and that, so to speak, unless the natural condition of texture be maintained the decoy influence is not exerted. This is well illustrated in fibrous union after a fracture of bone where the two ends have not been kept in quiet apposition.

Fibrous tissue is essentially a flexible and yielding structure. Under circumstances, therefore, encouraging mobility, granulation cells develop into fibrous tissue, even in the immediate neighbourhood of bone. Granulation cells are incapable of reproducing muscular and active glandular tissue. In these situations the ordinary fibrous cicatrix, such as is represented in diagram No. 10, is developed.

Gentlemen, in this brief outline of the microscopic anatomy of suppuration and granulation tissue it has been my endeavour to put the matter clearly before you. I do not claim for my paper anything more than an embodiment of many of the current views on the subject. To be conversant with the nature of the material with which we have to deal in these processes should be our aim. Underlying our successful treatment—of most, if not every one, of those surgical cases in which pus and granulation tissue are important factors—is a correct appreciation of these principles, so far, at least, as they lead us.

I know that my subject is deserving of careful attention, and that it has a great interest, in its scientific aspect, for the practical man. I know, too, that whilst I have hardly touched upon some important points I have overlooked others equally important. I have done my best to please you; and I hope you, gentlemen, will do your best to please me by taking up an instructive discussion, and that you will fill up the gaps I have left.

The paper gave great satisfaction, and led to an interesting discussion.

A hearty vote of thanks was accorded the essayist.

The usual vote of thanks to the chairman closed the meeting.

SAM. LOCKE, *Hon. Sec.*

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

A MEETING of members of this Association was held in the Veterinary College, Glasgow, on Wednesday, the 31st. ult.:—Principal McCall, President, in the chair.

The following gentlemen, amongst others, were present:—Professor Walley, Edinburgh; Messrs. Robinson, Greenock; Mr. Constable, Inchture; Mr. McConnell, Coatbridge; Mr. Kerr, Beith; Messrs. Robb, Mitchell, Mitchell, Anderson, Macqueen, and Anderson, Glasgow.

Professor McCall, in opening the meeting, spoke as follows:

GENTLEMEN,—Twenty-two years ago, in this same city, and while connected with the Edinburgh Veterinary College, I had the honour of assisting at the birth of this the first Veterinary Medical Society, and of delivering the first Inaugural Lecture which had been delivered in any Veterinary Medical Society in these kingdoms. That honour, however, was conferred upon me at the request of and as the substitute for my dear old friend and instructor, the late Professor Dick. That meeting was held within the Athenæum, and included the principal veterinary

surgeons in the West of Scotland, and among the number, Messrs. Cockburn, Anderson, McLean, Marshall, Bryce, Aitken, Steel, Moir, Robinson, Donaldson, and many others. Of the few names mentioned, sad to say, very many have fallen by the hand of death, and few of us are left to reassemble this day, nay, I think, with the exception of Mr. Anderson and Mr. Donaldson (who have retired from the labours of their calling, to enjoy, as we hope, a few years rest in the bosoms of their families), Robinson, Moir, and myself—all are gone. Then I stood forth the stripling in arms—the youngest soldier in the ranks; now I appear the veteran in arms—the oldest general in the field. Such, gentleman, is life, and morals innumerable might be drawn from the consideration of what I have stated; but in the meantime I will not in that direction trespass on your time.

To-day, gentlemen, the object we have in view, in gathering ourselves within these walls, is to resuscitate the society inaugurated in 1858, and then denominated the "West of Scotland Veterinary Medical Association." And in "awakening it to life," I shall probably handle it a little roughly; but, as I assisted at its birth, and have regularly watched its growth (although it must be confessed, for many years at a distance), and am well aware that it is not so lifeless as it appears, trust me, a little plain speaking will do it good. In awakening it to life, I shall briefly refer to a few of the advantages which may be expected to arise out of its resuscitation and continuance in active life, provided the energies of its members are concentrated and harmoniously displayed.

It is a familiar expression and true to life, "No man liveth to himself," yet, how very apt are we in the battle of life, so to push forwards as if the aphorism were false, as if each individual lived for himself and for himself alone. Now, to my mind, we could not have conceived a more certain means of recognising and developing the principle referred to, and of demonstrating that we live for the good of each other as well as ourselves than by resuscitating this society. Here we meet on common ground and with common interests, and the rights and the privileges of each member ought and shall be equally respected. This I am sorry to say has not hitherto been the guiding principle of the society inaugurated in 1858; and with all deference has been the principal cause of the apathy exhibited by many, its best friends. But, turning from this unpleasant aspect of the subject, the times in which we live are proverbial for the formation of societies, associations, and such like kindred institutions; and if for no higher reason than keeping pace with the times, and continuing the good example first set by those who first inaugurated this society, and which has been imitated in so many other towns and cities; it were high time we had again enlisted under one common banner. In the arts and manufactures the benefits of co-operation are admitted on all hands, and to come abruptly to the point I am aiming at, may co-operation not as much benefit veterinary science? There are many aspects in which we might view and answer such a proposition, but time will only permit me to select two. Firstly, as benefiting the pecuniary interests and elevating the status of the profession; and secondly, as advancing our knowledge of the science and the art. As regards the first, I think it will be freely admitted, that according to the present constitution of our country, with a few exceptions, the pecuniary emolument derived from the practice of a profession is an index, so to speak, of its social standing. Now, co-operation has invariably proven itself, directly or indirectly, to be a certain means of securing the pecuniary interests of parties. "The labourer is worthy of his hire," and however laudable may be our desires, we can neither

benefit the public nor ourselves, by tendering our services at less than their value. But, it may be asked, what is their value, pecuniarily expressed. I should not like to appraise them. It is a matter so far of conscience with each member of the profession, and of policy with the body collectively; but, under any circumstances, surely a sum considerably greater than is asked and obtained by a city porter for carrying a parcel, say the same distance from our places of business, as we make a professional call. Yet we all know that there are persons in our profession who travel about, and charge fees, sometimes less than a city porter. I would be the last to advocate a policy which would press hard upon our clients, but by all means let us charge a fee becoming a professional man in all cases where our clients can afford to pay, and where they cannot from poverty, let us bestow our services ungrudgingly and without a fee. I am not given to charge high for my services, nor do I put stress upon my position, and frequently I have a cheque for a larger amount than my account enclosed to me; nor do I refer to the subject of charges, because I have felt the pressure of such upon my business, not at all; but I have heard others deplore it, and moreover, I have seen its bad effects. It has yet to be proven that a reasonable charge is counter to the interests of our employers and the welfare of our patients, for services poorly requited, as a general rule, are grudgingly performed and imperfectly discharged. It is a question, however, how far societies formed for the sole and direct purpose of fixing fees to be charged for services rendered have been productive of good, either to the individuals themselves, or the public at large. Indeed, I incline to the opinion that they have done more harm than good; nor do I wish this society to infer that I desire that its members should fix a scale of fees to be charged for their services. In this and similar matters the society can only appeal to the feelings and honour of each of its members, and suggest the urgent necessity there exists for its members being more intimately linked and acquainted with each other. As professional men, we do not cling sufficiently to each other; the chain which binds us is not sufficiently strong. By periodically calling you together, and thus affording an opportunity for drawing out the sympathies of brotherly love, which we in common, in a greater or less degree, possess; and by guardedly exercising a spirit of charity towards each other in our intercourse, this association is eminently suited to advance the pecuniary interests of the profession and elevate its status.

And now let me direct your attention to the second aspect of the subject, or proposition, viz. the power or influence this society may exert in advancing our knowledge of veterinary science and art. The science which we profess, as all of you are well aware, belongs to the class termed *Inexact*, as distinguished from the *Exact*, it has also its art as well as its science. These relations are frequently but ill-defined in the mind of the practitioner, and, as a consequence, in practice and other ways they are confounded. If this society is to assist in advancing the studies of our profession, inquiries must be conducted on a liberal basis, and with due regard to all conditions. It will not do to ignore theory at the dictum of practice, as some minds in the past history of this society have unsparingly done.

I do not anticipate that this society, or others of a similar character, will revolutionise the theory and practice of veterinary medicine; inquiries tending to such results are more within the province of our colleges; but, as the teaching institutions are imperfect in many respects, and unable, from pecuniary and other causes, to conduct experiments and researches on a sufficiently extensive scale, it is wonderful

what an amount of assistance the colleges might derive through the co-operation of veterinary medical associations. In particular, I think provincial veterinary medical associations might be the means of shedding much light upon the diseases of cattle and sheep. Country practitioners have daily opportunities of studying the diseases of cattle and sheep as they affect them in a state of nature; whereas, town practitioners have few such opportunities. In prosecuting your studies, you have also the benefit of the previous history of the animal, with its idiocrasy, and many other little details which, when placed together, make not only a very interesting and connected account of the case, but further, from its accuracy, it forms the basis from which sound deductions may be drawn, and clever views promulgated, as to the pathology and treatment of such affections. I would, therefore, strongly urge the provincial members of this society to bestow special attention upon the diseases of cattle and sheep, and, as far as practicable, prosecute researches bearing on their origin and nature. Proclaim the results of your inquiries after they have been subjected to the ordeal of discussion at our meetings, and in doing so you will confer a favour upon the whole body of the profession, and in no inconsiderable degree advance the knowledge of the science and the practice of the art. Through the kindness and impartiality of the editors of the *Veterinarian* and *Veterinary Journal*, you will always find the columns of our professional journals open to receive your contributions, and I would suggest that you take greater advantage of this boon than hitherto has been the case. A paragraph of a meeting, with the mention of members present, and the name of the subject discussed, will do little for any cause, and is neither creditable to the member introducing the subject, nor to the gentleman acting as secretary for the society.

But to return, there is scarcely a disease, regarding the pathology and treatment of which, two opinions may not be entertained. These opinions may be founded upon principles widely different, or so closely allied, that to some minds they appear a distinction without a difference. But, as no two of us can look through the same pair of glasses at one and the same moment of time, and even, although we could, as vision differs in degree, we might fail in recognising the same object; and, as reason, like vision, differs also in degree, and at most is an index of the capacity of the mind in that particular direction, we should not be in haste condemning the opinion of our fellow, as the defect, if one, may after all be our own and not his. In discussion, there are some minds very rabid and intolerant of the opinions of others, and, with all deference, I have observed this condition as frequently in the old as in the young. Such a condition of mind is most disagreeable, and apt to make the possessor believe that when you challenge his theory you attack his veracity and honour, and thus insult his dignity. Now, I beseech of you, above everything, if you desire or expect the society to be a means of cementing you more closely together—if you wish it to be a mutual benefit and pleasant retreat from the cares of business, if you wish it (as it is calculated to do) to send you home better friends with your professional brethren, and better friends with yourselves, abstain and eschew all tendency to that nasty and unhappy condition of mind I have termed rabid and intolerant. Let your discussions be conducted with calmness, singleness of purpose, and in a spirit of tolerance; and while striving to enforce the claims of your doctrine, let your language and your manner prove that you are speaking to a point, and not for argument's sake, or a desire to differ.

With these few hurried and disjointed remarks, and thanking you, which I now beg to do for having placed me in the presidential chair

and for the spirit in which you have evidently accepted my suggestions, I shall now offer a few remarks upon Stricture or Hour-glass contraction of the Stomach of the Horse, and vomition in the same subject.

A short report of which will be contributed to the next number of the *Veterinary Journal;* also a description of two ingenious compound instruments devised and introduced to the members by Prof. Walley.

JAMES ANDERSON.
Secretary.

MEMBERS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

THE following candidates, holding the Highland and Agricultural Society's Certificate, have obtained the Diploma of the Royal College of Veterinary Surgeons:

Black, Jas. Barrowman	Howgate by Roslin	1870
Campbell, Angus	Galashiels	1867
Campbell, Thomas	Kington, Herefordshire	1859
Copeland, Henry	Poulton-le-Fylde, Lancashire	1853
Cunningham, Cornelius	Slateford	1859
Donald, Joseph	Newton Arlosh, Cumberland	1880
Frost, Thomas Allen	Derra, Co. Clare	1879
Heard, William	Tavistock, Devon	1850
Ireland, Edwin	Bridlington	1872
Keane, Patrick	Killarney, Co. Kerry	1877
Kelly, Andrew John	Beresford Place, Dublin	1876
Kirke, John Hamilton	Rose Street, Edinburgh	1878
Lees, Robert	Careillan, Tarbolton, Ayr	1862
Little, John	Abbey Town, Cumberland	1863
Marking, Chas. Rider	Toppesfield, Essex	1873
Mavor, Frank Frederick	Park Street, Grosvenor Square, London	1880
McInnes, Benjamin Jn.	South Carolina, U.S.	1874
Prentice, Robt. Bouchier	Longford, Ireland	1879
Reid, Andrew	Auchtermuchty, Fifeshire	1859
Sandford, William	Moneymore, Co. Derry	1877
Smith, Andrw. (Principal)	Ontario Vet. College, Toronto, Canada	1861
Storie, John	East Linton, Prestonkirk	1875
Thomson, Samuel	Canniesburn, Maryhill, Glasgow	1850
Tuite, Thos. Gavin	Old Castle, Co. Meath	1869
Woods, Joseph	Kirkham, Lancashire	1880

NEW MEMBERS OF THE PROFESSION.

AT the several meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held during the week commencing March 30th, the following students from the Royal Veterinary College received their Diplomas, and were admitted members of the profession:

Mr. Thomas John Keech	Blandford, Dorset.
— Wm. Henry Beach	Woodfield Oaken, Wolverhampton.
— John Trevor Jones	Rhyl, North Wales.
— John Jas. Crowhurst	Amersham, Bucks.

Mr. Edward Geo. Johnson	South Anston, Rotherham.
— Walter Wm. Gulleford	Islington, London.
— Geo. Gartside Mayor	Kirkham, Lancashire.
— Chas. St. Lo. Wilkinson	Ballycumbe, King's Co., Ireland.
— Walter Jas. Palmer	Tavistock, Devon.
— Edward Slipper	Catfield, Norfolk.
— Harry Carrickley Talbott	London.
— Herbert Alfred Towlson	Alfreton, Derbyshire.
— Stephen Marsh Smith	Margate.
— Thomas Wm. Cave	Nottingham.
— Frederick Leeds Gooch	West Longville, Norwich.
— Arthur Wm. Briggs	The Wylde, Bury, Lancashire.
— Geo. Richard Griffith	London.
— Donald Gregory	Tonbridge, Kent.
— Thos. Jarvis Rippon	Donington, Lincolnshire.
— Geo. Henry West	Newent, Gloucestershire.
— Thomas Skilton.	Ashtead, Epsom.
— Arthur Samuel Anger	Walpole, Suffolk.
— Ernest Robert Harding	Fisherton, Salisbury.
— Wm. Frederick Garside	East Leamington.
— George Deveson	Brondesbury, Middlesex.
— Theodore Charles Toop	Sherborne, Dorset.
— Sidney Villar	Staplegrove, Taunton.
— Frederick Francis Woolcott	Bishop's Lydeard, Taunton.
— Alfred Harris	Maidstone, Kent.
— Henry T. W. Salmon Mann	Leeds.
— William Caudwell	Worksop, Notts.
— Charles Taylor.	Nottingham.
— Thomas Wm. Lepper	Aylesbury.

Messrs. John Jas. Crowhurst, Edward Geo. Johnson, Geo. Gartside Mayor, Walter Jas. Palmer, Edward Slipper, Thomas Wm. Cave, Arthur Wm. Briggs, Donald Gregory, Henry Thos. Wm. Salmon Mann, George Deveson, Theodore Chas. Toop, Sidney Villar, William Caudwell, Charles Taylor, and Thomas Wm. Lepper, passed with *Great Credit.*

The following students of the Royal Veterinary College passed their *Second Examination* at the Meetings of the Court of Examiners, held April 2nd, 3rd, 5th, and 6th:—

*Mr. Walter Francis Day.
— David Evans.
— James Hall Brown.
* — Charles Jas. Vyner.
— Thos. Arthur Huband.
— Thos. Bower Cockshoot.
— Sydney Bright Price.
* — Robt. James Smith.
* — George Edmundson.
† — Wm. James Williams.
* — William Louden.
* — Arthur Broad.
* — Robt. Samuel Barcham.
— John Varney.
* — Richard Ephraim Liston Penhale.

†Mr. John Sibary Wheatcroft.
* — Tom Cooper Fletcher.
— John Albert Bown.
* — John Penberthy.
— Chas. Edwd. Cockram.
* — Thomas Pottinger.
— Thos. Joseph McGuinness.
* — Wm. Freeman Barrett.
* — William Davidson.
— Alfred Chas. Wild.
— Evan Wynne Williams.
* — Charles Humphreys.
— Chas. Curson Clark.
— John Thos. Holmes.
— Henry Chas. Harrison.
— Wm. Turner Simmons.

* Thus marked passed with *Great Credit.*
† „ „ „ „ *Very Great Credit.*

The following students, also of the Royal Veterinary College, passed their *First Examination* on April 7th and 8th:

Mr. Jeffrey John Dawtrey.
— William Langdon.
— Jn. Daniel Arnfield.
— Albert Hassall.
† — Chas. Henry Williams.
— Henry Jas. Skinner.
* — Henry Ballard.

Mr. Alfred Barrett.
— Archie Jn. Mullen.
— Edward Lawrence.
* — Albert Herbert Archer.
* — Tom Hawley Greatbatch.
— Harry Abrey Spurgin.
* — Herbert Wm. Pickworth.

* Thus marked passed with *Great Credit.*
† „ „ „ *Very Great Credit.*

GLASGOW VETERINARY COLLEGE.

The winter session at this institution terminated on Friday, 9th inst., and on the 12th, 13th, 19th, and 20th, the oral examinations of the Royal College of Veterinary Surgeons were conducted within the theatre of the college. The candidates for diploma were also subjected to a rigid practical examination on horses, cattle, and sheep, selected and brought to the college for that purpose. The Board of Examiners included—Professor Turner, University, Edinburgh; Dr. Dunsmore, Edinburgh; Mr. Benjamin Cartledge, F.R.C.V.S., Sheffield; Mr. George Fleming, F.R.C.V.S., London; Mr. M. J. Harpley, F.R.C.V.S., London; Mr. Wm. Robertson, F.R.C.V.S., Kelso; and Mr. A. Robinson, F.R.C.V.S., Greenock. The following gentlemen were also present as *ex officio* members:—Principal M'Call; Professors Knox, Cooke, and MacQueen, Glasgow Veterinary College.

The diploma of the Royal College of Veterinary Surgeons was obtained by the following candidates:—Mr. W. J. G. Johnson, Belfast; Richard Hughs, Llanarmon, Denbighshire; Mr. Allan P. Blue, Mearns, Renfrewshire; Mr. Thomas Bowie, Kilbarchan, Renfrewshire; Mr. Alex. Milligan, Corwall, Wigtownshire; Mr. Robert Stevenson, Newcastle-under-Lyme; Mr. George H. Pollock, Glasgow; Mr. William Stevenson, Howwood, Renfrewshire; Mr. James Wyper, Glasgow; Mr. Jeremiah M'Carthy, Leap, County Cork; Mr. Thomas A. Douglas, Fenwick, Ayrshire.

Twenty-five students were also examined for the second professional examination, of which number the following passed:—Mr. Henry Rogers, jun., Bombay; Mr. John Freeman, jun., Dublin; Mr. James A. Gosling, London; Mr. Robert Roberts, Colwyn, Wales; Mr. Wm. Pettigrew, Lesmahagow; Mr. Michael Y. Lees, Glasgow; Mr. Fred. Foster, Glasgow; Mr. Robert Glass, Glasgow; Mr. James M. Howat, Pollokshaws; Mr. Wm. Watt, Stirling; Mr. Hugh Bradley, Hilltown, County Down; Mr. Alexander Macadam, Paisley; Mr. Richard Ebbitt, Dunleer, County Louth; Mr. John Blakley, Ballymena, County Antrim; Mr. John Smith, Ulverstone, Lancashire; Mr. John Taylor, Cathkin, Rutherglen; Mr. Robert Black, Lundie, Forfarshire; Mr. James Nesbit, Galston, Ayrshire; Mr. Thomas M'Lay, Glasgow; Mr. Alexander Creighton, Irvine, Ayrshire.

Medals granted by the Highland and Agricultural Society of Scotland, Professor Allen Thomson, London; Professor Cleland, Glasgow University; Robert Walker, Esq. of Lethamhill; and Principal M'Call; and certificates of merit by the College were awarded in the different branches of study as follows:

Horse Pathology (written examination)—Gold medal (Principal M'Call). Mr. J. Wyper; silver medal (H. and A. S. of S.), Mr. R. Hughes, First-class certificates, Messrs. Mountney, Stevenson, and Bowie; second-class certificates, Messrs. Blue and Douglas.

Cattle Pathology (written examination)—Gold medal (Principal M'Call), Mr. R. Hughes; silver medal (H. and A. S. of S.), Mr. J. Wyper. First-class certificates, Messrs. Douglas, Stevenson, and Blue; second-class certificates, Messrs. M'Carthy and Bowie.

Practical Examination of Horses as to Soundness, Age, &c.—Gold medal, (Principal M'Call), Mr. R. Hughes. First-class certificates, Messrs. Johnson, Blue, and Pollock.

Practical Examination of Cattle as to Age, Operations, &c.—Gold medal (Robert Walker, Esq.), Mr. R. Hughes. First-class certificates, Messrs. Pollock, Douglas, and Blue.

Histology and Physiology.—Gold medal (Prof. Cleland), Mr. Henry Rogers, jun., silver medal (H. and A. S. of S.), Mr. James A. Gosling. First-class certificates, Messrs. Freeman, Taylor, and Creighton; second-class certificates, Messrs. Roberts, Glass, Nesbit, and Macadam.

Anatomy (*special and comparative*).—Gold medal (Prof. Allen Thomson), Mr. John Freeman, jun.; silver medal (H. and A. S. of S.), Mr. James A. Gosling. First-class certificates, Messrs. Roberts and Rogers; second-class certificates, Messrs. Taylor, Bradley, and Hunter.

Anatomy (*junior*).—First-class certificates, Messrs. John Renfrew and P. D. Kelly; second-class certificate, Mr. Wm. Shand.

At the close of the examination the President intimated that Mr. John Freeman, junior, had passed with "very great credit," and Messrs. Hughs, Blue, Glass, Watt, Gosling, Rogers, Bradley, Macadam, and Taylor with "great credit."—*Glasgow News.*

DICK'S VETERINARY COLLEGE, EDINBURGH.

Prizes were distributed to students attending Dick's Veterinary College, in the Council Chambers on Wednesday, 14th April. The Lord Provost presided, and mentioned that during the session the progress which had been made had been even more satisfactory than hitherto, and there had been a very keen competition for prizes. It was very gratifying, he said, that while for several years there had been a constant increase in the number of students attending the College, the numbers last year showed a greater increase. The Chairman concluded by complimenting Messrs. William Ryan and William Calvert on the number of medals they had gained. The prizes were then presented as follows:

Prizes Competed for during Sessions 1877-8.

Chemistry.—Gold Medal and Highland Society's Silver medal—William Ryan.

Materia Medica.—Highland Society's Silver Medal—Joseph Donald.

Botany.—Highland Society's Silver Medal—Wm. Ryan.

Prizes Competed for during Sessions 1878-9.

Anatomy.—Gold Medal and Highland Society's Silver Medal—William Ryan.

Physiology.—Gold Medal and Highland Society's Silver Medal—William Ryan.

Councillor Waldie's Prize (Case of Instruments) for best Practical Examination of Horses—William Calvert.

PRIZES COMPETED FOR DURING SESSIONS 1879-80

Veterinary Medicine and Surgery.—Gold Medal—Wm. Calvert. Highland Society's Silver Medal—Alex. Grey, jun.

Comparative Pathology.—Mr. Alex. Harris's Gold medal—William Calvert. Highland Society's Silver Medal—Joseph Donald.

Practical Examination of Horses.—Professor Baird's Prize (Case of Instruments)—John Roberts.

Best General Examination.—Highland Society's Gold Medal—Wm. Calvert.

Amateur's Prizes.—Silver Medal—A. M'Walter. Certificate of Merit—H. Bell.

Veterinary Medical Association Prizes.—Silver Medal for Best Essay of Session—Alex. Grey, jun. Certificate of Merit—Alex. H. Gentle.

Before the meeting terminated, Bailie Hall said they were all much indebted to the Lord Provost for the kind interest he had taken in their Institution, and the great amount of trouble he was always willing to undertake on behalf of the education of the students. He proposed a vote of thanks to him for the kind manner in which he had presided over them to-day, which was given with enthusiasm.

NEW VETERINARY COLLEGE, GAYFIELD, EDINBURGH.

PRIZE LIST.

THE distribution of prizes to the successful students of this college took place on Friday, 16th of April, at the college. Dr. Young, Professor of Physiology, presided. He congratulated the students upon the high degree of success attained by them during the session. All the examination papers which had come under his notice this year were, he was glad to say, above the average; there was not a single bad paper. Professor Williams, Principal of the College, in distributing the prizes, said the last session had been a very successful one in every way. They had had the largest class that ever was in the City of Edinburgh. The number on the roll was 104 students, and the number of entrances was 57. The work of the session had been carried on very satisfactorily, and the results of the examinations had come fully up to their expectations. The Principal then distributed the prizes as follows:

The Highland Society's Gold Medal for the Best Practical Examination, open to the competition of students from all the Scotch colleges, was awarded to Mr. Yorston, Manchester; and the Society's Gold Medal for the Best General Examination was gained by Mr. Ingram, Manchester.

The £20 prize given for the Best Middle Examination by the Principal was divided between Mr. Ingram and Mr. Sandeman, Kirreimuir, each receiving a cheque for £10.

The *Horse Pathology* Medals were won by Messrs. Nash, of Carperby, Yorkshire, and Ingram, of Manchester; and Certificates of Merit were awarded to Messrs. Chalmers and Michaelis.

Cattle Pathology.—Medal, Mr. Ingram; certificates, Messrs. Nash, Richmond, Fraser, and Canty.

Anatomy.—Medal, Mr. Woods, of Wigan; certificates, Messrs. Graham and Leather, Liverpool.

Physiology.—Medal, Mr. Woods; certificates, Messrs. Graham and Leather, Liverpool.

Botany.—Medal, Mr. Graham, Dunsford; certificate, Mr. Leather, of Liverpool.

Materia Medica.—Medal, Mr. Woods; certificate, Mr. Leather.

Chemistry.—Medal, Mr. Horrocks, Manchester.

Educational Medals.—Mathematics, Mr. King, of Coventry; languages, Mr. Bradshaw, Mauritius.

Medal for best collection of Anatomical Preparations.—Mr. Fraser, Keith, Banff.

The *Edinburgh Veterinary Medical Society's Medal* for the best essay on "The Preservation of the Horse's Foot," Mr. Fraser; certificate, Mr. Thompson, of Aspatria.

MONTREAL VETERINARY MEDICAL ASSOCIATION.

The usual fortnightly meeting of the above association was held on Thursday evening, April 4th, Mr. C. J. Alloway, V.S., in the chair.

The members expressed their pleasure in seeing Mr. Alloway once more among them, after recovering from his late severe illness.

The following resolution was also passed: Moved by Mr. Wm. McEachran and seconded by Mr. J. B. Green, "That this association deeply regret the untimely death of the late John S. Thomas, an active and earnest member of the association, and much respected by his fellow-students. The circumstances of his death are peculiarly sad, and we sincerely sympathise with his sorrowing family in their sad bereavement."

Mr. William Jakeman, Boston, Mass., read an interesting report of a case of cerebral meningitis in a horse treated by him under the direction of Professor McEachran. The symptoms described were those of dulness, stupidity, nervous twitchings, gradually increasing to complete stupor, alternated by violent fits of excitement, pressing the head into a corner, delirious movements, during which galloping was simulated.

The treatment consisted in laxatives—large doses of bromide of potassium, and in the latter stages nux vomica. At the outset cold applications to the head, subsequently changed to counter irritation.

The recovery is not complete, though nearly well, slight nervous twitchings continue.

Mr. Peter Cummings, Quebec, read an interesting paper on Auscultation and Percussion as diagnostic aids in Veterinary Practice. Mr. Cummings described the various sounds discovered on auscultating (applying the ear) and percussing or tapping the chest. He said it was impossible for any one to hope to be able to examine diseased lungs or heart unless they were perfectly familiar with the sounds emitted by healthy organs. None of the lungs or heart sounds could be recognised from description any more than any particular musical instrument or any individual tone of that instrument; they must be listened to both often and carefully.

He would, therefore, urge upon all students never to miss an opportunity of examining the respiratory and circulatory organs whilst at college when they could do so under the supervision of their clinical teachers. However well versed they might be in Physiology and Pathology, unless they could readily recognise a healthy from a diseased note they would have wasted many valuable years. It was absolutely essential to every practitioner's success that auscultation and percussion should be to him really and truly *diagnostic aids*.

In the discussion that followed, Dr. James Bell, Surgeon of the Montreal General Hospital, fully corroborated Mr. Cumming's views as to the necessity of becoming familiar with all chest sounds. He, in a few well-chosen remarks, gave the students some valuable ideas on the subject.

After a vote of thanks to essayists, the meeting adjourned till March 18th, when papers by Mr. E. J. Carter and Mr. Donald Campbell will be read.

ONTARIO VETERINARY COLLEGE,

TORONTO, CANADA.

The closing exercises of this Institution for Session 1879-80 took place on April 1st and 2nd.

The large attendance of students during the past session must have been exceedingly gratifying to the Principal, Professor Smith, and all connected with him, in his efforts to elevate the profession in Canada. The position which the Ontario College has attained on the American Continent, and the success in practice of its numerous graduates, are the best test of the teaching students receive.

The Board of Examiners were composed of the following gentlemen, appointed by the Council of the Agricultural and Arts Association of Ontario, viz. Messrs. Coleman, Cæsar, Duncan, Wilson, Sweetapple, Elliot, Cowan, McNaught, and Dr. Thorburn, who, after a most rigid examination, awarded diplomas to the following gentlemen:

Diplomas.

S. Brenton, Belleville; A. Bell, Sharpton; W. Burt, Simcoe; J. Burnett, London; G. Dunphy, Salford; G. Coulter. Islington; P. Z. Colsson, Mobile, Alabama, U.S.; J. B. Fretz, Pennsylvania, U.S.; F. L. Groff, Ohio, U.S.; H. G. Hawley, Brantford; Thos Meredith, Jamestown, N.Y.; J. Loughman, Montreal; B. B. Page, Illinois, U.S.; P. Stevenson, Aurora; R. Riddle, Cobourg; D. H. McFadden, Allanford; U. Springer, Waterloo; C. P. Smith, St. Mary's; J. Taylor, St. Catherine's; J. P. Whitehead, Delaware; B. Way, Belleville; L. A. Severcool, Ohio, U.S.; P. Shalliol, Ohio, U.S.; E. P. Westell, Arkona; D. Young, London.

Primary.—G. Bell, Westbrook; G. Howell, Carlow; J. Donelly, Palmerston.

Prize and Honour List.—Seniors.

Pathology.—Silver medal, G. W. Dunphy. Honours, W. Burt, H. G. Hawley, J. Loughman, B. B. Page, U. Springer, C. P. Smith, P. Stevenson, B. Way, J. Whitehead.

Chemistry.—First Prize, C. P. Smith; second, U. Springer; third, J. Whitehead. Honours, G. Coulter, B. Way.

Entozoa.—First Prize, G. W. Dunphy. Honours, C. P. Smith, U. Springer, J. Taylor, B. Way, J. Whitehead.

Dissection.—Prize, P. Z. Colsson.

Anatomy.—Silver medal, J. Whitehead. Honours, S. Brenton, W. Burt, P. Z. Colsson, G. Dunphy, J. Loughman, C. P. Smith, U. Springer, P. Stephenson, B. Way.

Physiology.—First prize, C. P. Smith; second, G. Coulter, G. Dunphy, J. Whitehead. Honours, B. B. Page, R. Riddell, P. Shalliol, E. P. Westell.

Materia Medica.—First prize, C. P. Smith, B. Way, equal. Honours, G. Dunphy, B. B. Page, P. Stevenson, U. Springer, D. Young.

Gold Medal for the best General Examination.—C. P. Smith, St. Mary's. Honours, W. Burt, G. Dunphy, B. B. Page, U. Springer, P. Stephenson, B. Way, J. Whitehead.

JUNIORS.

Physiology.—First Prize, J. A. Dell; second, W. E. Langford.

Pathology.—First prize, J. S. Butter; second, J. A. Dell. Honours, D. L. Devone, S. L. Honiford, — Logan, W. E. Langford, S. Maguire.

Chemistry.—First prize, J. A. Dell. Honours, W. E. Langford, A. Maguire.

Anatomy.—Silver medal, J. A. Dell. Honours, J. S. Butter, A. Logan, A. Maguire, — Shaw.

A numerous company assembled to witness the presentation of the above prizes, which took place in the museum on Friday morning. At the conclusion of the exercises Professor Buckland, on behalf of the Board of Agriculture, stated that in his department, breeding and management of stock, the following prizes were awarded:—G. W. Dunphy, books to the value of 20 dolls.; J. W. Litehead, 15 dolls.; B. Way, 10 dolls. He also said that he had the authority of the Commissioner of Agriculture for saying that that gentleman sincerely regretted his unavoidable absence. He expressed the full confidence that, great as had been the success of the college in the past, it would be greater in the future.

The following students attended during session 1879-80:—Messrs. William McCormack, London, Ont.; Willis Powers, Port Hope; J. Johnston, Teeswater; G. A. Dallimore, Minn., U.S.; W. J. Byers, Lloydtown: Geo. J. Howell, Carlow; Jas. Donelly, Palmerston; Geo. Dunphy, Salford; Wm. Burt, Lynn Valley; L. A. Severcool, Ohio, U.S.; D. McFadden, Owen Sound; C. P. Smith, St. Mary's, Billa Way, Belleville; S. Brenton, Belleville; P. U. Stevenson, Aurora; J. Loughman, Montreal; J. P. Whitehead, Delaware; T. Groff, Ohio, U.S.; P. Shalliol, Ohio, U.S.; J. Burnett, London, Ont.; Geo. W. Bell, Sydenham, Ont.; A. Bell, Sharpton, Ont.; D. Young, London, Ont.; B. B. Page, Dustin, Ill.; Geo. Coulter, Weston; P. Westell, Arkona; H. G. Hawley, Brantford; U. Springer, Waterloo; P. Z. Colsson, Mobile, Alabama; Thos. Meredith, A. G. Douglas, Perth; J. B. Fretz, Penn., U.S.; R. Riddell, Cobourg; A. Badgerow, James Furgeson, D. Burt, W. Cain, L. Carley, E. Wells, John Sommerville, W. Rose, W. Shaw, W. A. Labron, W. E. Langford, D. L. Devore, E. L. Bartram, Jesse A. Dell, A. Logan, G. W. Thomas, John Butler, A. Tanner, W. J. Tanner, William Steele, L. Lorean, W. Preston, J. White, A. J. Jeannin, H. Ovens, H. McElroy, A. D. Matthews, W. Langtry, C. C. Crane, L. T. Honiford, C. M. Gustin, F. E. Brooks, C. A. Woodford, Alex. Maguire, C. A. Delter, J. Sterling, J. Ottewell, F. Dailey, Wm. Parkin, G. W. Bowyer, W. Huntsberger, D. Courtney, F. Ashe, W. F. Kidd, J. Kime, F. Calder.

Veterinary Jurisprudence.

BATH COUNTY COURT, Feb. 28th, 1880.

Walker *v.* Snook.

Before His Honour, Judge Caillard.

Robert Walker, a farmer, sought to recover from the defendant, *George Snook*, farrier, of Bath, £27 12*s.* 6*d.* for a breach of warranty of a horse.

Mr. Bartlett appeared for the plaintiff, and *Mr. J. C. Benson*, of Bristol, for the defendant.

The plaintiff deposed that, on the 10th of January, he was in Bath Market, where he saw a brown gelding in the charge of the defendant. He asked if it was for sale, and the defendant replied that it was, and he wanted £45 for it. Eventually he gave a cheque for £42 for the horse, warranted sound. On Monday the 12th, when using the horse for the first time after purchase, he did not like its action, and sent it to Mr. Broad for his opinion on the following day.

Mr. Broad stated that he examined the horse on the 13th, and found it lame in both fore feet from chronic navicular disease.

James Morgan, a coachman, said that the horse had belonged to his mistress, and he as her agent sold it on the 22nd Dec. last to the defendant, after he had been blistering and treating it for lameness in the feet, for £13, out of which he deducted the defendant's bill for treatment. Witness noticed that the horse was lame in May soon after his mistress bought it.

John White, farrier, stated that he had examined the horse with a view to purchase before the defendant bought it, but finding it was lame in the feet, would not purchase it.

Mr. C. W. Gregory, veterinary surgeon of Bristol, said he had examined the horse since the Court had been sitting. He found it lame in the fore legs, but had not sufficiently examined it to form an opinion as to the cause of lameness. He saw nothing about the legs to account for it.

James Mason Broad, veterinary surgeon of Bristol, said that he had also examined the horse since the Court had been sitting, but not with Mr. Gregory. He found the horse was lame in both fore feet from chronic navicular disease; the horse pointed, and it was in other respects a clear case of navicular lameness.

Mr. Benson, on behalf of the defendant, said that the evidence on the part of the plaintiff respecting the warranty was so clear that he should not attempt to dispute it, although the defendant did not remember giving such a warranty. He would, however, call witnesses to prove the soundness of the horse.

Nathaniel Leigh deposed he had practised as a veterinary surgeon at Bristol for forty-five years. He examined the horse in question on the 3rd of February, at Bristol, and found no defect. He trotted it both with and without its shoes, and did not discover any lameness whatever. If the horse had been suffering from navicular disease it would certainly have shown symptoms which he should have noticed. He had not, he said, ever seen a sounder horse, and would have bought it. The feet were so good looking that they were not likely to be affected with navicular disease.

William Jermyn, veterinary surgeon of Bristol, said he also examined the horse at the Bristol Repository on the 12th of February. Before he examined it he made it stand still for several hours, in order that it might get stiff and easily show its lameness, if lame it was. It had good shaped feet, and such as were not likely to be affected with navicular disease. On cross-examination Mr. Jermyn stated that he never saw navicular disease in a good shaped foot.

The defendant and other witnesses were examined and the solicitors on both sides left the matter in his Honour's hands without further comment.

In giving judgment his Honour, said he too should be very brief. He was of opinion that the evidence as to the unsoundness of the horse was perfectly conclusive, and that, therefore, there had been a breach of warranty. The horse was lame in August, lame in January, and lame to-day. The verdict would be for plaintiff for the full amount claimed.

TESTIMONIAL TO PROFESSOR PRITCHARD.

On Wednesday, March 23rd, there was a large assembly of students in the theatre of the Royal Veterinary College, on the occasion of presenting an address to Professor Pritchard on his resignation. The address was written in old English characters, and bore the signatures of (180) one hundred and eighty students. Silence being restored after the prolonged cheering which greeted the Professor on his arrival, the secretary, Mr. W. H. Bartrum, rose and said: Professor Pritchard—I have, sir, been deputed by my fellow-students, to present you with an address, which will express more forcibly than any words of mine the peculiar interest felt and the unanimity will be seen by a reference to the number of signatures and the appearance of this theatre. It has been brought to our knowledge, sir, that for motives, into which we are not justified in entering, and for reasons on which we are not justified to express an opinion, but which we deeply regret, you are about to sever your connection of over twenty years with this institution. During that time it has almost become a matter of history the zeal and devotion which you have used as a teacher, and the success which has attended your efforts—efforts, sir, which have not alone been used to the advantage of students, but to the advancement of science. The value and success of those services have often been recognised, and deserving tributes of praise have, we believe, been tendered to you. In the trying period of our studentship we cannot but too deeply regret the loss of your services, although we are not unmindful of the fact that this step has been taken with due consideration for your personal feelings, and which no doubt will ultimately prove to your great advantage, in the future, in which we all wish you "God speed." Although you will be in private practice, we shall with difficulty sever ourselves from the old association of teacher and pupil, and shall no doubt in times of difficulty and uncertainty desire to avail ourselves of your great knowledge and extensive practical experience which, from your kindly aid and advice in the past, we are sure that you will readily afford. It only remains for me now, sir, to say that you carry with you in your new sphere of life the esteem of your pupils, and their best wishes for your welfare; and in order that this may be present to your memory, I have to inform you that, in addition to the address which I now present, an artist of considerable renown, "Mr. Gogin," has been commissioned to paint your portrait, and we have to request, sir, that you will place yourself at that gentleman's disposal, with the view of giving effect to our wishes, and we hope and believe that it will be regarded by you as one of the pleasant associations of your Professorship in this institution. It may also interest you to know, sir, that the Committee have arranged for this portrait to be photographed, in order that the students might hang copies of the same in their surgeries, to be to them an example of

the position to which study, application, energy, and perseverance will attain, and the esteem which follows the faithful performance of duty. The address which I have to present you is as follows:

TO WILLIAM PRITCHARD, ESQ., M.R.C.V.S.,

PROFESSOR OF ANATOMY AND EQUINE PATHOLOGY IN THE ROYAL VETERINARY COLLEGE, LONDON.

DEAR SIR,—We, the undersigned Students of the Royal Veterinary College, desire to express our deep regret at the loss we sustain by your retirement from a position which you have so long and so ably occupied. We ask you to accept a portrait of yourself as a slight expression of our respect and esteem, as an acknowledgement of the uniform kindness, and ever ready assistance you have always afforded us, and as a token of our best wishes for your future success. To this, sir, is appended, I believe, the signature of nearly every student of this College.

In reply, Professor Pritchard rose and said: Gentlemen, on this occasion I address you with mingled feelings—my mind somewhat in a maze, indeed, to be expressed in one word "Chaos," so that while I try to respond to the very handsome address just delivered, I do so under a certain amount of difficulty; but allow me to assure you such is more to be attributed to the workings of the flesh than the promptings of the spirit. I have been a teacher in this institution for twenty years, and from what has taken place before, and especially that of to-day, it is gratifying to me to think, in fact, I cannot help coming to the conclusion, that my efforts to please have been crowned with success. Some of you may consider it egotistical to say so, but when I tell you that I first begun at this College at the bottom round of the ladder as Demonstrator, and when appointed Deputy Professor I was presented with a Testimonial. Again a Testimonial awaited me when elected to fill the place of a Professor, and I was also met with one when I entered into my present position. I came here with the view of finishing my days "that is, my useful days," in this institution, and I have worked with the view of improving the position of the Veterinary Student and the future Veterinary Surgeon. You have no idea of the amount of work I have had to do, the correspondence I have had, the advice I have given to young gentlemen, and to old one's too, helping the profession, as I still hope to help it. But, gentlemen, although my duties have been laborious, let me tell you I look back upon them, with more than pleasure, as there is no grander feeling, no greater happiness, than that of helping one's fellow-man. You will, I am sure, excuse the pride I feel in taking this your very handsome Testimonial with me on resigning my position in this College. If it had been simply a sheet of paper with your names on it, and the words, "We are satisfied," I should have been proud of it, but this beautiful scroll, and the way in which the signatures have been appended to it, puts me in a position to show it to my friends, and not only to my friends, but to my enemies, for I suppose that I am like other people, and have them; but their comments upon me now must be made with their backs turned on this address, which expresses your opinion of me; and although you think I have done something for you, I look upon it as doing my duty. We are now about to separate, but it is only a separation as far as my going out of this College is concerned, and whether in this College or elsewhere you still carry with you my sincerest wishes; and if my advice can be of any service to you, I pray you will call upon it. And, gentlemen, I now have to thank you. Shakespeare said, "I am poor in thanks, but I thank you." I thank you too on my wife's account, who will be pleased

with this as I am. Her heart is with yours in the matter, and she will thank you from the bottom of her heart, a somewhat hackneyed term, but one that conveys a good deal. I am obliged to your Committee who worked out the details, as I know the trouble involved in getting up a Testimonial; and as to giving me my portrait, allow me to say that you could not have given me anything I like better, and when I say it is acceptable to me, I must also tell you that my friends in Wolverhampton are delighted with the idea; so that if you had considered the matter for twelve months you could not have selected anything that I should have appreciated more. Such, gentlemen, is the story, and now I shall give you the moral. Very early in life I came across these few lines, which I have seen the advisability of acting up to—they were thus:

"Weigh well the end."
"Deem nothing small or mean."
"For steps have a strange fatality." And
"Many a ponderous gate hangs upon a little hinge."

Take my advice, "Weigh well the end," and see if there is not something in the future that can be worked out. I had it when I came here, and up to the present time that future has been a grand one. I have already reached a point which at first I did not think possible, and let me tell you it is a sore, and sorry point to me, to leave this Institution, but I am satisfied I have taken the right step; and, gentlemen, wherever I am, whether in the West End or in the Country, you can always be assured of the advice of your old teacher.

Professor Pritchard, whose speech was frequently interrupted by the acclamation of his audience, then left the theatre amidst tumultuous applause.

BUYING DIPLOMAS.

Gentlemen,—I was very glad to see the letter of "Pro Bono Publico" in last month's *Veterinarian*, for I consider it most unfair that Students or Practitioners should, after obtaining the Highland and Agricultural Certificate, be allowed to buy the Diploma of the Royal College of Veterinary Surgeons, and immediately add L. and E. to their cards and brass-plates, leading the public to believe they are doubly qualified. I can assure you that the above-named arrangement has given much dissatisfaction to the majority of veterinary surgeons. I enclose my card. Yours, &c.,

London Only.

To the Editors of the Veterinarian.

UNQUALIFIED INSPECTORS.

Gentlemen,—As we always look to our friend the *Veterinarian* to state our grievances, will you allow me a small space to ask whether some steps cannot be taken to prohibit *Local Authorities* from appointing cow-leeches and other unqualified individuals, as Inspectors under the "Contagious Diseases Animals Act." I need not tell you it is both annoying and hurtful to a veterinary surgeon to have a class of men parading about in their practice, whose ignorance is only exceeded by their impudence. Yours, &c.,

To the Editors of the Veterinarian. M.R.C.V.S.

ARMY APPOINTMENT.

VETERINARY DEPARTMENT, WAR OFFICE,
April 9th.

Veterinary Surgeon, First Class, James Lambert, from the 17th Lancers, to be Veterinary Surgeon, First Class; Veterinary Surgeon Stuart Murray Wilson, from the 12th Lancers, to be Veterinary Surgeon.

The *Army and Navy Gazette*, of April 17th, says that no fewer than seven regiments, viz. the 1st Dragoons, 3rd Hussars, 5th Lancers, 12th Lancers, 16th Lancers, 17th Lancers, and 21st Hussars, are now without veterinary surgeons.

OBITUARY.

WE deeply regret to have to report the death of Professor Sharpey, by which event England has lost one of its most eminent physiologists. For many years Dr. Sharpey held a foremost place among scientists at the Royal Institution and the London University, with which institutions he was officially connected.

The science of veterinary medicine owes him a deep debt of gratitude as a physiologist, and the profession itself is no less indebted to him for having, amid all his investigations, found time to act as an Examiner of Veterinary Pupils. In this latter capacity he officiated from Dec., 1856, until May, 1875, when from impaired health he retired from the Board of Examiners.

He died on the 11th of April, at his residence at Torrington Square, in the 79th year of his age. He was unmarried.

On Thursday, April 15th, his remains were removed from his residence to University College, where the funeral was met by a large gathering of professional friends and others, who accompanied it to Euston Square Station, whence the body was forwarded to Arbroath, his native town, for interment.

The *Daily News*, alluding to his death, says, that the deceased gentleman graduated M.D. at Edinburgh in 1823, was a Fellow of the Royal Societies of London and Edinburgh, L.L.D. Edinb., a Trustee of the Hunterian Museum of the Royal College of Surgeons of England, an institution in which he always took a great interest; he was also Emeritus Professor of Anatomy and Physiology in University College Hospital. The catalogue of Scientific Papers, published by the Royal Society of London, furnishes a long list of his contributions to the advancement of science, one of the most important being his "Observations and Experiments to Purkyné and Valentine's paper on the Discovery of a Continued Vibratory Motion, produced by Cilia, as a general Phenomenon in Reptiles, Birds, and mammiferous Animals," published in the *Edinburgh Philosophical Journal.*

We have also to record the death on Feb. 9th, 1880, at his residence, Tickenhall, near Derby, of William Garrard, M.R.C.V.S., aged 60. His diploma bears date May 29th, 1844.

And of George Edward Cooper, M.R.C.V.S., *late* of Yeavely, Derbyshire, who died in London, January 14th, 1879, aged 32 years. His diploma bears date April 30th, 1867.

THE

VETERINARIAN.

VOL. LIII. No. 630. JUNE, 1880. Fourth Series, No. 306.

Communications and Cases.

PARASITIC DISEASE IN BATRACHIA AND SALMONIDÆ.

By T. Spencer Cobbold, M.D., F.R.S., Professor of Helminthology, Royal Veterinary College.

In the pages of the *Midland Naturalist* I have recently recorded a curious example of Parasitism in the Toad, showing the destructive effects of dipterous larvæ; and in *The Field* I have likewise had an opportunity of recording an instance of cestode tuberculosis in a trout, to which, as will be seen below, I have attached a special name. After the recent discussions that have appeared in the *Times* and in the *Lancet* respecting Trichinosis and Fluke disease, I think it high time that a better nomenclature for parasitic disorders should be introduced. At present I do not propose to enter fully into this question, but, as bearing upon the general question of epizoöty affecting all classes of animals, I think it desirable to give increased publicity to the following remarkable facts.

Just forty years ago I remember, as a lad, to have been painfully struck with the distress of a toad, as shown by its outstretched fore limbs firmly planted in the soil, and by an otherwise peculiar attitude. The victim was in a plantation of my father's Rectory grounds, Wortham, Suffolk. Noticing the constant outward and inward movement of several para-

sites which occupied the cavity of the nose, my chief thought was how I could best put the unfortunate batrachian out of its misery. I killed the toad; but the parasites were neither removed nor preserved. It was, in fact, my earliest observation in helminthology. From that time onward the circumstance continually recurred to me as one worthy of scientific notice; but as, until recently, I had received no confirmation of the correctness of the observation, the matter was allowed to pass. During my prolonged absence from town last autumn, a letter arrived from Dr. C. A. McMunn, of Clarence House, Waterloo Road, near Wolverhampton, describing something very similar. Writing on the 6th of August, 1879, Dr. McMunn records the following incident:—"As I was returning home from the country yesterday I noticed a toad slowly crawling across the road, and on taking it up I found two holes in the front of its head, evidently the nostrils, very much increased in size. They were filled with moving bodies. To-day the animal died. The two holes have coalesced into one, and the cavity formed by this coalescence is filled with the same parasites I saw yesterday. I enclose the toad, as I know you are interested in such matters."

For the reason above stated, it was not until the expiration of three months that I had opportunity to read Dr. McMunn's letter, and to open the paper-box containing the toad. After explaining this by letter, my correspondent was kind enough to furnish me with some additional particulars. Writing at the close of the year, he observes:—"On examining the toad more carefully, I found each nostril filled with whitish small worm-like bodies, which would amount, I should say, to fifty or more in each nostril. They kept appearing at the outside of the nostrils, and then receding, these movements being probably due to the respiratory efforts of the toad. They also had a rolling motion, individually. After some hours the septum between the nostrils was quite eaten away, and a large hole appeared in the animal's head, the toad being then quite dead." Dr. McMunn did not observe any rings or hooks, but in a postscript he expresses the opinion that the parasites represented "the larvæ of some insect."

I must here mention that the envelope and box had arrived in a torn state. When I examined the contents of the box, there was nothing but the skeleton of the toad, the remains of numerous pupæ, from which the perfect insects had escaped, and the wool and notepaper in which the toad was packed. The surface of the writing paper was plainly

marked with impressions of the smooth-skinned pupæ. These are distinctly ringed, and when magnified about forty diameters show a large number of minute spines. From a sketch supplied by Dr. McMunn, the living larvæ would appear to have been fully a quarter of an inch in length. I found that one of the dried, shrivelled, and empty pupæ skins measured exactly one-fifth of an inch in length. The remains of a rather small beetle that had evidently gained access to the box were found lodged in the skeleton. This had certainly nothing to do with the parasitism, about which not a shadow of doubt could exist.

These facts were recently communicated by me at a private meeting of the London Entomological Club held at Dr. E. H. Vinen's house, and I solicited this privilege, as I was unable to determine the species of fly causing the disorders without the assistance of entomologists, or, as I might more correctly say, dipterologists. The result was most gratifying, as in the very lively discussion which then followed, Mr. Robert McLachlan, F.R.S., drew attention to recent notices in the *Zoological Record* for 1877-78, and he stated that not improbably the larvæ in question would be found to belong to the genus *Batrachomyia* of MacLeay. In the reports I find that reference is made by Mr. E. C. Rye to a note by Herr Boie, on the larvæ of a Dipteron attacking the soft parts of the mouths of toads in Bohemia. M. Girard also gives "instances of batrachians attacked in a similar manner." Mr. Rye quotes also the opinion of MM. Colin de Plancy and E. Taton, that "the flies (*Batrachomyia*) attack only sores already existing." It appears that M. Moniez had previously referred some dipterous insects, possessing these habits, to the genus *Lucilia*, one species of which (*L. hominivorax*) proves, as everybody knows, so terrible to the convicts at Cayenne. The new fly, *L. bufonivora*, Mon., lays its eggs "in the eyes of frogs, and the larvæ eat into the living batrachian." Mons. Lelièvre refers it to *L. regalis* or *L. illustris*, Meig., but the opinion is disputed by M. Girard. It is also stated that "larvæ of this species have been discovered in the head of a toad, near Maurenne;" and also, in another instance, near Paris. From these observations it appears that the instances of dipterous parasitism in the nasal chambers of toads, as recently witnessed by Dr. McMunn, and by myself some forty years back, are perfectly genuine.

Every year it becomes more and more apparent how largely parasites are concerned in the production of epizoötics.

In my recently published treatise I have sought to give expression to this fact, more particularly in relation to our ordinary domesticated animals. By-and-bye more significance will be attached to this matter by professional men, who, instead of rolling together a variety of parasitic affections and calling them by one name will demand some special nomenclature, such as I am desirous of introducing. Recently a human disease, which I believe to be strongylosis has been confounded with trichinosis, and, similarly, olulaniasis and psorospermosis have been confounded with trichinosis. We must keep these and many other distinctive affections, such as anchylostomosis, widely apart. This brings me to notice the following remarkable instance of parasitism in one of the salmon tribe.

On the 30th of April I received from Mr. Robert J. Simpson some interesting parasites, together with portions of the skin, gills, and muscles of a lake trout. The specimens were accompanied by a letter, written from Rothay Cottage, Ambleside, only the day before, and in it Mr. Simpson records the following particulars:

"On Tuesday last a dead *Salmon ferox* was found in the river Brathay, a female fish, in good condition (for a spawned fish), twenty-four inches in length, four pounds in weight. The fish had evidently died from the salmon disease, though this is the first victim yet seen in the rivers running into Lake Windermere. On making a *post-mortem* examination I found the fish, I may say, one mass of parasites, all seemingly of one kind, and, from the egg, as minute as can be seen, to worms two inches long. One of the gills was diseased; the part I have cut off and enclosed in bottle. I also enclose a piece of skin that had the salmon disease; also a lot of the parasite at its different stages of growth. To my surprise, in cutting into the flesh under the diseased skin, I found the parasite at fully one and a half to two inches at full length. I enclose one bit of skin and flesh with a large parasite in it. I hope you will be able to see it. When put into the spirit its white body was clearly seen, stretched at full length, in the pink flesh. On cutting into the flesh, and examining it more thoroughly, I found the whole flesh more or less affected with the parasite, some at full length, others in cells curled up. I have not hitherto met with this parasite, nor have I had a specimen with the salmon disease to examine. I have not heard whether this parasite is common to fish killed by the disease. Do you know this parasite? Can it have anything to do with the disease? The cause of death did not appear clear, looking only at the

head, gills, throat, and heart, as, with the exception of the bit of gill sent, these organs seemed right."

On May 1st, and again on the 3rd, I submitted Mr. Simpson's specimens to microscopic investigation, and although neither the long "white body" in the muscles, nor a similar filamentous band two inches in length, and loose in the bottle, turned out to be tapeworms, it was soon perfectly clear that the mass of parasites from the "flesh" were cestode worms. Some were in capsules, whilst others had been liberated, but all, whether encysted or free, were sexually immature. At first I thought they might be capsuled Triænophori, but, after soaking in glycerine (by which simple device their characters were better brought out), I became satisfied that they were very young examples of *Ligula digramma*. Practically it is, perhaps, of little moment as to what species of adult cestode these larvæ may be referred, but I regard *L. digramma* as a synonym of *L. simplicissima*, both of these cestodes being sexually imperfect worms.

Now, the beautiful researches of M. Duchamp have shown that the larval Ligula residing in the bodies of various freshwater fishes are the young of the *Ligula monogramma* of water birds. Thus, by experiment, M. Duchamp succeeded in causing the larval forms which abound in the tench (*Tinca vulgaris*) to become sexually mature in the common duck. He says: "Cette évolution est extrêmement rapide: quatre jours suffisent pour que les œufs soient aptes à la reproduction."

I have examined a considerable number of Ligules from different fishes and birds. What has occurred in this instance is probably as follows: The trout either captured and killed or found a dead water-bird, which it ate, together with the Lingulæ it contained; or, possibly, it swallowed part of the strobile of a Ligula which had escaped a living bird *per anum*, as not unfrequently happens. The ingestion of the Ligulæ set free the contained ciliated ova. The six-hooked scolices in their interior migrated from the intestine into the flesh beneath the peritoneal membrane, and there underwent the usual transformation into young Ligulæ. These cestodes were so numerous as to seriously inconvenience the fish, thus giving rise to the disease which I call *ligulosis*. Here was a form of piscine epizoöty which, though not hitherto so called, has already been recognised as capable of affecting fishes fatally. This, as M. Duchamp has pointed out, was the case with the trenches in the ponds of La Bresse. In the present instance I think Mr. Simpson's

dead trout (*Salmo ferox*) came to grief partly from the effects of the fungus on the gills, and partly, as well as more immediately, from the irritation due to the presence of the very numerous young Ligules. I think, therefore, with Mr. Simpson, that the amount of fungus development was not of itself a sufficient cause of death, though, had there been no entozoa present, there can be little doubt but that the fungus disease would have gone on extending its ravages until the piscine host finally succumbed. Death from *ligulosis* is probably an exceptional occurrence.

In conclusion, I may state that there is abundant evidence to prove that all vertebrates are liable to succumb to parasitic disease; and the only effectual way of checking these outbreaks is to adopt some means of destroying the entozoa and ectozoa in one or other of their phases of life development.

SYNOPSIS OF CONTINENTAL VETERINARY JOURNALS.

By John Henry Steel, M.R.C.V.S., F.Z.S., Demonstrator of Anatomy at the Royal Veterinary College.

M. Cornevin's Italian Review, as given in the *Journal de Médecine Vétérinaire* for April, 1880, is most interesting and needs no apology for reproduction as follows:

Progressive Paralytic Muscular Hypertrophy or Pseudo-hypertrophic Lipomatous Muscular Disorder in a Calf, by M. E. Perroncito.—Since Duchenne, of Boulogne, published the first case of hypertrophic paraplegia of childhood, due to cerebral causes, observations in human medicine have multiplied and medical literature is now rich in information on this subject. Veterinary pathology, on the other hand, has nothing relating to it, unless we consider as this disease that which Rolff has described under the name "Fatty degeneration of the muscles of young swine," which, indeed, seems to differ from it neither in its mode of origin nor in the lesions to which it gives rise. Nevertheless, many experimenters, among them Mantyazza, Vulpian, Bizzozero, and Golgi, have produced it in animals. Mantyazza observed that on section of the ischiatic and crural nerves there occurs diminution in size of the muscular fibre, together with increased production of sarcolemmatous nuclei, and more rapid growth of the interfascicular connective tissue,

with abundant deposition of fat in its meshes when the animal survived for a long time. Vulpian, after section of the ischiatic, hypoglossal, lingual, and facial nerves, together with hyperplasia of the connective tissue, deposition of fat, and multiplication of nuclei, observed an increase in the diameter of the muscular fibre. Bizzozero and Golgi, who repeated Mantyazza's observations, asserted that they, as he did, observed diminution of the same diameter. Whatever conclusion may be arrived at on this particular point, we learn from the above-mentioned work that in the first stage of hypertrophic paraplegia there is an excessive development of connective, in the second stage of fatty tissue. M. Perroncito relates a case which he observed in a yearling calf which was slaughtered in the abattoir of Turin, in December, 1877. It was of the Piedmontese-plain breed, and since birth had retained the recumbent position. When any attempt was made to raise him, after many efforts he would kneel, but could not retain that position without support, nevertheless he was to all appearance in a state of flourishing health, and became so fat that he weighed 325 kgrms., and gave 182 kgrms. (56 per cent.) as carcase weight. When he was opened all the viscera of the abdomen and chest were found to be normal; there was considerable accumulation of fat around the kidneys and in the omentum and mesentery. All the muscles, instead of the usual red colour, were of a fine pinkish white. The muscles of the interior of the body were whiter than those of the exterior, especially those of the buttock and longissimus dorsi. In examination of the muscular system one seemed rather to have to do with lard than with meat; the density of the muscles was increased. The marrow in the long bones was abnormally white. When M. Perroncito was informed of this animal being in the slaughter-house it had been already cut up and the quarters taken apart, so that the professor was unable to examine the nerve centres. The butcher who purchased it assured him that he had observed nothing special about them. Microscopical examination ot specimens, either fresh or preserved in alcohol or in Muller's fluid, showed that of the primitive bundles some were atrophied, the others increased in size, that in two or three they were surrounded by fatty cells which compressed them. The nuclei were very abundant, but the sarcolemma contents did not seem to have undergone change. Between the nervous tubules at the terminal part of the ischiatic nerve were found fatty cells, similar to those between the fasciculi. When cooked and prepared as for food the meat

was found insipid and devoid of juice. After this description M. Perroncito asks if a butcher to whom such an animal is handed over can have any claim for compensation on the seller. Then he reminds us that in human medicine Cavagnis in such cases advises administration of iodide of potassium, long continued, and seconded by faradisation and good feeding. Remuell and Benedikt obtained good results from galvanisation alone. We regret that this observation, interesting as it is, was not rendered more so by more extended observation, which would surely have thrown some light on the hitherto little studied organic modifications which result from fattening animals for slaughter. It would have been particularly interesting to have made a qualitative and quantitative examination of the blood, and especially an analysis of the muscles. It is almost impossible to conclude, by microscopical examination, whether or not a muscular fibre has undergone change of diameter, since the least difference of tension may cause error. Chemical analysis would have solved the difficulty by showing either increase or diminution of myosin and syntonin—*Annali della Reale Accadémia d'Agricoltura di Torino.*

On the Parasites termed Trichina of Birds, by MM. Rivolta and Delprato.—Since the *Trichina spiralis* (Ow.) and the disease which it occasions have been well known, the attention of physicians and naturalists has been directed to the way in which it gains entry into the system, and it has been asked whether the flesh of animals other than the pig can by consumption be a means of transmission. Attention has been especially directed to barn-door fowls, and recourse has been had to microscopical observation and experimental research. Unfortunately the work hitherto done in this matter, far from conveying information, has been the source of confused discussions and prejudiced mutual affirmations and negations. Has not the Trichina of Owen been confounded with analogous but not identical nematodes since 1838? Von Siebold, in his mémoire on the sexless parasites of birds and mammals, said that there must be more than one species of Trichina, and Pagenstecher also came to this conclusion after an examination of birds of the genus Anas. But Herbst, more especially, established different species and gave the following as a result of his researches :—(1) A *Trichina spiralis* (Owen) in the cat. (2) A species peculiar to birds. (3) A species transmissible from the mole to the pigeon. (4) A species transmissible from dog to dog and from the dog to the badger, and *vice vĕrsa.* Wedl demonstrated the ana-

tomical difference between *Trichina spiralis* and that of birds, and Pagenstecher has recently stated that according to his experiments the dog cannot be attacked by true Trichina, but has a form special to him. M. Diesing, in his *Systema helminthum*, distinguishes two species of the genus TRICHINA, *T. spiralis* (Owen) and *T. affinis* (D.), placing under the latter heading provisionally all the species enumerated by Herbst. The former had been found encysted in the peritoneum and pleura of Cheiroptera and the following birds:—*Vespertilio auritus et noctula, Strix bubo, otus, et flammea, Gypselus apus, Lanius minor, Sylvia rubecula, Vanellus cristatus, Numenius arquatus, Larus fuscus, ridibundus et argentatus, Buteo vulgaris, Grus cinerea,* and also in the dog, cat, mole, and wild boar. Allowing, as we must, the existence of *T. affinis* of Diesing, it remains to be decided whether *Trichina spiralis*, the "true Trichina," as we may call it, can be transmitted to fowls, and from them pass to men. Dr. Bakodes, of Pesth, has found it in the walls of the ventriculus succenturiatus and of the intestines of two fowls, without having met with it in the muscles. M. Demarchi, in 1865, announced that he had found it disseminated in the thigh and the left leg of a fowl; finally, the special journals have reported, after *Spallanzani*, who first gave notice of it, that in 1878 German soldiers of the garrison of Thionville, became affected with Trichinosis, and two of them died. It was affirmed that the disease had its origin in consumption, not of the flesh of the pig, but of that of the goose. These three are the only cases hitherto recorded. Those of M. Damarchi and of Thionville do not admit of discussion, for the details are wanting. But we may observe, as regards the food of German soldiers, that it is more often composed of American preserved meats than of goose, and every one knows that Trichina is not rare in American bacon. Dr. Bakodes' case remains, but Linstow, who closely examined his work, did not hesitate to say that Bakodes committed an error, and only found a spiropter. He says, reasonably, that *Trichina spiralis* is never found *encysted* in the walls of the digestive tube; it only traverses them to enter the striated muscles. Thus, we must accept this result with some doubt. Besides, the experiments of Fuchs and Pagenstecher, Davaine and Colin authorise doubt. They have shown that by making some birds ingest Trichina capsules the parasites are promptly set at liberty, increase in size rapidly, develop their sexual apparatus and copulate. But generally the females were expelled from the intestine before the escape of the embryos, or when the latter entered

the digestive tube they become likewise expelled. Their migration into the muscles was never shown. The paper in hand says the description of the supposed Trichina of fowls only shows the difference between it and the same true Trichina which passes from the pig to man. The authors proved this on fowls in the neighbourhood of Pisa. The parasites were enclosed in a spherical oval cyst, of about a millimètre in diameter, principally in the peri-œsophagean areolar tissue or in the thickness of the intestinal walls of the mesentery. Though the greatest care was exercised they were never detected in the muscles or in the inter-fascicular areolar tissue. It is striated transversely and averaging 2 mm. in length; it is curled up like *Trichina spiralis*, but it may be distinguished at once from the latter, since it is agitated directly the cyst is opened, but *Trichina spiralis* is always motionless, and as though dead (?) The anterior part of its body is very narrow, the posterior is larger than that of the Trichina of Owen. But the true specific character is that its mouth presents two very marked conical papillæ. The œsophagus and intestine are lined by large and very distinct cylindrical epithelial cellules. Around the œsophagus may be seen two cylindrical masses, which are perhaps glands. Zoologically the confusion of the parasite which has just been described with *T. spiralis* ought to cease. But ought we to accept the name of *T. affinis* suggested M. Diesing? We must remember that the author has only suggested it as provisional. Now we know more about the matter we may, without inconvenience, adopt the names proposed by different authors to distinguish parasites which differ in their habitat, and slightly in their forms. Thus, *T. agilissima* (Molin), inhabits the peritoneum of some lizards; *T. anguilla* (Bowman) is found in the eel; *T. cyprinorum* (Diesing) is found in many species of fish; *T. circumflexa* (Palonis) encysted in the peritoneum (and not the muscles) of the rat; and lastly, the parasite which is the subject of MM. Rivolta and Delprato's present study, which they propose to call *T. papillosa*, on account of the formation of its mouth. Its habitat is the connective tissue of different parts of the body of birds.—*Giornale di Anatoma, fisiol. et pathol. degli Animali*, 1879.

Note on a Discomyces of Sarcomatous tumours, by M. Rivolta.—In the course of 1875 the author found in sarcomata of the ox special products, which attracted his attention, but which he scarcely dared, in spite of their reactions with caustic potash, to consider of a vegetable nature. Two years later Dr. Harz, with greater assurance, did not hesi-

tate to consider them a species of fungus, which he called *Actinomyces bovis*. Since then the microphyte thus designated has been again found in the same conditions, and more thoroughly investigated. M. Rivolta considers it ought to be ranged in the family of Discomyces. When examining a sarcomatous tumour from the scrotal region of the horse which had been sent to him by a veterinary surgeon of the Italian army, M. Rivolta saw a parasite, which though closely resembling that found in the ox, differed from it in some particulars. After this the Professor of Pisa proposed to establish a new genus, Sarcomyces, which would comprise the species *S. bovis* and *S. equi*. He announces that he is about to study the development, culture, and inoculation of this parasite.—*Giornale di Medicina, Veterinaria e Farmacia of Pracenza.*

First Congress of Tuscan Breeders.—On the 6th December last this Congress was opened at Firenze (Florence). Sixty members representing the different agricultural committees of the country were present. Marquis Ridolfi, senator, was elected president. General Baron V. Ricasoli was sent by the Minister of Agriculture to represent his department. The first question discussed was that of the Maremma breed of horses. The assembly was of the opinion that it could not approve of the crossings with English horses which have been made for some time past. That it would be preferable to modify the race, such as it is, by selection, or to use only stallions of Oriental breeds, if foreign stock must be utilised. The second question referred to horned cattle. Two races, tribes, varieties, whatever we choose to call them, are found about this part of the country, that of the Val di Chiana and that of Pisa. Professor Zanelli, Director of the Zootechnical Establishment of Reggio d'Emilie, endeavoured to establish that (whatever has been said on the matter) the Val de Chiana cattle are a pure, indigenous, uncrossed race. After this the Congress unanimously decided that the said breed being the best found in Italy, as far as propensity to fatten and to fetch a high price in the markets, it is advisable to promote its spread as much as possible, and especially to substitute it for the Pisa breed whenever agricultural conditions and food supply render it feasible; that it is necessary to appeal to breeders to remedy the defects it at present presents by a good choice of breeding beasts. The practice of working bovine animals was then considered, and the meeting expressed the opinion that it must be maintained, in order to prevent any other animal taking the place now filled by cattle. As for

reserving it for the ox to the exclusion of cows, the Congress decided that when the work is not excessive, and is performed on level ground, there is no inconvenience in employing cows, and there is great benefit derivable from utilisation of animals destined to reproduce the race. With regard to an improved method of feeding animals for fattening, working, and milking purposes, the Congress could not do more than hint vague concessions, for this depends so much on the various influences of surrounding circumstances, the prices of food stuff, and local industry. Thus, the only matters decided on were the good effects of green forage with oil cake, and of cooked and fermented food. With regard to the ovine species, which is so much at home on the slopes below the Appenines, the Congress decided that what especially prevented rapid increase of sheep is the want of food supply in bad seasons. We must obtain from the agriculture of the future a modification of this state of things. The Congress, then, with unanimity and acclamation, voted as follows:—"Considering the delay in the completion of the system of canals and of irrigation of the valley of Chiana, which risks the fertility of a country whence the best race of Italian cattle is derived, the Congress votes that the government of the Kingdom of Italy, shall continue the works of water supply commenced before the autonomy of the country." The meeting terminated its sittings, after examining the measures of sanitary police, which should be adopted to arrest extension of epizootics, and especially to prevent fairsand markets being, as now, the principal centres of contagion.—*Il Zootechnico*, January, 1880.

Bibliography.—*Forage Plants, or the Vegetable Constituents of Meadows and Pasture Lands of Italy*, by M. A. de Silvestri; *Traite de Zootechnie*, by M. Sanson, translation by MM. Lemoigne and Tampelini.—Whoever has even a slight acquaintance with Italian literature will be struck with the great number of its publications. On considering the matter, we find an explanation in the character and proclivities of the Italian people, which preserves them from the excessive centralisation which affects us so much and considerably to our prejudice. We, in France, have only one capital, which is at once administrative and pre-eminent in intellect. Italy, ever since its unity, continues to have many which dispute artistic, literary, and scientific supremacy—Rome, Florence, Milan, Venice, and Naples. This is the secret of the productive power of the Italian people. These reflections, which I first made long ago, were forcibly recalled to my mind, when examining a beautiful

volume, enriched with five hundred engravings, which has just been published at Turin, by M. A. de Silvestri, professor at the Veterinary School of that town. Its title is given above. It is a kind of agricultural and medical botany, similar to that of MM. Rodet and Baillet, which we have in France, and will be particularly useful to agriculturalists, veterinarians, cavalry and administrative officers. The text is good, and the plates are well worked. We are well aware how difficult it is to obtain even passable engravings in the provinces, and must congratulate our Italian colleagues on having, thanks to the absence of centralization, good workmen at hand to illustrate the good books they produce. Two other professors of Zootechny, M. Lemoigne, of Milan, and M. Tampelini, of Modena, have happily thought right to translate the work of M. Sanson on economy of live stock. The detailed analysis which we gave last year of this work, by the Professor of Grignon, renders it superfluous to enter into further particulars about it, and we must content ourselves with congratulating the translators on their happy thought, and the author for the patriotic satisfaction with which we see French work spread, by its writings, beyond our frontiers.

VETERINARY SCIENCE IN AMERICA.

Communication from Mr. J. H. Steel.

Gentlemen,—In your number for May I notice a letter from Mr. Robert Jennings, jun., of Pittsburg, Pennsylvania, in which he alludes to my paper on "Veterinary Science in America," which you did me the honour to insert in your January number. I trust you will excuse me if I consider I am able to treat with contempt Mr. Jennings's observation that my paper contains "calumnies," "infamous charges," and "slanderous statements." Allowing to him good faith in professional writings, and simple honest desire for truth (which he denies to me), I shall consider a few of his remarks. He says "errors and omissions are readily detectable" in the paper. With regard to omissions, I did not presume to undertake the very ambitious task of recording every futile attempt to inaugurate veterinary studies in America. Had I done so I fear I should have overtaxed your patience, and should have found few readers. Acknowledging freely that there are omissions, I am also most willing

to admit that Mr. Jennings has informed us of some very important ones, due to my limited sources of information, and to the fact that some of them are now for the first time placed on record by him. Thus, I was unaware that Mr. Robert Jennings, sen., was "the first to publicly advocate the cause of veterinary science" in America. I respect that gentleman all the more now I am informed of it, and admire his determined efforts in this direction, prolonged through many years, culminating in the planning and organization of the United States Veterinary Medical Association, which is now doing such good work. What I marvel at is that we have no more evidence of these efforts than those enumerated by your correspondent. My paper will have done some good if it has rescued this worthy name from even temporary oblivion. Also I am most happy to retract my remark that "all Pennsylvanian diplomas are worthless" now I am informed that four winter courses of lectures were delivered by the Pennsylvania College of Veterinary Surgeons. Still, some of the graduates ought to let us know exactly what courses of lectures were attended by them at Philadelphia, to what examination they were subjected, and who were the staff of their alma mater. I ask this, for we should know the truth of the matter. We are not quite assured that attendance at free lectures delivered once a week during the winter months, and free clinics twice a week for four months, suffices as a professional education. Nor do we quite see that the fact of an agricultural society offering the use of its room (which could hardly have been required when a lecture-room, library, laboratory, dissecting-room, and infirmary were already available) and allowing the delivery of a "course of lectures on Horseology under their auspices" is any proof that the institution thus honored turned out fully qualified veterinary practitioners. Still, taking into consideration the fact that everything must have a beginning, we are willing to allow that *there are Philadelphia graduates*, and to hope that from these small beginnings may arise a professional body potent for scientific progress. But I have been misled in this matter "by the unjust, unfair, and prejudicial statement of the Editor of the *American Veterinary Review*." This gentleman, therefore, comes in for a share of abuse, and I am not always able to determine from Mr. Jennings's paper who is the "malicious" and "calumniating" person. I confessed my indebtedness to *Professor Liautard's* writings, and they have been sufficiently long before the profession to warrant my doing so. If the statements of American veterinary

history made by this author were "unjust" and "unfair," where was Mr. Jennings, the planner of the United States Veterinary Medical Association, at the opening meeting of which the paper was read? Again, when the first number of the only existing American veterinary periodical appeared, were the Pennsylvania graduates so indifferent to their status that no one would rise to refute any statements which were inaccurate, or did they all, like Mr. Jennings, "not see the first number?" At any rate, we were warranted in accepting as facts, statements made thus publicly and unquestioned, and we are glad to be instrumental in clearing up any misunderstanding on this matter. We now come to the "bogus diploma" question! on which we are taxed with having lapsed into gossip or malice, because we said "Philadelphia has an unenviable notoriety in veterinary history in connection with the 'bogus degrees,' the fame of which, extending to this side of the Atlantic, has rendered us suspicious of qualifications, even sometimes more searching than those to which we subject our own graduates." Here we must really protest against Mr. Jennings's treatment of us. He has quoted our remarks incompletely, has perverted our sense by inattention to punctuation, and has given us the credit of statements of which we are guiltless. One thing he seems, however, to have made very evident, that a Robert McClure was, in 1860, appointed a professor of the Veterinary College of Philadelphia, as a colleague of Mr. R. Jennings, and a Robert McClure, M.D., V.S. was the man who, in my paper, is mentioned in connection with bogus degrees, and as acting as the "Veterinary College of Philadelphia" in issuing diplomas. Are these one and the same man? We are pleased to hear that the true college had closed its doors ten years before, but we now for the first time know this! Until Mr. Jennings's letter appeared, certainly the McClure episode was that best known in connection with the checkered career of veterinary science in Philadelphia. Finally, gentlemen, it can be scarcely doubted that Mr. Jennings has enlarged our information in informing us that the "Veterinary College of Philadelphia" was the first institution of the kind chartered in America, as we were previously of the opinion that Dadd's School at Boston was the first, though the latter was chartered some three years later.

I am, gentlemen, yours truly.

To the Editors of the 'Veterinarian.'

ON PLANTS IN RELATION TO ANIMALS.

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

(*Continued from p.* 306.)

PAPILIONACEÆ.

As there is probably no more important order in relation to animals than the one whose name heads this paper, we would direct attention to some of the facts connected with it at the present time, because the summer months will yield us so many interesting native species for our study.

Properly speaking, the plants with the true papilionaceous corolla are arranged as a suborder of the Leguminiferæ, of which most of our native species are examples; and as the suborder is so well described by the late Professor Balfour, we have great pleasure in transcribing his remarks:

"Papilionaceæ.—A suborder of the leguminous plants, characterised by having the flowers papilionaceous, and the petals imbricated in æstivation, the upper one exterior. The flowers are like those of the pea, and consist of five irregular petals, the upper being the vexillum or standard, which covers the rest in the bud, the two lateral being alæ or wings, and the inferior the carina or keel, consisting of two petals, more or less completely cohering.

"The plants of this suborder have frequently beautiful flowers, as in *Cytisus*, *Laburnum*, *Wistaria*, *Lupinus*, *Clianthus*, *Erythrina*, or coral-flower, &c.

"They are often nutritious, as in the various kinds of clover, bean, pea, medick, lucerne, sainfoin, melilot, &c. Many are used for their medicinal qualities, as in the case of *Glycyrrhiza glabra*, the liquorice; *Astragalus verus*, *creticus*, *gummifer*, and others, which yield gum-tragacanth; *Myeospermum peruiferum* and *M. toluiferum*, which yield balsam of Peru and balsam of Tolu; *Pterocarpus marsupium* and *P. erinaceus*, which furnish kino, &c. Broom-tops procured from *Sarothamnus scoparius* are used as a diuretic; the hairs from the legumes of *Mucuna pruriens*, in the West Indies, and of *M. prurita* in the East, under the name of cowage or cowitch, are used as anthelmintics.

"Others are valuable in commerce and the arts, as furnishing food, dyes, fibres, timber. Various species of *Indigofera*, as *I. tinctoria* and *I. cœrulea*, furnish the indigo of commerce;

Pterocarpus santalinus yields red sandalwood, which is used as a dye; *P. draco* yields gum-dragon; and *P. dalbergioides* is said to yield Andaman redwood; *Bablisia tinctoria* gives a blue dye, and is the wild indigo of the United States; *Crotalaria juncea* supplies fibres, which are known as Sunn or Bengal hemp; the fragrant seeds of *Dipterix odorata* are known as tonka beans; a similar fragrance is given out by some species of the *Melilotus; Arachis hypogæa* produces its legumes under ground, and hence receives the name of ground-nut; *Robina pseud-acacia,* the locust-tree, yields a hard, durable wood; according to Bertoloni, a kind of ebony is the produce of *Fornarinia ebenifera;* rosewood is the timber of *Dalbergia, Machærium* and *Triptolemæa.*

"There are certain poisonous plants in this group; thus, the seeds and bark of *Cytisus* and *Laburnum* are narcotic; the roots of many species of *Phaseolus,* as *P. multiflorus* (the scarlet-runner) and *P. radiatus,* are poisonous; the branches and leaves of *Tephrosia toxicaria* and the bark and the root of *Piscidia erythrina* are employed as fish poisons; *Physostigma venenosum* yields the Calabar ordeal bean; *Gonapholobium uncinatum* and *Gastrolobium grandiflorum* are deadly sheep poisons in the Australian colonies. The sub-order contains about 350 genera and about 5000 species."

The plants arranged under the more extended Leguminosæ are very numerous and highly important, but if we look to the more limited Papilionaceæ we shall find that we shall have some most useful plants to deal with, nay, more, our native list of these, which Syme has put down at eighty-four species, will afford for our study a series of useful, interesting, and beautiful plants.

For the present we shall direct attention to the following genera:

1. *Ulex.*—Densely thorny shrubs, flowers yellow.
2. *Genista.*—Shrubs, sometimes spinous, flowers yellow.
3. *Sarothamnus.*—Shrubs, rarely spinous, flowers yellow.
4. *Ononis.*—With viscid hairs, rarely spinous, flowers pink.

Each of these genera possess but few species; they are all showy plants, so much so as to be for the most part favourites in our gardens and shrubberies.

1. *Ulex.*—Is well known by its English names of furze and gorse, and the Scotch title of whin. It is by some classed under no less than three specific names, as follows:

Ulex Europæus, common furze.
„ *Gallii*, planchons furze.
„ *nanus*, dwarf furze.

Perhaps, however, these are but mere varieties, and, at all events, our business is more particularly with the *U. Europæus*. This is one of the commonest plants in our island, and, indeed, it would seem to be more plentiful with us than in any other part of the world, notwithstanding that the spread of agriculture and the extended enclosure of commons and waste grounds have done so much to lessen it from one end of England to the other.

At the present moment the furze is in the full blaze of its beauty, verifying the words of Cowper—

"The common, overgrown with fern, and rough
With prickly gorse, that shapeless, and deformed,
And dangerous to the touch, has yet its bloom,
And decks itself with ornaments of gold,
Yields no unpleasing ramble."

The common furze is the largest form, and it is likewise the most spinous, but its spines are not like those of so many other spinous plants, but many of them are abortive leaves, probably a midrib ending in a spine representing a leaf without its lamina. It is interesting to watch the germination of a seed of the furze, which begins life like so many trifoliate plants, first with the two rounded cotyledon leaves, next a single more or less heart-shaped haft, then a true trifoliate leaf, which, as the plant gets older, is converted into unifoliate spines, while the branches all take on the armature of spinous terminations.

We have said that just now the gorse is in all its glory, but, curiously enough, it is really difficult to find a month in which some few of its showy flowers may not present themselves, which has given rise to the common saying of—

"When gorse is out of bloom,
Then kissing's out of tune."

A gorse-common or a furze-brake will be well known everywhere. It is a welcome covert for the fox and various kinds of game, and the bushes form a home for very many insects.

The gorse is used for various economic purposes; when old it is useful for fuel, and in some parts is much employed by bakers for heating their ovens. The cottager also finds it useful, especially in summer, its short-lived heat being just enough to boil the tea-kettle.

It is also in vogue in the furze districts for walls of sheds and outbuildings.

It has been much recommended for cultivation, especially on soils almost too poor to grow anything else. In the *Cyclopædia of Agriculture* we find it thus noticed:

"When regularly cut down every year the annual shoots, mown as wanted, and bruised to deaden the prickles, supply a green food throughout the winter, which all animals, and especially horses, are particularly fond of. When cultivated the seeds are either collected from the wild plants or from a variety which, by successive cultivation, has become rather more succulent and productive."

Our own observations, on both the wild and cultivated furze as food for cattle, lead to the conclusion that its feeding properties are too low to render its gathering and preparation at all a remunerative matter; still less does its value at all warrant the purchase of crushing machinery, which has been invented for bruising the prickly plant.

At one time some extensive plantations of gorse were made in the Cotteswolds, and very costly machinery employed for utilising it, but we believe it was soon abandoned; still, we are in favour of a gorse brake in some situations, especially where not too thick, as it not only affords shelter for sheep, but, as they browse upon it greedily, it often aids the small and wild grasses.

2. *Genista*, like the furze, is partial to poor soils, but while the former get on on poor clays the latter is fonder of a less stiff soil. Our species are three, as follows:

Genista tinctoria.—Stems shrubby, erect; leaves smooth, sometimes pubescent.

„ *pilosa.*—Stems shrubby, procumbent; leaves silky.

„ *anglica.*—Stems wiry and spinous.

Of these the first species is the most common, and is, besides, the one in which we are mostly interested. It usually occurs on poor, wet clays, such as the marls of the Lias and the Fullers' earth, and is the most useful of the species, the other two being merely occasional forms.

The dyers' green weed is so called from its use in the art of dyeing, for which it was extensively used. Once it was employed as a medicine, and was esteemed as a diuretic, but at present the next genus takes its place. It is largely collected in some parts of the country for use as a dye. It is called dyers' green weed, wood, or woad waxen.

Mrs. Lankester says of it that—

"All parts of this plant yield a yellow dye, and have long been used by dyers for producing this colour, especially for wool that is to be dyed green with woad. In some parts of England the plant is collected in large quantities by the poor, and sold to the dyers. The ashes form an alkaline salt, which has been used as a remedy in dropsy and other diseases."

There is no doubt but that the presence of alkalies in many of the family is the cause of the diuretic properties with which so many of the order are endowed.

3. *Sarothamnus*, formerly called *Cytisus scoparius*, or butcher's broom, has the latter common name from the fact that butchers formerly used rods of it to beat flies from their meat.

At one time broom (*Planta genista*) was celebrated in song and story, and the Plantagenet line is supposed to have got the name from the assumption of the *Planta genista* as a badge by Henry the Second.

Broom at one time was supposed to possess very strong medicinal powers, thus sheep were supposed to become intoxicated by eating the seeds of the plant. The plant and its seeds were formerly employed in brewing. There is no doubt but that it possesses a quantity of alkaline salts, and hence its diuretic action; it is, however, not much employed in the present day.

4. *Ononis*.—Of this we need only refer to the single species, *Ononis arvensis* (rest-harrow), distinguished by its beautiful pink flowers and viscid herbage. Its common name of rest-harrow is doubtless due to the poverty of the soil in which it delights to grow, it being recognised by the farmer as a plant which indicates such poverty of soil that cultivation is of little use.

Mrs. Lankester says that—

"By old writers this plant is called cummuck furze or petty whin. Gerarde says 'it is sooner found than desired of husbandmen, because the tough and woodie rootes are cumbersome unto them, by reason they do staie the plough and make the oxen stande; whereupon it was called rest-plough or rest-harrow.'

"It seems difficult to destroy it by fallowing, and is called by old herbalists *Arresta bovis* and *Remova aratri*. Gerarde says: 'Pliny reporteth "that being boyled in oxymel (or the syrup made with hony and vinegar) till the one half be wasted, it is given to those that have a falling sicknesse. The tender sprigs or crops of this shrub, before the thornes come forth, are preserved in pickle, and be very

pleasant sauce to be eaten with meat as a salad, as Dioscorides teacheth." ' "*

At present the rest-harrow is of no repute for any good quality, except its beauty; it is not, however, of the size indicated in the extract just quoted that it should stay the operation of agricultural implements, so that we incline to the modern farmer's belief that its name of *rest-harrow* rather applies to the fact that the harrow may rest where such poor soil as produces it occurs.

PRACTICAL HINTS ON STABLE MANAGEMENT IN INDIA.

A Second Edition, revised and enlarged, of a Lecture written by J. B. W. Skoulding, Veterinary Surgeon First Class, Royal Horse Artillery, the prototype having been written and delivered by him when in charge of B. F. R. H. A. at Campbellpore, in November, 1875. Meerut, 1878.

(*Continued from* p. 310.)

G. *Kind treatment.*—Having described in detail the principles laid down for our guidance by all medical authors of note for the preservation of the health of man and animals, viz. fresh air, cleanliness, good food, pure water, with a judicious amount of warmth and exercise, I will offer a few suggestions relative to the further comfort of horses in particular, for all the care in the world may be wasted if comfort be not studied also.

On the right of the line in this matter stands kindness, and you may receive it as a fact that many a young horse, which would otherwise have turned out a quiet, obedient, and useful servant, has, through the brutality of an ignorant groom or master, been converted into a sullen, dangerous, useless brute; it is, therefore, an important matter that we should always be gentle, though firm, in handling them, and such a cruel relic of the barbarous ages as that instrument of torture, the "twitch," should never be allowed to form a portion of any right-minded man's stable or infirmary equipment. The use of it is a cruelty, the infliction of which degrades and proves how utterly careless a man is of giving pain, so that he himself escapes, or how little he can know of the anatomy of that sensitive appendage, "the lip," in which the nerves are peculiarly numerous. It is also a

* 'English Botany,' vol. iii, p. 16.

wrong that may never be forgotten or forgiven by the victim, who will often on subsequent occasions give striking proofs of his unwillingness to have his head handled, fearing a repetition of the suffering. There are many, I regret to say, who apply the twitch on every available opportunity. Some men are not content with placing it on the lips, but include each ear in the coils of this horrible invention. Now, as far as my experience has gone I have found that when even a young horse rebels, it is generally from fear, and would point out that should we at once proceed to torture him we confirm what he has already dreaded, that he would be hurt by us; whereas if, on the other hand, we send for a little grass or a feed of corn, and let it be given to him by his usual attendant, his fears are quieted, and he will usually allow us to perform any minor operation that we may wish. If, however, this fails to quiet him sufficiently, strapping up one fore foot and giving him a run on three legs for a while, still feeding him when halted, will invariably succeed, and for all important operations we can hobble or cast him; or, where we have such an appliance, we can put him in the travis or stocks, as they are sometimes called, and thereby secure to ourselves an immunity from any danger whatever.

Horses (or any other animals) should never be beaten, kicked, or maltreated in any way. If the horse requires correction while under tuition or subsequently, it should be administered with judgment, and not extend beyond reducing him to obedience, and one should make friends with him again as soon after as possible.

Harness.—By ensuring the fit of the head collar with the eye fringe, and taking care that the clothing and the body roller or surcingle be properly adjusted, also that the head and heel ropes are of a comfortable length (of the use of the latter I disapprove as a rule) one can add materially to their comfort when in the stable.

Of the harness, the fit of the collar, pad, saddle, bridle, breeching, breastplate, crupper, and kicking strap, should also be carefully attended to, for this will enhance the comfort of the horse when at work, and keep him serviceable, by in this manner preventing chafes and galls that would on their occurrence throw him out of work.

Marching.—During a long march the rider often injures the back of his horse, by lolling and rolling about in his saddle, especially if the pace be so slow as to tire both man and animal from sheer monotony.

I would at this portion of my subject impress on the minds of all the necessity that always exists for heedful supervision in

the matter of chafes, galls, and other slight wounds, for it is of the greatest importance that these lesions or abrasions be carefully dressed and protected from the air, dirt, flies, &c., as soon as possible after occurrence, to prevent them from assuming an unhealthy character, and running into troublesome sores.

Tartar.—There is a cause of discomfort to the horse that frequently arises, and is as often overlooked. I mean an accumulation or collection of tartar deposited from the saliva on the tushes; this should be watched for, and removed at once.

Clipping.—The operation of clipping is one that has, since its introduction, found almost universal favour amongst horse owners, as by this process the long heavy coat of the winter months is removed, from which horses in fast or severe work are found to benefit largely, for while that covering remains on the horse he is weak or foggy, as it is termed, and sweats so profusely under exertion that it is impossible to dry him without an immense expenditure of time and labour, and when dried he is liable to break out a second time into a state of profuse perspiration. To obviate this clipping was introduced, and has proved of great service, for horses improve in condition and pluck, work with more life, and are known (if well clothed and protected when at rest) to be less liable to take cold, as the term goes, than when wearing the coat provided by nature for his comfort when under however diametrically opposite conditions of life.

Horses should be clipped entirely, but not till the coat is thick and long, and they should be carefully clad afterwards. Singeing supersedes clipping with some, and is of equal benefit (in fact I prefer it), while others singe after clipping.

Shoes.—The condition of the shoes should be carefully watched, and if any of them be lost or loose, or a single clinch started, it should be reported and rectified at once, and any stone or mould removed from the feet as often as circumstances may demand.

Saddlery.—The saddlery and harness with their appendages, the bits and stirrup irons, &c., should be clean and bright. Bar soap has been found by many to be the best application for cleaning and preserving the integrity and softness of the leather, and the burnisher to be most useful in polishing the steel and brass accessories; in addition to these, we may supply wash-leathers, sponges, dusters, and Bath brick.

Syces.—The native atendants on the horse, the syce and grass-cutter, both of private and public stables, should be regularly paid, treated with due consideration, and encouraged to work at their respective callings with regularity and promptitude, but should be exempt, as a rule, from all other labour.

Conclusion.—In conclusion, I would ask one and all to bear in

mind that my views on the subject of horse management in the abstract are:

I. That he should be stabled in airy, clean, commodious, well-situated buildings, and that when with others it would be better should the number in each building not exceed twelve or fifteen.

II. That care should be exercised to prevent the sacrifice of the protection of the animals from draughts, &c., to exaggerated ideas of ventilation, or *vice versâ*.

III. That he be well fed, watered, clothed, cleaned, harnessed, shod, and judiciously worked.

IV. That kindness, tempered with firmness, be shown to him on all occasions.

V. And, lastly, that we should divest ourselves of the threadbare idea that it is a wild animal we have to manage and provide for, for the horse with which we have to do is one removed from his original haunts (certainly for the benefit of mankind, if not for his own), an animal requiring the greatest care and attention to breed and develop in the highest form (and I would ask, where is the animal which does not need the same?), but one that will repay us tenfold for our labour and kindness by his usefulness, coupled with his willingness to work for us in the end.

Pathological Contributions.

CATTLE PLAGUE.

This disease, although existing in the provinces of Bessarabia, Warsaw, Volhynia, Ekaterinoslav, Podolia, Kherson, and Taurida, in the Empire of Russia, has not again extended into that of Austro-Hungary.

PLEURO-PNEUMONIA.

The annual report of the Veterinary Department of the Privy Council, which has been recently issued, contains an account of the extensive prevalence of this disease in the United States of America. The statements are based on the authority of the Commissioner of Agriculture of that country, who, in a report dated November, 1878, remarks that, "since the appearance of this affection on our shores, it has prevailed at different times in the States of Massachusetts, Connecticut, New York, New Jersey, Pennsylvania,

Maryland, Delawar, Virginia, and in the district of Columbia;" and this report of the very unsatisfactory condition of the health of the United States cattle has been confirmed by the Inspectors of the Privy Council stationed at the various ports of Great Britain, for it would appear that, during the year 1878, 137 cattle affected with pleuro-pneumonia were landed in this country from the States.

Very great efforts are being made in some of the States to extirpate this disease, but it appears that no beneficial result has as yet been obtained, inasmuch as during the first five months of this year upwards of 153 cases have been detected by the Inspectors of the Privy Council in cattle landed here.

In the Netherlands, during the first sixteen weeks of this year, pleuro-pneumonia appears to have been confined to the provinces of South Holland, Friesland, and Groningen, and only twenty-six cases have been reported.

During the first three months of this year the disease has declined to a very considerable extent throughout Great Britain, having been reported from only twenty-three counties in England and seven in Scotland; no cases have been returned from Wales.

During the three months ending March 27th, 1880, 733 cases were reported in Great Britain. In the corresponding period of last year the number was 1034.

FOOT-AND-MOUTH DISEASE.

This disease is but little heard of now. Isolated outbreaks have been reported during the first three months of the year from Hunts, Somerset, and the Isle of Ely.

Facts and Observations.

Horse Distemper.—A "distemper" is reported to be attacking horses, generally, in McLean County, U.S.A. The disease, whatever it may be, is said to have appeared "in an unusually malignant form."

Liver Fluke.—The liver fluke is spoken of by the *Sydney Mail* as being prevalent amongst flocks in some parts of the northern districts of the Colony of New South Wales.

THE VETERINARIAN, JUNE 1, 1880.

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

TRICHINOSIS AND TRICHINOSIS.

UNDER the title above quoted, the *Lancet* of May 20th refers to Mr. Power's report on the outbreak of trichinosis among the boys of the training ship "Cornwall;" and the remarks which appear in the pages of our contemporary suggest some not altogether satisfactory reflections as to the kind of evidence which is deemed necessary to establish the existence of a disease which we had thought could be determined with absolute certainty by any expert who was familiar with the general characters of the parasite on which it depends. For our own part, we had, until now, entertained the conviction, based on many observations, that among nematodes *Trichina spiralis* was easily recognised; it is not, therefore, reassuring to be told by a high authority that trichinosis, as we have hitherto understood the term, may after all only be "trichinosis of a particular sort."

Most of our readers will remember something of the circumstances attending the outbreak on board the "Cornwall," to which public attention was called at the time of its occurrence. At first the disease was believed to be typhoid fever, but certain difficulties which arose out of this assumption demanded investigation, and the whole matter was ultimately placed in the hands of the Local Government Board, who directed one of their most experienced medical officers, Mr. Power, to make an inquiry.

In the course of the investigation certain facts pointed Mr. Power's attention to the food as a possible cause of disease; and, as the evidence became more and more complete, the suspicion assumed the character of certainty. Salted pork, which had been imported in barrels from America, formed a considerable item in the meat supply; and it is impossible to peruse Mr. Power's report without

being struck with the connection which appears to exist between the phases of the disease and the consumption of the pork on certain days. American pork, it is known, sometimes harbours Trichinæ, and with the evidence before him, which was the outcome of the inquiry, Mr. Power almost inevitably accepted the idea that the disease was not typhoid fever, but trichinosis. It only remained to put this last conclusion to the test of experiment, and for this purpose the body of the boy who had died on board the "Cornwall" was exhumed, and some of the muscles submitted to microscopic examination, in the course of which numerous small nematodes were discovered, some of them still living. None of the parasites were encysted, and none of them were spiral in form; and the drawing of one of the worms which is given in the report is, in plain terms, quite unlike the very familiar *Trichina spiralis*.

Of course, the differences in the anatomical characters of the nematode worm which was found in the muscles of the boy, as compared with those of Trichinæ, did not escape Mr. Power's notice, in fact, he comments on them in his report; nevertheless he retains the term trichinosis as the proper designation of the disease from which the boys on board the "Cornwall" suffered.

Our colleague, Dr. Cobbold, to whom a copy of Mr. Power's report was sent by Dr. Buchanan, did not endorse the writer's views, as will appear from the letter which he addressed to the *Times* of May 3rd, in which the following passage occurs:—"I wish to state that there is not in the said report a particle of evidence that the outbreak in question had anything to do with trichinosis."

The *Lancet* of May 8th, in an article headed "Trichinosis and Trichinosis," makes the following curious remarks:

"What Dr. Cobbold apparently wishes to state is that in his opinion the nematode parasite discovered by Mr. Power in the fatal case of illness on board the 'Cornwall' was not the *Trichina spiralis* with which the profession is tolerably familiar, and to which Mr. Power's conclusions seem to point, but some other seemingly unknown form of nematode

parasite, for the source of which, as it affects man, we should look to an indifferent water-supply. Dr. Cobbold's opinion upon a question of helminthology will properly carry great weight, but something more than even his opinion, its absoluteness notwithstanding, will be needed before it can be received that the parasite figured by Mr. Power is not *Trichina spiralis*. Mr. Power himself hesitates, from the microscopical character of the parasite alone, to affirm that it is so, but the tendency of the evidence to be derived from the outbreak of illness is to this conclusion.

"Dr. Cobbold's statement that 'we ought rather to look to an indifferent water-supply than to diseased meat as the primary cause of the outbreak' will excite amazement in the face of the evidence advanced by Mr. Power. The water-supply of the 'Cornwall' was and is common to the ship and a considerable population on shore, but the disease was confined to the ship. The succession of the cases admitted of explanation if the cause were assumed to be connected with some article of food consumed on board, but not otherwise, so far as the seemingly exhaustive examination by Mr. Power went. Dr. Cobbold would substitute the vaguest of suggestions for the results of a careful investigation!

"Dr. Cobbold is not happier when he touches upon the important question raised by Mr. Power of the possible relation of certain febrile seizures to the wanderings of as yet undetected and undetermined parasites. Mr. Power's suggestions are already bearing fruit in the meetings of the Pathological Society; Dr. Cobbold's observations simply go to raise an undefined but disquieting if not alarming spectre in the columns of a daily paper! As between 'trichinosis' and the existence of hitherto unsuspected 'wandering rhabditiform parasites,' we apprehend that the public will not be apt to consider the latter as the more consolatory phrase, particularly when they come to know that their effects upon the human system may be quite as correctly described as, and actually constitute, a 'trichinosis.' When Dr. Cobbold writes that there is not 'a particle of evidence' to show

that the outbreak on board the 'Cornwall' was 'trichinosis,' he merely means trichinosis of a particular sort, and at present we have only the bare statement of his opinion, unsupported by 'a particle of evidence,' in confirmation of it.

Knowing something of trichinosis in man and animals from observation and experiment, we confess that we were not prepared to see in the columns of the *Lancet* the statement which implies that what has for years past been familiar to the profession as trichinosis may, after all, be only *trichinosis of a particular sort,* and that the wanderings of other parasites may be quite as correctly described as, and actually constitute, a "trichinosis."

The state of the case is not improved by an article which we find in the *British Medical Journal* for May, in reference to a report by Dr. Armistead on the health of the Dunmow Rural Sanitary District during 1879, in which an account is given of an outbreak of trichinosis (?) at Thaxted in Essex in June of last year. Dr. Armistead states that, on June 18th, he examined fifty-two persons who had eaten some sausages purchased at eightpence per pound from a man who had a stall in the street at Thaxted on June 14th. Of these persons forty-four showed symptoms of *irritant* poisoning, three others were slightly ill, and only five escaped without any ill effects. The cases were suspected, from the symptoms, to be due to the presence of Trichinæ, a conclusion for which there does not appear to be any warrant. The symptoms varied but little, diarrhœa prevailed in all the cases and in some was very severe; vomiting; thickly-coated tongue; pain in the stomach and back and in the muscles, sometimes extending to the ends of the fingers; pain in the head and, in some cases, double vision and swelling of the eyes likewise existed. More or less fever followed, with perspirations, thirst, and loss of appetite. In four of the cases vomiting and diarrhœa, with pain, began within twelve hours after eating the sausages. In one case sixteen hours elapsed. In twenty cases the symptoms were very violent at about the twenty-fourth hour. In four cases

there were no symptoms for thirty-six hours, and in nine cases for sixty hours. In one case three days elapsed, in five cases six days, and in three cases the symptoms were so slight that no notice was taken of the commencement. Age seems to have had some effect, for children were much less severely attacked than adults, which is contrary to what might have been expected. Some of the pork used in making the sausages is said to have been salted, and probably of foreign origin.

We may remark here, in respect of the symptoms described, that most of them did not indicate trichinosis at all; that Trichinæ do not cause any disturbance to their host a few hours after they have been swallowed; and, lastly, that all the symptoms might have been expected to arise from the consumption of bad sausages, without the influence of the Trichinæ, which are said to have been found only in certain portions of them, unless, indeed, they were Trichinæ of a sort which have not yet come under the notice of helminthologists.

Extracts from British and Foreign Journals.

SHEEP ROT.—THE FLUKE EPIDEMIC IN SUSSEX.

At the West Sussex Quarter Sessions, on Thursday, April 8th, Sir W. Barttelot, M.P., brought under the notice of the Duke of Richmond and Gordon, who was present, the subject of the fluke in sheep and cattle. So many animals had been lost through the disease that many people were of opinion that the disease was absolutely catching; yet nothing had been devised to prevent the spread of the disease; and now, at the present critical time, it was devastating the flocks and herds of the country. There was hardly a bullock went into market without a fluke, and as for the sheep, there was hardly a sound one to be found in any market. As an instance of this, one had only to visit the Horsham market on the previous day, where sheep were selling at 13*s*., 15*s*., and 16*s*. each. This, in these years of depression, was a

disastrous state of things, and what he wanted to know was whether something could not be done to prevent the further spread of the disease.

The Duke of Richmond and Gordon said he was very much afraid he could say nothing that would throw light on the matter or give comfort to the farmers. If his hon. friend would look back, he would find that the disease had been more or less prevalent, after such wet seasons as they now had. If he looked back for years, he would find the same thing had happened. But he was astonished to hear him say it was a contagious disease, because he had never heard that admitted, although his attention had been occupied by the subject on several occasions. With regard to preventing the spread of the disease, he thought it impossible. There was no power to declare a district infected where the disease was prevalent, and this, he believed, would be very much objected to, were it done. As to what should be done in future, he was unable to advise them in any way that would give them much satisfaction. As far as he could, however, he would consider whether anything could be done, but, as it was not a contagious disease, under the Contagious Diseases (Animals) Act, they had no power to act in the matter.

THE BLOOD IN ANÆMIA.

At a recent meeting of the Paris Academy of Sciences, M. Hayem read a paper on the anatomical characters of blood peculiar to intense and extreme anæmia. In what he calls *aglobulie intense* (the richness in red corpuscles varying from 2,000,000 to 800,000), he notes that crystals form in the dried blood, like those of dried lymph; and in the fresh blood, he finds white corpuscles with coloured contents, and still retaining amœboid contractility (such are also found in lymph). In *aglobulie extrême* (800,000 to 450,000 red corpuscles), there are elements like the red nucleated corpuscles of oviparous animals. In all cases, the white corpuscles are much more numerous and smaller than in normal blood. In anæmia, then, the blood approaches in character to lymph.—*The British Medical Journal.*

GLANDERS.

Report of the Health, &c., of Kensington, for the Four Weeks March 28th to April 24th, 1880, by T. Orme Dudfield, M.D., Medical Officer of Health.

On the 3rd March your Vestry requested me to "report as to the number of cases of glanders (in horses) that have occurred in this parish during the past six months, and the bearing thereof to the public health." A statement had been made to the effect that 116 horses suffering from this disease and farcy had been slaughtered in Kensington during the period in question, and the subject was referred to in Parliament. In my last report I stated that the occurrence of glanders in horses appeared not to have had any "bearing on the public health in Kensington, as no death had been reported from this disease, or from any cause of a suspicious character which on any reasonable ground of probability could be traced to the poison of glanders." I stated, moreover, that although I was unable to throw much light on the subject, as to horses, having been unable to procure any information as to the localities in which the disease had existed, there was a serious error in the statement that "116 horses had been slaughtered" in Kensington on account of glanders and farcy within the period of six months, inasmuch as 44 cases, which belonged to Hammersmith, had been included in the Kensington list. Of the remaining 72 cases, it appeared that 26 had occurred in two stables of cab proprietors, leaving only 46 to be spread over the remainder of the parish. I added that should I succeed in getting any additional information, I would make a further report.

The subject being one of considerable importance, and having a special interest for your Vestry, I have since ventured to place myself in communication with the Metropolitan Board of Works, the "Local Authority" under "The Contagious Diseases (Animals) Acts," with the view of ascertaining the actual number of horses that had been slaughtered in Kensington on account of glanders and farcy, not merely within the "past six months," but from the beginning of 1879, as a means of testing the accuracy of the allegation that there had been a great increase in the number of cases reported since the outbreak at Colville Mews, and as a result of the prosecutions which followed upon the exposure your Vestry's officers had been instrumental in bringing about.

I have now the satisfaction to acknowledge the receipt, this

day, of the official returns, from which it appears that the deaths within the six months ended February 29, were only 64, viz. from glanders 44, and from farcy 20. Moreover, it appears that although there was a decided increase in the number of cases *disclosed* after the outbreak at Colville Mews last April, the horses slaughtered were not so many as represented, the highest monthly *total* in 1879 having been 11, whereas we had been led to understand that there had been a monthly *average* of 20. The *recorded* deaths for the whole year were 81, viz. from glanders 57, and from farcy 24, of which 76 occurred between April and December, and only five in the first quarter of the year. It will be remembered, however, that I stated in my Third Report for 1879 (April 2nd, p. 19), that there were grounds for believing that some 10 horses had been slaughtered or had died of the disease in one man's stables in those three months, the cases having been concealed. In the first quarter of the current year there was a marked increase in the number of cases *recorded*, the horses slaughtered on account of glanders being 35, and farcy 20—total 55.

The subjoined table shows the monthly number of horses slaughtered, and of infected places. The total number of infected places (separate stables) in the 15 months being 60.

Month.	Horses Slaughtered.				Infected Places.	
	1879.		1880.		1879.	1880.
	Glanders	Farcy.	Glanders	Farcy.		
January	2	...	7	5	2	11
February	2	...	13	7	2	11
March	...	1	15	8	1	15
April	2	5	...	...	3	
May	6	4	...	...	8	
June	8	2	...	...	8	
July	8	1	...	...	8	
August	5	3	...	...	5	
September	6	1	...	...	5	
October	6	2	...	...	7	
November	6	...	...	...	5	
December	6	5	...	...	6	
	57	24	35	20		

The following table shows the localities where the disease existed, the number of "infected places" (*i. e.* stables), and the total number of cases in each; but in some stables there

were cases of glanders and farcy, so that the total of infected places was only 60. Period 15 months.

Locality.	Premises Infected.		Horses Slaughtered.		
	Glanders	Farcy.	Glanders	Farcy.	Total.
Archer Mews, Archer Street	1	...	1	...	1
Blechynden Mews	...	1	...	1	1
Bolton Mews, Bolton Road	...	1	...	1	1
Buckingham Mews, Portobello Road	1	1	1	1	2
Chepstow Tavern Mews	...	1	...	1	1
Clarendon Road, Notting Hill	1	...	1	...	1
Colville Mews, Lonsdale Road	5	3	6	5	11
Commerce Mews, Bolton Road	1	1	2	1	3
Denbigh Mews, Portobello Road	1	...	1	...	1
Duke of Clarence Stables, Uxbridge Rd.	...	1	...	1	1
Golden Mews, Portobello Road	1	...	1	...	1
Hesketh Place, Notting Dale	1	...	1	...	1
Hippodrome Stables, Notting Dale	1	...	1	...	1
Holland Mews, Holland Road	1	1	1	3	4
Kramer Mews, Richmond Road	2	...	2	...	2
Lambton Mews, Westbourne Grove	1	...	3	...	3
Lancaster Mews, Basing Road	1	...	1	...	1
Latimer Mews, Manchester Road	1	...	1	...	1
Latimer Road (Railway Arch)	1	...	1	...	1
Ledbury Mews, Ledbury Road	2	...	2	...	2
Ledbury Mews West, ditto	4	2	12	3	15
Lonsdale Yard, Lonsdale Road	1	...	1	...	1
Munro Mews, Golborne Road	2	1	2	1	3
Old George Yard, Church Street	...	1	...	1	1
Portobello Road, Notting Hill	1	1	1	1	2
Royal Crescent Mews	...	1	...	1	1
St. Katherine's Road	1	...	1	...	1
St. Luke's Mews	...	1	...	1	1
Silchester Mews, Silchester Road	1	...	2	...	2
Talbot Mews, Talbot Grove	3	2	18	13	31
Thomas Mews, Notting Dale	1	...	1	...	1
Thorpe Mews, Oxford Gardens	3	...	5	...	5
Walmer Road, Notting Hill	2	1	2	1	3
Warwick Road, Kensington	2	1	7	1	8
Wellington Mews, Norfolk Road	2	2	2	7	9
Wellington Mews, Ledbury Road	2	...	11	...	11
York Mews, Bramley Road	1	...	1	...	1
	48	23	92	44	136

Of the 136 horses slaughtered in 15 months, 106 had been the property of omnibus and cab proprietors, 12 of tradesmen, and 12 of general dealers, &c., the remaining 6 belonged to your Vestry's stud.

The *total* number of infected places (separate stables) in the 15 months was 60. The majority of them are comprised within

two limited areas, of which Talbot Mews and Colville Mews, respectively, may be taken as the centres. In the Colville Mews area there are about 60 cases within a quarter of a mile square.

No case of glanders was reported in any gentleman's stable, or livery yard, and the horses affected may be fairly described as being of a low class.

A few illustrations may suffice to show the spread of the disease in stables, the dates of slaughtering of *farcied* horses being distinguished by figures in Egyptian characters.

Occupation of Owner.	Date of Slaughtering.
Omnibus and Cab Proprietor* (3 contiguous stables)	1879.—April 2nd, **2**nd, 3rd, **14**th; May 1st, 2nd; Oct. **14**th. 1880.—Feb. 25th.
An Omnibus Proprietor† (in 3 stables in the same mews)	1879.—May **5**th, 10th, 28th; June 18th, 21st; July **17**th; Aug. **2**nd, **11**th; Sept. 10th, 12th, 18th; Oct. 2nd; Nov. 8th, 23rd; Dec. 6th, **9**th, **16**th, 29th, 30th. 1880.—Jan. 10th, **12**th; Feb. **3**rd, **24**th; March 16th.
An Omnibus Proprietor (in 4 stables in 4 mews)	1879.—Jan. 24th; July 5th; Nov. 25th; July 26th; Oct. 20th. 1880.—Jan. 3rd; Feb. 14th, 19th, 21st; Mar. 2nd, 3rd. Jan. **16**th, **23**rd; Mar. **9**th.
Cab Proprietor . . .	1879.—Nov. 24th. 1880.—Jan. 2nd.
Cab Proprietor (3 contiguous stables)	1879.—April **29**th, **30**th; May 12th; June **3**rd, 21st; July 15th; Aug. 7th, 8th; Oct. 20th; Dec. 2nd. 1880.—Feb. 18th, 26th; Mar. **1**st, 16th, **16**th, **17**th, 17th.
Cab Proprietor . . .	1879.—Jan. 17th.
Ditto (same stable) . . .	1880.—Mar. **1**st, **15**th, **18**th.
Coal Dealer	1880.—Jan. 7th; Mar. 27th.
Kensington Vestry, Warwick Rd.	1879.—Sept. 22nd; Oct. 15th. 1880.—Jan. 1st; Feb. 22nd; Mar. 4th, 10th.

With reference to Warwick Road, it may be observed that only two cases are known to have existed there, excepting those in your Vestry's stables; one (farcy) was slaughtered four months before, and the second (glanders) three months after the first horse exhibited signs of the disease in your Vestry's stables.‡

* There is ground for believing that several horses had died or been slaughtered previously in these stables, the existence of the disease having been concealed.

† At the stables of the proprietor's father (another omnibus proprietor), but in another parish, 44 glandered horses, it is stated, were slaughtered in six months, ending February 29th.

‡ Since the report was written, I learn from a return published by your Vestry that a case of glanders had occurred in your Vestry's

The occurrence of case after case in the same stables is quite as suggestive of aërial infection as of the conveyance of infection from horse to horses by direct contact, or through the medium of polluted stable fittings, sponges, buckets, &c.

It is worthy of remark that in more than one instance the disease existed in two separate localities, on premises in the occupation of the same owner, pointing to the probability that infection had been conveyed by people in the employ of the proprietor. The way in which cases of glanders and farcy have been mixed up in some of the stables, well illustrated as it is in the preceding tables, will probably suffice to show the intimacy of the relation that subsists between these two diseases, if indeed, they be not varieties of one and the same disease. The spread of the diseases points, I cannot but think, to the insufficiency of the processes adopted for cleansing and disinfecting premises, and which obviously were insufficient to destroy the special virus. In connection with this subject, and in support of the view thus expressed, it seems not unreasonable to point to the Omnibus Company's stables, where one case only existed in a large stud of horses, the presumption being that, by the measures adopted for purifying the premises, the disease was stamped out without loss of time.

To prevent misconception, it should be well understood that the date of the death of any given horse, by no means furnishes a clue to the date of attack. There are doubtless at the present moment scores, it may be hundreds, of horses in the metropolis affected with glanders—many of them at work—of which the "Local Authority" has no knowledge. Most of these horses probably are employed in night cabs and omnibuses, and the only way of detecting would be for the inspectors of the Board, with the assistance of the police, to make raids at uncertain intervals on cab and 'bus stands, examine every horse on the rank, and the stables from which diseased horses had come. The dread of such inspections, and the consequences of detection, would, I doubt not, lead to frequent disclosure of diseased horses. As showing the inveterate tendency to concealment, I may again refer to the outbreak at Colville Mews, where, in the early part of last year, some ten horses had been killed or had died before the disease was brought to light, and then only owing to the spread of it to two human beings. Not long after, moreover, we were instrumental in bringing to knowledge a group of cases that had occurred at another stable, and there was a race between the police officer and the proprietor of the

stables in October, 1878, and therefore seven months prior to the first case of "farcy" in Warwick Road, referred to in the text of the report. —May 7th.

stables which should be the first in arriving at the Board Inspector's surgery to report the occurrence of the *last* case. The horse owner won; but he did not save himself from successful prosecution, the Local Authority having proceeded against him on the ground that he did not *immediately* report the cases as required by the Order of the Privy Council.

It would be interesting, did time permit, to discuss probable modes of the spread of glanders other than those obvious modes to which I have alluded. I shall only refer at this time to the probability of infection being conveyed by virus deposited by diseased horses in public drinking troughs. So strongly did I feel on this risk that I ventured some time back to recommend, among other precautions, that your Vestry's horses should be separately watered each with its own bucket, and not suffered to use a common drinking trough even in the stable yard. This precaution was the more necessary because in the earlier stages, and in the chronic form of the disease, it is highly probable that the specific ulceration of the nostrils which characterises this malady may be slight, or so high up as to be invisible to the unassisted sight, though it is worthy of consideration whether it might not be practicable to make an examination of any suspicious case with the aid of a nasal speculum.

I may, in conclusion, repeat an observation made in my last report, viz. that I have not "any means of ascertaining whether the deaths from glanders in Kensington have been more numerous in proportion to the number of horses kept than in other parts of the metropolis;" the Metropolitan Board of Works, moreover, being "unable to state whether the disease has been more prevalent in Kensington than in other parishes," as they have "no means of knowing the number of horses kept, the attention of the Board's officers being only called to those places upon which disease appears."

We read, however, in the Annual Report of the Veterinary Department of the Privy Council, for 1879 (p. 35), that "more cases of glanders and farcy have been returned in the metropolis than in any previous year; but that "there is no evidence to show that the disease is more prevalent than in former years . . . . the increased number of cases returned being due to the activity of the executive in carrying out the Act of 1878, and Orders of Council relating to these diseases."

There can be little doubt, I think, that the prosecutions which followed on the discovery of the cases at Colville Mews in April, and the expressed resolve of more than one police magistrate to inflict the full penalty of twenty pounds for offences under the Act and Order, operated as a stimulus in promoting the *disclosure* of cases by the owners of diseased horses. Be this as it may,

however, it is eminently desirable that we should know the true state of the case as regards the whole of the metropolis, and I respectfully submit that the Local Authority might be invited to publish a return, or that such a return might be asked for in the House of Commons.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Monthly Council, Wednesday, May 5th, 1880. Present—The Duke of Bedford (President) in the chair.

VETERINARY COMMITTEE.

General Viscount Bridport reported that Professor Simonds had presented to the Committee the following report, by Professor Axe, on an outbreak of disease in a herd of cattle, the property of J. B. Lawes, Esq., Rothamsted Park:

On the 10th of March I visited Rothamsted Park, and inquired into the circumstances relating to an outbreak of pleuro-pneumonia and anthrax. Mr. Lawes' herd consists principally of shorthorns, among which were forty-six milch cows and seventeen bullocks. The maladies have up to this time been confined to these portions of the herd. The milch cows were divided into two lots, of forty and six respectively, and they occupied two sheds standing right and left of an open yard in which the seventeen bullocks were confined. All the cows excepting four had been in Mr. Lawes' possession for periods varying from eight months to two years. The four animals referred to had been purchased between the middle of February and the 25th of March last, and were at the time of my visit free from disease. It should be mentioned in reference to these cows that, in the course of my inquiry, I was informed that one of them had been purchased in a district where pleuro-pneumonia is reported to have recently existed. An examination of this particular beast, however, failed to develop any indications of pulmonary or other disease.

The seventeen bullocks were purchased in Ireland in December last, and had occupied the yard adjoining the cow-sheds since the beginning of February. All of them, excepting one, were on the day of my visit healthy. The animal referred to was reported as having been generally unthrifty, and to have made only slight growth and improvement in condition, since his arrival at Rothamsted. Disease was first recognised on the 28th of March in one of the lot of forty cows, and was at that time regarded as a common cold, and treated accordingly. On the 5th of April this cow died, and Mr. Edwards, veterinary surgeon, of St. Alban's, after a careful *post-mortem* examination pronounced the disease to be pleuro-pneumonia. The second case occurred on the 29th of March, and was destroyed on the 6th of April. The third case appeared suddenly on the morning of the first-named date, after the cow had partaken of a full meal, and the animal died the same evening, having in the meantime exhibited acute symptoms of choking. The fourth case was seen on the 6th of April, and was destroyed the following morning. The fifth case was observed on the evening of the 9th, and was found dead on the morning of the 10th. Mr. Edwards made a *post-mortem* examination of this cow, and failed to recognise the lesions of pleuro-

pneumonia. I had an opportunity of examining the lungs, liver stomachs, and intestines, and the spleen of this animal, and the lesions presented by them were, as Mr. Edwards had previously expressed himself, "quite different from those of pleuro-pneumonia." The history of the case, as well as the *post-mortem* examination, were both indicative of blood poisoning. Neither in the one nor the other were there any evidences of contagious lung disease. On the contrary, everything pointed to some sudden disturbance of the sanguiferous system. A careful examination of the remaining portion of the herd failed to elicit anything definite as to the existence of pleuro-pneumonia. On the following day (March 11th) I again visited Rothamsted, and further examined the cows, as well as the other portion of the herd, but without being able to satisfy myself of the existence of pleuro-pneumonia. On the experience now obtained, the following letter was addressed to Mr. Lawes:

"Sir,—From a careful consideration of all the circumstances connected with the cow whose viscera I examined when at Rothamsted, I am of opinion that death was the result of 'anthrax,' a disease of the blood, more commonly known as 'blood-poisoning.' With regard to the causation of the malady, I think the facts pertaining to the case point to a too thrifty and plethoric condition of the body as the most reliable explanation. The measures already adopted towards the herd fairly anticipated the conclusion arrived at, and I yesterday further suggested to your bailiff that the quantity of cake now being given should be diminished to the extent of three pounds per day. I would add to that suggestion the advisability of allowing the cows slow walking exercise —say half an hour each day. For the carrying out of the latter object, it would perhaps be found convenient to deal with ten animals at once instead of the whole number. With reference to the cause of death in connection with the first four cases, I am not in a position to speak with authority, but it is highly probable that some of them, and notably the third cow that died, succumbed to the same disease as the one referred to above. Of the supposed existence of pleuro-pneumonia, I have not been able to procure any evidence in the remaining portion of your herd. As, however, Mr. Edwards, who has a large experience to guide him, has certified to the existence of that disease in the case of the cow first taken ill, the most scrupulous care and watchfulness should be exercised in regard to the health of the herd in the immediate future.

"I am, yours faithfully,

"To J. B. Lawes, Esq." "J. Wortley Axe.

In reply to my communications, favorable reports continued to be received up to Saturday morning, the 17th April. In the afternoon of that day Mr. Lawes telegraphed to Professor Simonds as follows:— "Cow died just after being turned out; quite well before." I was again instructed to visit Rothamsted, and, on making a *post-mortem* examination of the beast referred to, lesions of contagious lung disease were found to be distinctly pronounced. There were, however, besides, extensive lesions of the intestinal canal, liver, and lymph glands, of such a nature as to leave no doubt of the existence of blood changes other than those commonly associated with lung disease. On inquiring into the state of the general herd, my attention was directed to one of the seventeen bullocks, which was noticed dull and ailing the day previously. An examination of this animal afforded further confirmation of of the existence of pleuro-pneumonia. The chief feature of pathological interest in this outbreak is the existence of anthrax and pleuro-pneu-

monia in the same herd, and even in the same animal at one and the same time. The short period which elapsed between the commencement of disease and the death of the animal was, in two of the cases at least, altogether irreconcilable with what is known in regard to the course and duration of pleuro-pneumonia; and this fact rendered the inquiry difficult and perplexing, and compelled me, while acting upon the evidence of blood disease present, to await the advent of positive information respecting contagious lung disease.

J. Wortley Axe, *Professor.*

Royal Veterinary College, April 27th, 1880.

Mr. Duguid, of the Veterinary Department of the Privy Council, attended the Committee and made the following Supplementary Report on a subsequent visit to Mr. Lawes' herd:

I visited Mr. Lawes' farm, at Rothamsted, on Tuesday, April 20th, in company with Mr. Edwards, Veterinary Inspector to the local authority, and saw two animals, which had been previously isolated, showing well-marked symptoms of pleuro-pneumonia. One of these was a cow that had been some time on the farm, the other was an Irish bullock purchased in December, and said to have done badly for some time; this animal had the disease in the chronic form. Both these were ordered to be slaughtered. In addition to these a cow was ordered to be slaughtered that showed the acute symptoms the same morning. I saw the lungs of two animals that had been killed, and found the characteristic lesions of pleuro-pneumonia. At a meeting of the magistrates held at St. Albans the same afternoon (April 20th) the question of slaughtering a number of healthy animals that had been in contact with the diseased was discussed, and a sub-committee appointed to value the stock, and, if they thought it expedient, slaughter a number of the healthy animals that were in condition for the butcher. I was present at the meeting, but have not heard what further action has been taken by the local authority.

P.S.—With regard to the origin of the disease, suspicion attaches to the Irish bullock above referred to, and also to a cow purchased from a neighbourhood where the disease existed. This cow, I may add, appeared in perfect health when I examined her.

Mr. Lawes had since sent the following statement:

On Saturday last (May 1st) the Contagious Disease Committee decided that all the cows in the shed, and all the oxen which were in the yard adjoining, should be killed. The following are the statistics up to the present time:

Cows in building		45
Oxen in yard		19
Cows died and buried	3	
Killed as diseased and buried	8	
Killed as healthy, but afterwards condemned and buried	4	
Killed and sold	16	
Still to be killed (healthy)	14	
	45	
Oxen killed and buried	3	
Killed and sold	13	
Still to be killed (healthy)	3	
	19	

The only animals which have been brought upon the farm this year have been two cows; both these have been healthy; one was killed yesterday, and had no disease; the other will be killed to-morrow. The cows first attacked had been on the farm for one or two years. At the end of last year I received forty-nine head of cattle from Ireland; they were purchased for me by a friend; nineteen of these I brought into the yard next to the cow-shed about two months ago, and I think the evidence points to the disease having its origin in one of these oxen. The lungs were very bad from fresh disease, but the lower part of the lungs, estimated to weigh 4 lbs., was "quite dead," and, according to the opinion of the veterinary surgeon, it had had pleuro, from which it had recovered. It had been previously noticed both by my bailiff and the herdsman that this animal would not eat cake, and that he was hunted about by the others; but the bullock did as well as the rest. The remaining Irish cattle, which have been in the fields since they came, have had no disease.

This report having been adopted,

Mr. Rawlence said he felt so strongly on the agricultural calamity occasioned by rot in sheep and cattle that he considered the Society should institute some inquiry as to the real cause of the disease. Professor Simonds had written a very admirable paper, and his theory seemed to be clear enough; but he knew of cases in which three fat calves, varying from eight to ten weeks old, the livers of which had been found, on inspection, to be full of flukes, although the calves had never been out of the house, had never sucked anything but from the mother, and had had no access to green food, so that the mode of origin of the disease described by Professor Simonds appeared to be entirely disproved. He had been a very large occupier of water-meadows for the last forty years, and he could feed them off with sheep up to Midsummer with impunity, but not afterwards without running serious risks of losses by disease. Nevertheless, in a neighbouring meadow a farmer could grass-feed his sheep all through the autumn, although the sub-soil of his own meadows was gravel, and of his neighbour's clay. If any deputation were appointed, he should be happy to take them over these meadows, and show them the means of irrigation. The cows were now dying by wholesale, and horses were also affected. If further investigations were made as to the cause of the disease he thought we should get nearer the facts.

Mr. Pain suggested that perhaps the theory of Professor Simonds was not altogether wrong as to the bringing up of the snail from the grass. The snail might be carried by the cow, and the calves might therefore inherit the disease from their mothers. He would suggest that the dams of the calves mentioned by Mr. Rawlence should be purchased and sent up to London for examination.

In reply to inquiries,

Professor Brown stated that as this particular disease was not included in the provisions of the Contagious Diseases (Animals) Act, he did not consider it probable that the Government would make any inquiry into it. With regard to the general question of an investigation, he thought it quite important, provided the necessary funds were forthcoming.

The Earl of Ravensworth said this was a matter of almost national importance. The ravages of the fluke appeared to be very extensive, and not at all confined to the South and West of England. He thought it would be very desirable that a question should be addressed to the Government in both Houses upon the matter, in order to direct the attention of the Privy Council specifically to it; and also that the Council

should appoint a deputation to wait upon the Privy Council at an early date, to inquire what steps the Government are prepared to take.

After some further discussion, it was unanimously resolved, on the motion of *Mr. Dent*, seconded by *Mr. Pain*—

"That the Veterinary Committee be requested to consider the desirability of making an investigation into the recent outbreak of the fluke disease, and to report to the next Council how they can carry out such investigation, and whether they are of opinion that local inquiries should be carried out under the direction of the Council."

Mr. Dent then gave notice of motion for a grant, not exceeding £500, for such investigation, in the event of its being recommended by the Veterinary Committee.

ROYAL COLLEGE OF VETERINARY SURGEONS.

ANNUAL MEETING.

THE thirty-seventh Annual Meeting of the Royal College of Veterinary Surgeons was held in the Freemasons' Hall, Edinburgh, on Monday, 3rd May.

Principal WILLIAMS, of the New Veterinary College, Edinburgh, President, occupied the chair.

Present:—Professors McCall, Walley, McFadyean, and Vaughan; Gen. Sir Frederick Fitzwygram, Bart.; James Collins, Esq., Principal Veterinary Surgeon to the Army; Messrs. Jno. Aitken, Wm. Anderson, J. W. Anderton, Archibald Baird, Colin C. Baird, R. T. Bell, Allan P. Blue, Jno. Borthwick, Andrew Boyd, Hugh Brock, John R. Brown, H. J. Cartwright, John Cameron, James Connochie, C. Cunningham, Wm. Dobie, Thos. E. Dollar, David Dudgeon, George Elphick, J. H. Ferguson, Jas. Fingzies, George Fleming, Jas. Freeman, Alex. H. Gentle, Thos Greaves, Andrew Greig, Alex. Grey, junior, John E. Grey, M. Hack, J. Hammond, Wm. Hunting, John C. Johnston, Alex. Lawson, T. H. Lewis, Alex. J. MacCallum, A. J. McIntosh, Peter Moir, George Morgan, John P. Prentice, Geo. Philp, Wm. Robertson, Alex. Robinson, Archibald Robinson, R. Rutherford, James Scrymgeour, Thos. H. Simcocks, Andrew Spreull, Jno. Storie, J. B. Taylor, Peter Taylor, Tom Taylor, W. A. Taylor, Wm. Whittle, Wm. Woods, Jas. Wyper, and the Secretary.

The *Secretary* (Mr. Arthur W. Hill) read the notice calling the meeting, and also the minutes of the previous meeting, which were approved.

Report of the Council.

The *Secretary* read the Annual Report of the Council as follows:

The Annual General Meeting of the Royal College of Veterinary Surgeons was held on May 5th, 1879, in accordance with the provisions of the Charter, when the following gentlemen were elected Members of Council in the place of those who retired by rotation, viz.:—John Wortley Axe, Wm. Robertson, Thos. Wm. Gowing, Jas. Beart Simonds, Wm. Whittle, and J. Wilkinson Anderton.

The Council have to report that at their first meeting, held on May 27th, Professor Williams, of Edinburgh, was elected President, and the following gentlemen were elected Vice-Presidents:—Professors McCall and Walley, Messrs. H. J. Cartwright, G. Williams, Jas. Moon,

and E. C. Dray. Treasurer, Mr. E. C. Dray, and Secretary, Mr. W. H. Coates.

The Council have the satisfaction to announce that on the obtainment of the Supplemental Charter granted by Her Majesty's Government in August last (a copy of which was submitted at the last Annual Meeting, and circulars issued to those gentlemen holding only the Highland and Agricultural Society's certificate), 124 have availed themselves of the opportunity offered, and have received the diploma of the Royal College of Veterinary Surgeons.

It has been suggested that steps should now be immediately taken by the Royal College of Veterinary Surgeons to obtain an Act of Parliament for the protection of the title of Veterinary Surgeon, or other titles conferred by them or empowered by Royal Charter.

In order to give further effect to the Charter thus obtained, the Council have found it necessary to make certain alterations and amendments in the Bye-laws.

The following are the new and amended Bye-laws:

7. At a meeting prior to the Annual Meeting the Council shall choose from among the members of the profession not less than six persons to act as scrutineers in the matters of the election of Members of Council.

New Bye-law to follow "No. 32"—

"That in case any student, after having attended the prescribed course, is prevented by any cause—the fault not being his own—from presenting himself for the first or second Examination, he shall, after having passed that Examination, be allowed to present himself for the one immediately following, by studying one term less than he would by the "Bye-laws 31 and 32," provided the full number of terms shall have been complied with."

"37. Bye-law annulled."

The Council have to announce that the two years' system of Examination was brought to a close in January last, it having been extended to that period in order to admit those who from various causes had been unable to pass their Examination to the satisfaction of the Court of Examiners.

The three years' system is now in full force and has hitherto proved successful. The Examiners find that there is a greater amount of proficiency in the class of students who now present themselves for Examination, and less re-examination of rejected candidates.

With reference to the changes in the Court of Examiners during the past year, the Council regret to announce the resignation of Mr. Robert Lewis Hunt, F.R.C.V.S., who, in consequence of failing health, was reluctantly compelled to relinquish his duties at the Cattle Pathology table.

The vacancy in the Examination Board has been filled up by Mr. Jno. Roalfe Cox, who has been appointed to the "Horse Pathology table."

The Council have to report that since the last Annual Meeting eighty students from the different veterinary schools have received the diploma of the Royal College of Veterinary Surgeons.

The following students obtained Honorable Mention, viz.:—Messrs. Ernest Ed. Batt, W. J. Malvern, F. Gowland Rugg, Nicholson Almond, H. A. Rumboll, J. J. Crowhurst, G. Johnson, G. G. Mayor, Walter J. Palmer, E. Slipper, T. W. Cave, A. W. Briggs, Donald Gregory, H. T.

W. S. Mann, G. Deveson, Theodore C. Toop, Sidney Villar, W. Caudwell, C. Taylor, and T. W. Lepper (Royal Veterinary College), with Great Credit.

The Council have had under their consideration a scheme for one uniform Matriculation Examination to be adopted by the respective schools. The scheme was generally approved, but as one dissented from the arrangement the subject was deferred for further consideration.

The Council elected the following gentlemen as Examiners for the Fellowship Degree, viz.:—Messrs. Fleming, Collins, Duguid, and the Dean of the College of Preceptors.

A Special Examination for this Degree was held February 27th, 1880, when the following were admitted Fellows:

Mr. Wm. Sheppard Wallis, Halstead, Essex.
„ M. Wiggins, Market Harborough.
„ Wm. Albert Russell, Army Veterinary Department, Dublin.
„ Thos. Simpson, Seel Street, Liverpool.
„ Isaac Vaughan (Prof.), New Veterinary College, Edinburgh.

Prizes.

The Fitzwygram Prizes.—In order to increase the number of candidates, and to offer further inducement for competition, the Donor gave notice that the competition for these prizes would not hereafter be limited to those who had passed with *Great Credit*, but would be extended to members of the Royal College of Veterinary Surgeons, who held their diploma for not more than two years.

Six candidates entered their names for the competition of these prizes in April, 1879. The written examination took place in London, and the *vivâ voce* and practical examination in Lincolnshire. The only gentlemen who obtained the required number of marks were:

Mr. Edward Simpson Shave, Royal Veterinary College, First Prize £50
„ Thomas Herbert Lewis, New Veterinary College, Edinburgh, Second Prize £30
„ Wm, Frank Smith, Royal Veterinary College, Third Prize £20

The Royal Agricultural Society again offered their Prizes for competition, when the following was the award of that examination:

Mr. Wm. Alston Edgar, Dartford, Kent, £20 and Gold Medal.
„ Wm. Frank Smith, Bromley, Kent £10 and Silver „
„ Nicholson Almond, Great Clacton, Colchester . . . £5 and Bronze „

The following letter was received from the Secretary of the Royal Agricultural Society:

"Royal Agricultural Society of England,
"12, Hanover Square, London, W.;
"*Dec.* 16*th*, 1879.

"Dear Sir,—I am instructed by the Veterinary Committee to ask you to be so good as to ascertain from the Council of the Royal College of Veterinary Surgeons whether they could undertake to nominate Examiners for the Society's Veterinary Prizes and Medals, so that identical examinations might be held simultaneously in Edinburgh,

London, and, if necessary, in Dublin. The object in view is to promote a co-operation between the several agricultural societies, so that the prizes might be equally open to graduates of the Royal College of Veterinary Surgeons, whether they are resident in England, Scotland, or Ireland, and whether they have been educated at the Royal Veterinary College or at any other recognised veterinary school.

"Your early attention to this matter will much oblige,

"Yours very faithfully,

"H. M. JENKINS,

"W. H. COATES, Esq. "*Secretary.*"

Communications have been made with the Highland and Agricultura Society in the hope that Scotland would unite in making the prizes general among the students, and the Council purpose to appoint examiners as soon as the agreement has been entered into between the two societies.

Unfortunately, however, the Highland and Agricultural Society, after due consideration, does not feel itself in a position at present to come to such an arrangement, hence the scheme must remain for a time in abeyance.

THE HOUSE COMMITTEE.

During the past year the House Committee had their attention directed to a freehold property in Fitzroy Square, which was to be sold, and was considered might be made available for a college.

The Committee spared no pains or expense in interesting themselves upon the subject. A surveyor was appointed to value and inspect the property. It was considered, however, to be deficient in its appearance, and the rooms unsuited for the requirements of a college.

On further deliberation, and after taking a legal opinion, the negociations fell through in consequence of certain doubts having been expressed with regard to the genuineness of the title.

The Committee, therefore, resolved to ascertain, by advertisements, whether suitable premises could not still be obtained. The replies received were unsatisfactory, and failing to receive any assistance from Her Majesty's Government, the Council deemed it advisable that they should not leave their present building until some more suitable premises could be obtained.

In accordance with the terms of the lease, the house has been put under thorough repair, and a portion of the back premises pulled down and re-built, as it was considered to be dangerous.

THE COLLEGE FUND.—Some trifling subscriptions have been received during the past year, the only real increase being the receipt of its dividends.

The following is the amount of stock and balance at the bankers:

Amount of Stock standing in the names of the Trustees	£1513 13 4
Balance at Bankers	104 11 10
Dividends	44 9 4
Total . . .	£1662 14 6

The following is the statement of the attendance of members at the Council and Committee Meetings:

Vice-Presidents.

Henry Joseph Cartwright	6	James McCall	1
George Williams	4	E. Coleman Dray	6
James Moon	3	Thomas Walley	3

Council.

Jn. Wortley Axe	4	Peter Taylor	6
Wm. Robertson	2	John Cuthbert	3
T. W. Gowing	3	Rd. Sam. Reynolds	6
Jas. B. Simonds	2	Francis Blakeway	
Wm. Whittle	5	Benj. Cartledge	4
Jn. Wilkinson Anderton	6	Matthew J. Harpley	7
Major-Gen. Sir F. Fitzwygram	4	Geo. Fleming	5
Jas. Collins	6	Wm. Pritchard	7
Wm. Hy. Coates	8	Wm. Williams	5
Geo. Morgan	7	Hartley Thos. Batt	8
Jas. Freeman	5	Thos. Greaves	7
Alf. B. Proctor	2	Geo. Thos. Brown	1

Committees—Finance, House, and Selection.

Hartley T. Batt	6	M. J. Harpley	4
Henry Jos. Cartwright	1	Jas. Moon	3
Jas. Collins	3	G. Morgan	2
E. C. Dray	5	W. Pritchard	3
Geo. Fleming	2	J. B. Simonds	2
Jas. Freeman	1	P. Taylor	4
Thos. Greaves	6	Geo. Williams	3

The Registrar has to report the death of thirty-five members of the profession since the last Annual Meeting. Among them may be mentioned the death of Professor Varnell, F.R.C.V.S., late Professor of the Royal Veterinary College. He was elected President of the Royal College of Veterinary Surgeons in 1865, and was a Member of Council for upwards of sixteen years. Also the death of Mr. John Cuthbert, of Leeds, a Member of the Council, elected three years ago. He was also a Fellow.

A new Register will shortly be published containing the names of the new members of the profession, as well as those who have been recently admitted holding the Highland and Agricultural Society's Certificate, and the many alterations which have been made since its last issue. Copies may be had on application to the Secretary, price 1*s.* 6*d.*, or 1*s.* 8*d.* post free.

Presentations.

Presentations have been made to the Library of the College by Professors Simonds, Williams, Walley, and Vaughan, and by Mr. E. B. Nicholson, of the London Institution; also some interesting classified specimen grasses to the Museum by General Sir F. Fitzwygram. The skeleton of a pure Arabian horse and morbid specimens from India were presented by Mr. G. Fleming. Mr. Harpley also forwarded a photograph of the Veterinary Congress held in Hamburgh, containing a portrait of the late Wm. Field.

During the past year, in consequence of failing health, the Secretary has been reluctantly compelled to tender his resignation to the Council

of the Royal College of Veterinary Surgeons after holding office for a period of eighteen years.

The vacancy has been filled up by the election of Mr. Arthur Wm. Hill.

The Financial Statement is annexed. The Balance in hand, after defraying the expenses of the year, amounts to £553 2*s.* 5*d.*

E. C. DRAY, TREASURER, *in Account with the Council of the Royal College of Veterinary Surgeons, from* APRIL 1*st*, 1879, *to* MARCH 31*st*, 1880.

Dr.	£	*s.*	*d.*	Cr.	£	*s.*	*d.*
To Balance at Bankers, April, 1879	330	0	5	Examiners' Fees and Expenses	654	7	6
Examination Fees to March 31st, 1880	1349	5	0	Examiners' Fees for Fellowship Degree	15	15	0
Highland and Agricultural Society's Certificate Fees	212	3	6	Rent	100	0	0
Fellowship Fees	78	15	0	Rates and Taxes	38	1	8
Dividends	27	19	8	Salary to Secretary	150	0	0
Copies of Register	3	7	6	Insurances	1	18	9
Registrar's Fees	0	3	0	Printing	17	3	6
Property Tax	2	1	8	Advertisements	18	3	0
Gas consumed by C.V.M. Soc.	1	17	6	Stationery, Postage Stamps, and Bookbinding	28	18	0
Interest from Scottish Bank	0	2	9	Law and Parliamentary Expenses for Supplemental Charter	161	1	11
				Reporters	11	11	0
				Diplomas, Printing and Embossing	14	19	9
				House Surveyor	3	3	0
				Drugs for Cabinet and Museum	2	1	0
				Coals, Gas and Wood	12	1	1
				House Repairs, Painting, and Rebuilding back Premises	153	12	6
				Furniture, Upholsterer, and Gasfitter	11	8	1
				Petty House and Sundry Expenses	30	3	7
				Wages	20	0	0
				Messenger	7	15	0
				Banker's Commission	0	9	3
				Balance at Bankers, April, 1880	553	2	5
	£2005	16	0		£2005	16	0

Amount of Stock standing in the names of the Trustees, £952 13*s.* 8*d.* Three per cent. Consols.

We, the undersigned, have examined the above accounts, and have found them correct.

April 14, 1880.

GEORGE A. BANHAM,
TOM G, BATT, } *Auditors.*

On the motion of *Mr. P. Taylor*, seconded by *Mr. Greaves*, it was agreed that the report be received.

It was also agreed, on the motion of *Mr. Morgan*, seconded by *Mr. Cartwright*, to adopt the report.

At the request of *Mr. Whittle* the number of meetings of the Council and Committee which he had attended was corrected in the report, the number being six instead of five. He expressed his opinion that a proper register should be kept, so that there might be no mistake.

Mr. Morgan explained that the error had been made inadvertently, but said that if such a record was to be kept it ought to be correct. He thought that the number of summonses to attend ought to be given as well as the number of meetings.

Mr. Taylor said he thought it was of importance that there should be an accurate register kept, because it was seen from that how the various members fulfilled their duty.

Professor Walley said that there were one or two things in the report to which he wished to refer, and one of these had reference to the time when the voting papers were sent out. He found that, in some instances, the voting papers did not arrive at their destination in time for the members to vote. For instance, he had received from Aberdeenshire a letter dated the 24th of April, in which it was said that the voting paper was received only the previous day at three o'clock. Now, they were all aware that in country districts a letter very frequently could not be answered by return of post; and it so happened that, in this instance, a letter received at three o'clock could not be answered the same evening; in fact, it could not be answered till the Monday. His own voting paper arrived in Edinburgh on the 22nd, which gave him ample time to return it by the 25th. He did not quite understand whether the bye-law on the subject meant that the voting papers were to be at their destination three days from the date, or despatched from London three days within the date. If the latter was the meaning of it, then his voting paper did not reach him in time. He thought that, so far as it could be done, ample time should be given to outlying members to send their voting papers back in time, especially in the case of the members in Aberdeenshire (applause). There was another matter to which he would refer, namely, as to those who had passed the examination last year. On page 3 of the report there were a number of names given of students having obtained honorable mention. Now, so far as he observed, there was not the name of a single student from Scotland who had obtained honorable mention. He did not know the reason of that, but it was a matter that should be inquired into. Those that were given were all from the London College. He wished to make another remark, and that was in connection with the statement in the report, "that steps should now be immediately taken by the Royal College of Veterinary Surgeons to obtain an Act of Parliament for the protection of the title of Veterinary Surgeon." At the last Council meeting he made the remark that he thought this matter should be brought prominently before the members of the profession, and he did not think that he was out of place in directing particular attention to that matter, so that they might discuss it amongst themselves, and when the time came they might help them in the matter (applause).

The *President* asked if there were any further observations to be made on the report.

Mr. Hunting, London, said he wished simply to remark that this their first meeting in the Scottish capital marked a new era in the life of the profession, and the successful result of a long struggle to improve the

position of the profession (applause). He thought that they might congratulate themselves on having arrived at the stage of having obtained such a good position that they could meet in Scotland without opposition from another examining body. At the same time a healthy rivalry was not a thing to be objected to, and he had just risen for the purpose of stating that there was a chance of making a mistake in the other direction, and getting into a dead level of uniformity. Although one examining body was a good thing, yet it was not a good thing that they should have merely one governing body. He should be very sorry to see the schools ruled entirely by the profession, and that was what he was afraid they were approaching to. He thought that the schools and the management of the schools could not be too much separated from the profession so long as the College had the power of granting diplomas. Of course there was no reason why the schools should not combine voluntarily, and select parties to examine; but it would be a mistake for the schools to hand it over entirely to the profession. It was the thin end of the wedge, and they might possibly be interfering with the schools afterwards in other matters. He would say, let the schools submit their students to whatever matriculative examination they might choose, and if they did not get proper men to do so, they would soon be shown in their true colours, and free trade would very soon right itself in the matter. With regard to the Museum of the College, he thought that any person who had been in it would be of opinion that it was simply and solely a disgrace to the profession. There were many really valuable specimens hidden away in a manner that was not creditable to them. There was hardly a provincial town that did not have specimens worthy of the Hunterian Museum, and he believed that the veterinary surgeons throughout the country would be willing to send up specimens to the Museum of the College provided there was a decent place to put them in. He must say that he felt almost sorry to read that somebody had presented the skeleton of a pure Arab horse, as he did not know where it was to be placed. He concluded by saying that he thought they might congratulate themselves on everything having gone right lately, and also on their present meeting in Edinburgh (applause).

In reply to *Professor McFaydean*, Edinburgh,

Major-General Sir F. Fitzwygram explained that there was an error in the report with regard to the regulations as to the Fitywygram Prizes, but that the papers sent out in his name were correctly worded, so that he did not think that any practical injustice had been done to any one.

Mr. Dollar, London, said that several members had received no voting papers. He believed there had been some difficulty in issuing the voting papers this year—first, on account of the members not notifying to the Registrar the alteration in their addresses, the great number of fresh names appearing on the Register for the first time. He did not stand up to find fault with what had been done; still he thought that making a note of the delay that had occurred this year would have the effect of the papers being sent out better next year (applause). He wished to take the opportunity of moving a resolution, and he would do in connection with the Annual Report. The Report stated that "steps should now be immediately taken by the Royal College of Veterinary Surgeons to obtain an Act of Parliament for the protection of the title of Veterinary Surgeon." He merely made that paragraph the stepping-stone to bring forward what he wanted. The resolution he was to propose, if it was acted upon by the Council, would not only have a great influence on the profession itself, but also in connection with the view that the public would take of them as a profession. If

they went to Parliament for a Penal Act, there were some members who would ask, "Who wants a Penal Act? Are they more respectable than the individuals whom they are asking the Act against?" When he read Clause No. 12, of the Supplementary Chapter of the Regulations in connection with the Charter, he was surprised at the unlimited power which the Council possessed over every one of its members. But in reading further on in the Charter there was no line laid down in any shape or way. They were, as it were, a body of men placed body and soul in the hands of the Council (a laugh). He did not object to that; he was satisfied that they should hold that unlimited power, but he was anxious to know, as an individual member of the profession, in what way they were ready to exercise that unlimited power. He had no doubt that if it was exercised it would be exercised for the benefit of the profession, but the clauses in connection with the matter were in such a crude state that no one knew how the Council might act for the benefit of the profession. In making these remarks he referred to the getting of a Penal Act for the profession. Now, the very first thing that would be said in the House of Commons, if they went as a body, would be—How do they regulate the conduct of their members? There was nothing printed to show what these regulations were; and although they could point to the clause showing that the Council had unlimited power to expel any member from the profession for a sufficient cause, there was no provision stating how the Council should act in this matter. What he wished to propose in the shape of a resolution was the following:—"That the profession represented by the members now present at their annual meeting consider that the time has arrived when the Council should embody in a series of resolutions what derelictions of conduct on the part of any of their members will subject them to the cognisance of the Council with a view to putting Clause 12 in operation against them." In his opinion, if that were done, it would not only be a most beneficial thing for every member of the profession as a profession, but it would have a great tendency to raise every member of the profession if it was known that the Council in connection with it had such unlimited powers, and that they would exercise them in certain circumstances. He would be glad if any gentleman would be good enough to second the resolution, and make any remarks regarding it, and he would also be glad to answer any questions in connection with it (applause).

Mr. Lawson, Manchester, said he had great pleasure in seconding Mr. Dollar's proposition, and he entirely concurred in all that he had said. There was another matter that he wished to bring before the Council, and he was enabled the better to do so as he had experienced that morning the labour in connection with it, namely, as to the voting papers. He would suggest to the Council respectfully that they should see that next year the voting papers were sent out in a manner similar to the voting papers in a Parliamentary election. The names were in larger print, and those who voted put a cross against them, so that the scrutineers had little or no difficulty, while the voters would also have less difficulty in marking those gentlemen for whom they voted. There was considerable difficulty experienced at present, and there were a great many bad voting papers. He might say that he had had applications from a number of people asking how they were to vote. He had no doubt that it would be for the general welfare of the profession if this matter were taken into consideration.

Mr. Mackintosh asked if Mr. Lawson proposed that in future they should vote by ballot?

Mr. Lawson said that the voting was by ballot now; but he wished the system to be entirely altered and reorganised. At present it was very easy for a man to put a cross at the name after the one he intended to put it, and often they could not tell for whom the vote was given.

Mr. Taylor.—You would still have each member to sign his paper with his name?

Mr. Lawson.—Decidedly.

Mr. Taylor.—And that the type should be larger?

Mr. Lawson.—Yes; and that the way they voted for a Parliamentary candidate should be followed in the voting paper. It was plainer and more legible than the present system.

Mr. Greaves, Manchester, said that he saw the force of Mr. Lawson's remarks, but no system that could be adopted was perfect. The voting papers sent out in the election of Members of Parliament were open to the same objection as had been urged (cries of "No, no"). There were many cases where the cross was put between two names, and you could not tell which party the cross was intended for. He thought he must be a very stupid man who could not understand the directions given on the voting paper; but so it was, and there would continue to be mistakes. With reference to one of the subjects brought before them, the sending out of the voting papers, he had to complain that they had not been sent out in that due form that they ought to have been. He had a friend who had resided at the same place for forty years, and he did not get his voting-paper till the 27th, while it ought to have been returned on the 25th. Other members did not get theirs till the 27th. He hoped the same thing would not occur at the next Annual Meeting. With reference to Mr. Dollar's resolution, the question was discussed at the Council as to what should be the nature of the offence of the person who should be excluded from the profession, and he might tell them that it occupied a good deal of time. The various points were fairly discussed, and it was thought best to leave it as it now stood in the rules. They might depend upon it that it must be a heinous charge against a veterinary surgeon that would exclude him from the profession. The Council had guarded against it if it were to be carried out unfairly. They must have two thirds of the members present before any action was taken, and then three fourths of those present must be in favour of any action being taken before it could be done; so that it must come before a full Board before action could be taken, and the Council was not a body that would exclude a man if there was not sufficient reason for doing so. Perhaps there might be two or three cases in a man's lifetime, where a person had proved himself to be a disgrace to his profession. It was right that they should have power to exclude men from the profession who were unworthy of the name (applause). There was one other subject to which he would refer, and which had been alluded to by Professor Walley—namely, the Matriculation Examination. He did not take the same view of the matter that the professor did. He thought it was right that the Council should have the power to examine or give the subjects for examination before a student entered the College schools. He had seen some instances of an absurd anomaly, where a student had been examined at one college and rejected. His education had been very limited, and he passed to some other college, where he was admitted. Now, if the Council had the power of appointing the examiners, such an incongruity as that could not occur. They were getting such a position that they ought to improve themselves, if possible, and let them get better educated men into the profession. The time was when any man, let his education be ever so limited, was allowed to enter the

colleges if he paid his fee. He remembered on one occasion, when he had an opportunity of coming to Edinburgh on a deputation from the Royal College of Veterinary Surgeons, that he found that the Lord Provost and members of the Corporation were in favour of a higher standard of education than the College were then asking for. He thought that the time had come for the student having a good position in regard to education before entering the College schools. He was in favour of the various schools placing the power in the hands of the Council of appointing the examination of the student before he entered the College. He hoped that an amicable arrangement would be come to by the principals of each college to give the power into the hands of the Council (applause).

Professor McCall, Glasgow, said that as he was the principal of a college that objected to the system of uniformity being carried out, he thought it was right that he should make a statement. He was the first to introduce an educational test before allowing a student to enter the College, and he was in a position to say that no student had been allowed to enter the College, who had been refused by some other College, so that the statement that had been made to that effect did not apply to him. He respected the Council, and he believed that the very best talent that had been found in the profession had been found in it. Hitherto they had conducted the duties devolving on them with great efficiency, but he was not prepared to hand over the power he possessed, so far as an educational test was concerned, to the Council. He believed that if the Council adopted the same measures with regard to the Scottish schools as to the schools in London, they would empty the benches considerably. He was perfectly willing to come to an understanding with all the three colleges, whereby the principals of all the colleges should have an equal representation as to the changes that took place in the Council. He knew that his feelings in regard to the matter were sympathised in by Principal Williams and Principal Walley. Before he wrote the letter on the subject he consulted those gentlemen, and they also came to the conclusion that the principals of the colleges should have a seat at the Board. He was perfectly willing to come to an understanding with the College to have a uniform test applied to all students entering the College, but he would not hand over to the Royal College that power that he possessed (applause).

Mr. Macintosh.—Is this before the meeting as a motion, or as an expression of opinion?

The President.—It is simply an expression of opinion.

Principal Walley said that Mr. Greaves referred to the fact that a student was received at one college after being refused admission to another. Now, such a fact had never come under his knowledge, and as far as the school with which he was connected was concerned, he was certain that no such admission had ever been made. He rather thought that Mr. Greaves had mistaken the matter a little. This was what had taken place. A student had been refused admission to the Royal College of London simply because he could not pass the examination, and at another college he had passed an examination, after which he went back and entered the Royal College. The rule was that the student should not enter the College till he had passed Latin or French, but it went on to say that a Matriculation Certificate from another school would be accepted. They would now allow students to pass without Latin or French, but they might come to Edinburgh, pass the Matriculation Examination there, and then enter the Royal College.

However, he might state that they put a stop some time ago to anything of the kind being done in the future so far as Edinburgh was concerned.

Mr. Cameron, Berwick-on-Tweed, said he had much pleasure in being present at the first meeting of the Royal College in Edinburgh. He was not living in Scotland now, but he had still the same feelings as Scotchmen. He highly approved of the change which had been made which enabled the meeting to be held in Edinburgh ; but another change would require to be made before the full advantage could be reaped. It had not been taken into account that there were no trains running in the north of Scotland on Sabbath. It was a matter of time and money to those in the north who attended the meeting, and he thought that an arrangement should be made so that meetings such as the present, and even in London, should not take place on a Monday or a Saturday. The present system also involved a good deal of Sabbath travelling. Although he had no special objection to Sabbath travelling which he did professionally, yet it ought to be done as little as possible. They knew the source of England's greatness, and they knew that it was said, "They that honour Me, I will honour." If there was no legal objection to it the meeting ought certainly to be held on any day of the week except Saturday or Monday. He was sure that Scotchmen were highly gratified to see their English brethren in Edinburgh (applause). With regard to the question of voting, he considered it would be a very great improvement if Mr. Lawson's proposal were carried out.

General Sir F. Fitzwygram said he wished to make a few remarks. Professor McCall, in the course of his speech, said that the Royal College of Veterinary Surgeons were regulating or had regulated the Matriculation Examinations. That was not the case. The Royal Veterinary College had regulated its own examinations, and the Royal College of Veterinary Surgeons had had nothing to do with it. Professor Walley had mentioned that while the Royal College of London prescribed a high standard, they allowed the admission of students surreptitiously by coming down to Scotland. Now, there was no doubt that in the original scheme in London they did accept certain examinations for certain places, but it was found that there was an abuse, and the Governors stopped it, and no one was now allowed to enter the College unless he passed the full examination. The proposal of the College was not to establish a uniform examination for the four schools, but to define a certain standard below which no one should be allowed to enter into the veterinary schools at all. What they endeavoured to do was to draw out a scheme giving the lowest examination which a young gentleman must pass before he could be fairly supposed to derive any advantage from entering the schools. He thought that if the Principals of the four schools would agree together, the Royal College of Veterinary Surgeons would gladly endorse any recommendations they might make. There would then be no chance of the examination being altered without the accord of the schools. He thought that some examination should be adopted below which no young gentleman should be allowed to enter.

Principal McCall said that the alterations had taken place principally with reference to the veterinary element of the London College. As they were aware, Sir F. Fitzwygram, Mr. J. Collins, and Mr. Harpley, were Governors of that Institution. Now, suppose that the other colleges took a part in the Matriculation Examination of the students, these three gentlemen would still have to do with the Matriculation Examination for members of the Council ; so that, while the other three colleges

in Scotland would have no voice at all, these three gentlemen, being Governors of the Royal Veterinary College, would have a voice.

Mr. Fleming, of London, said that this was a very important question, and he thought that the time had arrived when their educational status should be improved. It must be confessed that the standard of education at the present time was very far from what it should be, and the anomalies that existed pointed to the fact that if it was left to the schools themselves there would be no uniformity, because it was impossible where they had competing schools to have that uniformity of standard which was so necessary. The medical corporation of licensing bodies in medicine had a standard of education laid down, which applicants for admission to the schools had to pass before they were admitted. He thought that, as the Royal College of Veterinary Surgeons were responsible for the status of the student, inasmuch as it gave him the diploma, it was responsible, not only for the professional education of the student, but also for his general education. Although some of those present might dissent from what he said in regard to that, yet he was sure they would agree with him that the general education of the veterinary student greatly required raising (applause). He had had conversations with some of the teachers, and they had expressed themselves as labouring under great difficulties from the simple fact that the men they taught were unable to understand the language in which they were taught. It lay with the Council to determine the amount of education that was required for its members; and now that the profession was entirely responsible for its own position it should see that its graduates were men who obtained such a fair share of education as would enable them to study the science, as well as enable them to pursue it with advantage, both to the public and to themselves (applause). Whichever way that was done the profession would not be satisfied till this reasonable amount of education was laid down. He thought that the Matriculation Examination should be in the hands of the Royal College of Veterinary Surgeons, because it was the only way that they could get that uniformity of education that the profession and the public required. As to the voting papers, he thought that the suggestion of Mr. Lawson was a good one. He thought that the cross applied to the name would answer very well, and that it was a mistake that the voter should sign his name. He knew that a certain number of people would not vote because the vote was public, and because the scrutineers could tell how the voter had given his vote. He thought that where there were a number of names to be voted for it was very invidious, and he had abstained from voting himself. He considered it would be a better plan if the names of the gentlemen to be voted for were printed in the manner indicated by Mr. Lawson.

Mr. Spreull said that they did not want any signature at all.

Principal Walley said that, with regard to Matriculation, he believed that the schools were willing to agree amongst themselves as to a certain uniform standard. He thought that that was the best way of solving the difficulty, and that it was merely a matter of time. Although he had no objection to the Council exercising some supervision over them, still he thought they need not put the power entirely out of their hands. As to the system of voting, he did not see that if they were to vote by papers they should affix their signature. Personally he did not care about the matter, and he was ready to put his name all the same, but he thought that the voting should be carried on in the way it had been.

Mr. W. A. Taylor said that if he was in order, as the discussion had assumed a somewhat miscellaneous nature, he should like to offer a few

remarks with regard to the voting papers. Having been unexpectedly called upon to act as one of the scrutineers, he found that much time was unnecessarily expended by the manner in which members of the College had to vote for the respective candidates. It was, he thought, an unnecessary and unwarrantable tax on the time of the scrutineers to have to count and go through in a minute manner the names as at present arranged in order to arrive at a correct conclusion. He cordially supported the suggestion of Mr. Lawson, more particularly that the names of the candidates be printed in larger type. There had been, he believed, fourteen votes lost that morning, a majority of them from absence of signature, and some others from mystification of the names and residences of the candidates with the list of the present members of Council. Some gentleman, unable to understand the Queen's English, had erased the names of the present members of Council instead of voting for the candidates. He thought that was another suggestion that might be taken into consideration in future by those who draw up the voting paper. He did not know that it was absolutely necessary that a list of the present members of Council should appear on it. If so, he thought that it would be highly judicious that a plainer and more distinct manner of discriminating between the two were applied in drawing out the voting paper. He thought also that some better arrangement might be made with regard to the appointment and the attendance of the scrutineers. If gentlemen accepted an office, he thought they were called upon and in duty bound to be there to do their duty. It was exceedingly unpleasant for a member of the profession, after having come a distance of between 200 and 300 miles, to be suddenly called upon to act as a scrutineer. He might say that it had been so on this occasion in several instances.

Mr. Dollar's motion was then put to the meeting, and unanimously adopted.

The *President* then said that he would endeavour to explain some matters which had been under discussion that afternoon. In the first place, as to the non-delivery of voting papers till late in the week, he must confess that he was to some extent to blame in the matter. The annual report was detained in Edinburgh for a day in consequence of his absence from home. It could not be printed till he had revised it after being sent to him by the secretary; and, being from home, the report did not get to London for another day. That would to some extent account for the delay. He trusted, however, to have an opportunity of moving in the Council, or that some one else would do it for him, that more days would be allowed for sending out the voting-papers. He hoped that by next year there would be no longer any cause of complaint. The Secretary told him that the reason why a great many gentlemen had not received voting-papers had been on account of their having changed their residences since the last publication of the Register. The voting-papers were sent to the old addresses; and, the new addresses not having been given, the papers were returned. He hoped that every gentleman who had changed his address would send the new one to the Registrar of the College, in order that he might get the voting-paper in due time. With regard to the matriculation question, he must confess that he was quite willing that the Council of the Royal College of Veterinary Surgeons should have at least the power of fixing a minimum examination. That was to say, that, after due consultation, and by arrangement with the principals of the colleges, power be granted to the Royal College of fixing, as it were, the lowest standard below which no one would be allowed to enter the College, and also of

appointing examiners to conduct such examinations, leaving it open to each individual college to elevate its standard of education if it thought proper; but at all times, there being a distinct arrangement between the schools and the Royal College of Veterinary Surgeons that the Royal College of Veterinary Surgeons should not be allowed to exercise their power in raising the standard of education except by the consent of the principals of the schools. If that was carried out it would meet the views of all, and put the matter on a satisfactory footing. He had always had a strong feeling that the power should be in the hands of the profession. He quite agreed with the observation by Mr. Fleming as to the College being not only responsible for the scientific training, but also the educational training of those who became members of the profession; and when the matter came forward again, he would certainly support the views he had expressed at the present time. He would not touch much on the question of students coming from London to Scotland, having been rejected at the college there, and afterwards returning with a certificate. It so happened that he knew the gentleman referred to. He was a good scholar, but did not know French or Latin, and was excluded. However, he was in a position to say that the London Veterinary College would not now allow any man to enter with a certificate except it was equal to the standard required by the London Veterinary College; and therefore that little matter, which occurred a year or two ago, could not possibly occur again. He was sorry that at their first meeting in Edinburgh there should not have been a larger muster of Scotch veterinary surgeons. They had for a number of years agitated for what had happened that day. They had desired that the profession should meet in the City of Edinburgh, and after having obtained their desire, he was afraid that they did not appreciate them, or else the attendance would not have been so sparse on the present occasion. Considering that so many of their friends had come from Lancashire, Yorkshire, London, and other parts, he thought that the Scotch veterinary surgeons might have come in greater force. Their friends had come to do honour to veterinary science in Scotland on the present occasion, and he was sorry that many living in neighbouring parts were conspicuous by their absence. As to the point raised by Mr. Cameron, regarding the day of the Annual Meeting of the Royal College, he had to state that it was laid down in the Charter that it was to be held on the First Monday in May. He did not think that the objection as to Sunday travelling would have much weight with veterinary surgeons (a laugh). He did not, indeed, see why it should, for they often had to travel professionally on that day, and it was just as important that they should travel to the meetings of the College as it was that they should attend a case of sickness on Sunday (laughter and applause). He hoped, then, that if this obstacle had stood in any one's way it would in future be forgotten, and that they would have larger attendances. As to the omission from the report of the names of the gentlemen who passed with credit last year, he might say that the names of the students who passed in April last would not be received in time to be in the report; but then they found that the names of the men who passed with very great credit last year were also omitted. That, he was inclined to think, was due to some omission on the part of the secretary in Scotland, Dr. Dunsmure. He trusted that such an omission would not take place again, as it was a matter of professional and general interest (applause). He would be glad if the Council would support the view that there be a supplementary report published in the *Veterinarian* and *Veterinary Journal*, so that people might

not run away with the idea that no students passed with credit on this side of the border (applause). As to the Museum, they all knew that the building was not such as they required—that they needed a larger and better building, but they were not so fortunate as to find such a building in London last year. The matter was, however, receiving due consideration, and a committee was appointed to consider the whole matter. There was a room on the second floor, at No. 10, Red Lion Square, that might be applied for the purpose, and he could say that the matter would receive due consideration at the hands of the committee that had been appointed. As to the alteration of the voting papers, he thought that the present voting paper was a very good one, that the directions were exceedingly plain, and that no man of ordinary intelligence should make a mistake in regard to it. But he should like to see the names of the candidates in much larger type, and much more space between the names. He could understand the difficulty of separating the names where they were so close together, and he trusted that next year the names would be printed in larger type. For his own part, he detested secret voting, and if it came before the Council to discuss the matter, he should certainly go in for open voting. He did not think that any man should refuse to sign what he had voted. He had now to report the result of the election; and he might state that, notwithstanding the complaints about the non-receipt of voting papers, about 900 had been received this year by the scrutineers—a larger number than ever was returned to the scrutineers before, causing much extra work on the part of the secretary (hear, hear). Mr. G. Fleming headed the list with 625 votes; Professor Brown obtained 609; Professor Pritchard, 593; Principal Williams, 495; Mr. T. Greaves, 458; and Mr. H. T. Batt, 398. Principal Walley was elected by 355 votes in room of the late Mr. Cuthbert. The following were the votes given for the other candidates:—Mr. Talbot, 309; Mr. Flanagan, 299; Mr. Wragg, 297; Mr. Robinson, 282; Mr. Cartwright, 261; Mr. Dray, 197; Mr. Owles, 142; Mr. Moon, 98. The President then intimated that the next Meeting of the Council would be held in London on the 25th of May, 1880.

On the motion of *Mr. Robertson*, Kelso, a cordial vote of thanks was given to the President, and the proceedings were then brought to a close.

The Dinner

Was held in the evening in the Waterloo Hotel, where seventy gentlemen sat down to a sumptuous and well-served repast. Principal Williams, of the New College, Edinburgh, occupied the chair, supported on the right by General Sir Frederick Fitzwygram, and on the left by Mr. J. Collins, Veterinary Surgeon-General for the Army. Among the others present were:—Mr. Imlach, President of the Royal College of Surgeons; Mr. F. N. Menzies; Major Kaye, 21st Lancers; Major Boulton, Prof. Turner, Dr. Dunsmure, Dr. Dycer, Mr. T. Graves, Manchester; Mr. Fleming, London; Dr. Stevenson Macadam; and Mr. Munn.

On the removal of the cloth, the usual loyal and patriotic toasts were duly honored. Some amusement was occasioned by the circumstance that in the toast list the printer had appointed Major Kaye to reply on behalf of the Queen. Major-General Sir F. Fitzwygram and Major Boulton replied on behalf of the army.

Professor Turner, of Edinburgh University, in giving "The Royal College of Veterinary Surgeons," said he had been attached to the

Royal College for some years in a certain official capacity, which had given him an opportunity of knowing a great deal of what the Royal College had been doing, and of satisfying himself that it had been doing excellent work in connection with the veterinary profession. The Royal College could not boast of that antiquity which some Royal colleges in the toast list could boast of. It only dated back some forty years; yet they might regard it as a very lusty infant—a child which could assert itself, which possessed all the elements that conduced to vigorous manhood. He knew of few institutions associated with educational matters which had done so much good, from a professional point of view, as the Royal College of Veterinary Surgeons had done. Under its auspices, under the examinations conducted by it for a series of years, there could be no question that the tone and standard and spirit of the veterinary profession had amazingly improved (applause). And he was happy to say that the College was not disposed to stand still, but was desirous of furthering the prosperity of the profession over which it exercised so important a superintendence. During the years he had been engaged as one of its examining body, a most important improvement had been instituted, namely, the lengthening of the curriculum. Nothing, he thought, that the College had yet done had been more conducive of good than the addition of one year to the curriculum. He had had an opportunity of comparing the acquirements of the candidates before this extension, and he could assure the members of the College present that the change had been of a most beneficial character. The candidates were now prepared to answer questions, and to display an acquaintance with their various important departments of professional knowledge which, prior to the extension referred to, it would have been simply absurd on the part of an examiner to have expected. The young men now in course of preparation for examination in its successive stages were unquestionably more thoroughly prepared than was the case formerly. But if he might be allowed at the meeting of so many influential members of the College to make a statement with reference to veterinary education and examination, he should like to say that he thought the College ought to make an additional step forward, and that before long. The step should not be in the direction of extending the professional curriculum from three to four years—not at least now, for he did not think the profession ripe for that; and the addition of another year of study added to expense of study, consequently many who would be disposed to enter the profession might not have the funds to do so. The step he urged, and which he hoped would be seriously considered, was the institution of an entrance examination. Nothing, he thought, would add so much to the standard of attainments in the veterinary profession as the institution of such an examination; and no one should be allowed to appear for professional examination until he had passed that entrance examination. As an examiner, he had constantly felt difficulty with candidates who came up absolutely ignorant of the Latin language, on which was based so many of the terms employed in veterinary medicine, and the sciences on which veterinary medicine was founded. He would have an entrance examination embracing not only Latin, but English, and the more ordinary arts of education. This, he maintained, would increase the whole standard of the profession; and on this occasion of their meeting under the presidency of one who had long been connected with veterinary education in Edinburgh, he thought it a fitting time to bring forward this suggestion. Principal Williams had been selected to fill the high office of Chairman of that College from his high attainments; and with the

toast of the Royal College he coupled health and prosperity to their worthy President (applause).

The *President* responded to the compliment which had been paid him. Speaking of the gratifying progress made, he, nevertheless, thought the College had not advanced quite so rapidly as was desirable. The extension of the curriculum was the result of a great fight, in which they had received the warmest support and encouragement from the Highland Society. He endorsed the views of Professor Turner regarding the desirability of an entrance examination, which had also been approved at their annual meeting. The test, in his opinion, should not be high at first, but uniform, and should be governed and regulated by the Royal College (hear, hear).

Major-General Sir F. Fitzwygram, Bart., in proposing "The Highland and Agricultural Society of Scotland," spoke of the fame of Edinburgh and her medical and veterinary schools as having been largely due to the disinterested action of the Highland Society. The present meeting was the result of endeavours which had for several years been made to bring to an end the asperities and animosities, he might say, which had long divided and detracted from the usefulness and progress of the veterinary profession. To the action of the Highland Society was it due that they were now enabled to speak as a unity, and he trusted they might hope for marked progress in the future (hear, hear). Every member of the profession had now not only an equal right to vote, but equal power in selecting representatives to sit in their Council, which now fairly and truly represented the entire body of the profession (hear, hear). They were now about to apply to the Legislature for a Bill to protect them against unqualified and unlicensed practitioners. Protection of their profession, if they simply asked it for themselves, might perhaps meet with little sympathy at the hands of the new House of Commons; but if they urged it on the grounds of justice and humanity in the interests of the lower animals of God's creation, he trusted they would be able to succeed. It was scarcely more than half a century since the late Professor Dick instituted in the city the first veterinary school ever known in Scotland (applause)—a school which lived and flourished and still bore its honored name (hear, hear). Now there were in Scotland no less than three veterinary schools, which could compare with any of the kind in Europe (hear). And he was sure they would all hear with pleasure that Her Majesty's Government, in instituting a new Veterinary College at Aldershot, for the instruction of officers of the army, and through them of others throughout England, had, on the recommendation of the Secretary of the War Department, selected for the new institution a distinguished number of the old Clyde Street School (applause). Thanks to the union now between the Royal College and the Highland Society, they had now a thoroughly representative Council of all the branches of their profession; and the future was in their own hands (applause).

Mr. F. N. Menzies, Secretary of the Highland and Agricultural Society, in responding, said he did so with some diffidence, not because the task was new to him, but because it was the first occasion on which he had been called upon to return thanks where the Highland and Agricultural Society had divested itself of some of its privileges. At the same time he thought he might say that the Society was in honour bound to meet the views of the veterinary profession (hear, hear). The Highland Society gave its patronage to the veterinary profession from no interested motives. It was purely and simply from a desire to raise that profession to the best of its ability; and what the Society did to

aid his late venerated friend, Professor Dick, had left a mark on the veterinary profession which would long be recognised (applause). As representing the Highland and Agricultural Society, perhaps the best thing he could do was to wish the Royal College a genuine Highland welcome, and to say that, having now come down to Scotland for the first time, it was to be hoped they would feel so happy here that they would not repent the visit, but resolve occasionally to visit the northern metropolis (applause). The Highland Society, in giving up its veterinary certificate, did so entirely at the wish of the veterinary profession, and it was thought not proper for the Society, as a constitutional body, to continue the granting of certificates in what was not perhaps a strictly legal manner. At the same time they were not going to hold aloof from the veterinary profession. They would keep up their veterinary department; and if by so doing they could benefit the profession, he was sure the Highland Society would always come to the front (hear, hear). The idea of the Society had been not antagonism, but emulation; and if obliged to retire, it was not because they felt themselves defeated, but because the step was deemed necessary to benefit the veterinary profession. The Society's prize would be continued, along with other efforts, to further, as far as possible, the interests of veterinary science (applause).

Among the toasts which followed were:—"The Royal College of Surgeons," by Mr. G. Fleming, replied to by Mr. F. B. Imlach; "The Veterinary Colleges," by Mr. T. Dollar, replied to by Principal Walley; "The Examiners," by Mr. Whittle, and replied to by Dr. Dunsmure.

SPECIAL MEETING OF COUNCIL, HELD MAY 25TH, 1880.

Present:—Messrs. Anderton, Batt, Blakeway, Cartledge, Coates, Collins, Sir F. Fitzwygram; Messrs. Fleming, Freeman, Greaves, Harpley, Reynolds, Robertson, Taylor, and Whittle.

On the motion of *Mr. Greaves*, seconded by *Mr. P. Taylor*, General Sir F. Fitzwygram was voted to the chair.

The *Secretary* read the notice convening the meeting.

The minutes of the last Special Meeting were read and confirmed.

The *Secretary* stated that letters had been received from Professors Williams and Simonds and Messrs. Morgan and Gowing, regretting their inability to attend the meeting. Prof. Williams, in his letter, expressed his best thanks to the Council for the honour they had conferred upon him in electing him President for the past year, and for the kind support and assistance afforded him in carrying through the business.

Mr. P. Taylor proposed Mr. George Fleming as President for the ensuing year. He did so on the ground that Mr. Fleming had been a member of Council for twelve years, and had performed his duties in a faithful, honest, and Englishman-like manner. His transcendant abilities would enable him to fulfil the office with credit to himself, and he would be an honour to the Council.

Mr. Greaves said he had great pleasure in seconding the proposition.

Mr. Fleming was unanimously elected.

Gen. Sir F. Fitzwygram said he wished not only to congratulate Mr. Fleming, but also to congratulate the Council on the selection they had made. Sir Frederick then vacated the chair in favour of Mr. Fleming.

The *President* thanked the members of the Council most heartily for the honour they had paid him in electing him as President of the Royal College of Veterinary Surgeons. He must confess that he accepted office with a large amount of diffidence. He was not sure whether the very high compliment they had paid him was altogether deserved. He himself was of opinion that the office of President should be held by the senior members of the profession. There were many worthy men whom he should have liked to see President in preference to himself; nevertheless he obeyed the call of the Council, and he trusted that in the coming year they should be able to transact the business of the College satisfactorily. He should rely upon their assistance. There was a great arrear of business and a large amount of committee work especially. He trusted the members of the Council would give him their active support, and he assured them he would do all he could to further the interests of the Royal College.

The following gentlemen were nominated as Vice-Presidents:—Messrs. Dray, G. Williams, W. Woods, Moon, Dollar, F. Dunn, Cartwright, Prof. McCall, and Mr. Cox.

On the ballot being taken, the following was found to be the result:

Mr. Dray	11	Votes.
„ Cartwright	11	„
„ Cox	9	„
„ Dunn	9	„
„ Woods	8	„
„ Dollar	8	„
„ Moon	7	„
„ G. Williams	6	„
Professor McCall	6	„

Messrs. Dray, Cartwright, Cox, Dunn, Woods, and Dollar, were therefore declared duly elected.

On the motion of *Mr. Taylor*, seconded by *Mr. Whittle*, Mr. Dray was unanimously re-elected Treasurer.

Mr. A. W. Hill was unanimously re-elected to the offices of Secretary and Registrar.

This concluded the business of the First Special Meeting. A Second Special Meeting was announced to be held, but

The *President* questioned whether it could be held legally, as the Vice-Presidents for the past year no longer existed, and those who had been just elected were not present. The Vice-Presidents were responsible for their share of the business of the Council, and if they had not received notice of the meeting they could not be held responsible.

Mr. Greaves thought it had been hitherto held that the Council was not complete unless the Vice-Presidents were in attendance.

The meeting, therefore, was not held, and the business that would have been transacted was postponed till the next Quarterly Meeting.

Before the Council dispersed, on the representation of *Mr. Coates*, it was agreed that the Treasurer should be instructed to reimburse the Secretary for the expenses he had incurred in connection with the Annual Meeting at Edinburgh.

The Council then adjourned.

CENTRAL VETERINARY MEDICAL SOCIETY.

At an ordinary meeting, held at No. 10, Red Lion Square, W.C., on Thursday Evening, May 6th, the President in the chair,

Mr. A. Broad introduced a specimen of hip disease. He was afraid it would not present the interest it might have done, as he did not know the history of the case, but simply came to hand on the horse being slaughtered. He found masses of bone at the hip and on the femur; also a specific deposit in the lumbar region to an enormous degree, pieces lying close to it in apposition to the rough surface of the femur; found the os innominatum and acetabulum quite healthy; the pieces were very closely kept together. The horse was a mere skeleton when he saw the body; it only showed what unsuspected disease might be going on. Thought hip disease was looked upon as rare.

Mr. H. R. Shaw exhibited a piece of a lung taken from a two-year-old ox; it was from an English bullock; the other parts were all healthy; there was nothing wrong with the liver or intestines; only one side of the lung was disordered, and that at the edges. The animal was slaughtered at the market.

Mr. Banham brought forward a specimen of ulceration of stomach, with enlargement of spleen, taken from a retriever dog. The animal was brought to him twenty-four hours before death. Found extreme growth of the bronchial glands and spleen; the liver was also affected, but the lungs and kidneys were quite healthy; thought it was leucocythemia or leukæmia—lymphatic growth. It was an extraordinary specimen, and, he believed, was rarely found in the lower animals, though common in other subjects. Thought the actual cause of death arose from ulceration of the stomach and rupture of the vessels. The intestines were full of blood. After the animal died found a large pool of blood in the room; believed the growth had but little to do with the cause of death. The dog had been vomiting for a fortnight or three weeks occasionally. When he saw it, it could not keep anything on its stomach, was much emaciated and very weak. He had brought the specimen before their notice on account of the growth, as a characteristic case of leucocythemia.

The *Secretary* had destroyed numbers of dogs, and had made *post-mortems* on them and others, but never remembered seeing anything like the present specimen. There were generally some traces of the formation; did not see how it could be cured. The appearances would never be suspected during life; there might, perhaps, be a slight thickening in the chest, but had found it in the back.

The *Chairman* believed it to be an ordinary case of gastric irritation; it was only the spleen that was enlarged.

Mr. Banham thought that was all one could diagnose. Could not tell the cause the ulceration in the stomach or the actual cause of death; it might have been through rupture of some of the vessels.

Mr. G. Gerrard thought the enlargement of the spleen was simply due to the wasting away of the tissues of the body. Bennett discovered white corpuscles in the blood, but gave no accounts approaching this. They were very easily detected by the microscope. He knew the case of a dog that died because it could not pass a small pebble through its bowels; it died from excessive vomition. In the present case the enlargement, pressing upon the intestines, might have diverted the nervous

action, and thus induced excessive vomition, and thereby caused ulceration and ultimate death. In the case he cited the vomition seemed to have continued until the animal was exhausted.

Mr. Banham held, in that event, he would have expected the ulcers to commence in the mucous membranes, but probably Mr. Gerrard's theory was correct.

Mr. T. Moore remarked there had been extreme emaciation. No one could suspect such a condition in life. Vomition could be caused by irritation of the mesenteric, which presses on the pneumogastric of the heart. Thought death was caused by a rupture, and the animal bleeding to death thereby.

Mr. T. Moore then exhibited a horsecloth, made of a new material composed entirely of raw silk; had seen something similar a few years since; it was likely to be very useful, as it contained great warmth with lightness, being much lighter than ordinary clothing. Thought they would like to see it. He had had it made from a pattern head-cloth, ordinary ones fastened down the front; this one fastened down the side of the neck; the horse's throat was thus kept warm and free from draught. It cost 50*s*. Believed it to be very durable from what he had heard, and, being porous, it allowed perspiration to evaporate.

The *Chairman* thought it a very useful and durable article, and was very light and warm.

Mr. J. Woodger jun., then gave an account of a case of calculi occurring in the bladder of a half-bred Scotch terrier bitch, six years old, and weighing about 14 lbs. or 15 lbs. The animal was brought to him on May 4th, and was under his treatment only a few hours before death. Its owner give a slight history; observed there was a difficulty in urinating, and on examining her he found the bladder was enormously distended. When the dog was on the point of death he tried, ineffectually, to persuade its owner to have it destroyed. Never expected calculi, and had never heard of a case until the one Mr. T. Moore mentioned some little time since. He gave the animal some medicine to allay pain, and a few hours after that it died. Previous to death its owner mentioned that it passed about three and a half pints of water and blood, and saturated the room with urine and blood. He made a *post mortem*, and found the bladder contracted and full of calculi. There were hundreds of small pieces; many of them were lost in washing. The bladder was in a dreadful state, and had been so for some time. The kidneys were healthy. Thought when he saw the dog there was a calculus in the passage, and on moving the animal home it got shifted; it died after passing the urine. The calculi appeared different to those Mr. T. Moore had exhibited some time since, in not being so white. He had not fully tested their composition, but sulphuric acid had no effect at all. In reply to Mr. Gerrard, did not think it possible to have cured the animal, as it was too far gone, and had not passed a catheter.

Mr. T. Moore said, with reference to the case he brought forward, he had had another in a black-and-tan bitch, where he suspected calculi; it had been going on for twelve months, and at last was poisoned. In the bladder he found a nodule or tumour, which acted like a valve to the neck, as it covered about one eighth of an inch every time the animal wanted to pass water; it came just on the top of it.

The *Secretary* said he never used a catheter. The best way to empty the bladder of a dog or bitch was to lay the animal gently on the floor, press the hand over the hips, and work it round over the flanks (the speaker here described, by movements of his hands, the motion he intended); by this means the animal's sense of relief was very great. He

believed the phosphates of lime or magnesia composed the calculi, some of which he noticed sparkled considerably, and could see a number of facets on some.

Mr. Shaw thought the dog must have been suffering from some disease for a long time; the mucous membrane was very thick.

The *Chairman* then requested their attention to the adjourned discussion on Mr. Banham's paper, read at the last meeting, whereupon

Mr. A. Broad said he noticed the presence of several gentlemen who did not attend the last meeting, and suggested it might be useful to give a few of the heads of the paper in question. So far as he understood it, it seemed to touch upon the idea of the formation of a company to enable veterinary surgeons and others to have a yard of their own in which to hold *post mortems*. He had already expressed his opinion that they would never be able to accomplish this, but further facilities might be obtained by using a portion of the existing slaughter-houses, and having that portion set apart on purpose. He would get the opinion of Mr. Harrison on the point. That gentleman had waste land, and was desirous of meeting the wishes of veterinary surgeons. If they required a small room fitted up for their convenience he felt sure Mr. Harrison would do his best to meet their views.

Mr. H. J. Hancock stated he was not present at the last meeting, but had glanced through Mr. Banham's paper. He must say he endorsed Mr. Broad's opinion, and thought they were more likely to meet with some success among the knackermen than by establishing a place of their own, and he very much doubted if they would get the necessary sanction of any vestry or Metropolitan Board or Corporation of London to erect any place in the City; they were very jealous of the existing knacker's places, and would do away with them as soon as they could. He thought it would be the best way to offer the knackerman a fee whenever they used the houses, say 2*s.* 6*d.*, and a certain sum to use the yard, as if the masters had this fee instead of the men they would get better served. If such a plan was adopted the fees the knackermen would receive would be ample to keep one man employed in a *post-mortem* house; then they would receive proper attention.

The *Chairman* said he quite agreed with Mr. Hancock in his remarks about the authorities; he also thought there was not the slightest chance of their having *post-mortem* premises of their own. One great obstacle would be the expense, and the authorities were doing away with slaughter-houses as rapidly as they could; there was hardly one in the West End now, whereas some ten years since he could count eight or ten. Believed Mr. Hancock's suggestion the only one they could adopt.

Mr. T. Moore thought they would never be able to have a mortuary of their own. The best course would be to remunerate the knackermen, but it would be invidious to select any one knackerman, as it would give offence to the remainder. Believed that there were only three that would answer their requirements. The Society had a large fund lying idle, and arrangements should be made with three or four of the knackermen to offer them better facilities, paying them for such, also for any interesting specimens which now found their way into the boiling-pot, but which might prove to them very serviceable; the men would keep them if paid. If the masters received the fee, as Mr. Hancock suggested, the men would expect one too. He thought a committee should be formed to confer with these men to settle the question.

Mr. Hancock observed he agreed with Mr. Moore that the men would expect something, but if they went to the places they would feel indepen-

dent, so to speak, if they paid for accommodation. Now they went haphazard, as it were, and were privileged beings. If the men said they could not attend to them they had their journey for nothing.

Mr. Woodger stated he had made numerous *post mortems*. One objection to the slaughter-houses was that, if one asked for a particular part of an animal, one could not be certain of receiving it. Of late years he had not visited any of these establishments, always making *post mortems* at his own place; gave the knackermen a few shillings to bring the animal over. He found knackermen obliging. If one place was established they would not get one tenth of the veterinary surgeons to support it.

Mr. F. W. Wragg understood Mr. Banham desired them to have proper *post mortems* made, *i.e.* a scientific *post mortem*. Did not see how those made by knackermen could be called scientific. If they had a room at any knackerman's premises he would not pay for the carcase if it was to be kept waiting for such *post mortem*, and he thought they had but few clients who would forego the sum paid in order to have a *post mortem* made in a scientific manner.

The *Secretary* thought Mr. T. Moore's idea a novel one, which, if acted upon, would necessitate the setting apart of one or two evenings every year for considering subjects obtained from *post mortems*, as the knackerman might think almost everything worth saving, and they would become overstocked with specimens. The idea certainly had its humorous side as well as a practical one. It was unpleasant to visit the slaughter-houses, get besmeared with blood and dirt, and have no accommodation for washing, and also feel that they for the time being were self-invited guests or interlopers. Had never met with any incivility, and was always furnished with the specimens he asked for. There would always be a difficulty in approaching these places. Did not like to make a *post mortem* at home, as it caused a crowd of people to congregate as if it was a nine days' wonder.

Mr. Shaw thought, as far as ablution requirements were concerned, that might easily be remedied. The proprietors of these establishments complained strongly of the veterinary surgeons keeping carcases waiting so long for *post mortems*, thereby rendering them useless.

Mr. Hancock thought that was the exception rather than the rule. Once he required a part from an animal that had died from hæmoglobinuria, and the knackerman cut out a large abscess and showed it to him, and informed him that was the cause of death. He thanked him, but looked elsewhere.

Mr. Banham said he was rather surprised at the turn the discussion had taken. He could not see how any report given by a knackerman of any disease could be instructive, whereas a veterinary surgeon's report would be useful. Had no very great objection to Mr. Broad's suggestion of renting part of one of the present establishments to start with, if the proprietor would fit up a room for them; this he thought questionable. Mr. Gerrard he understood not to complain of the places, but of want of time for investigation; he presumed, therefore, that he considered the conveniences afforded sufficient. The same gentlemen had also suggested that the Royal Veterinary College and the Brown Institution are the proper places for carrying out *post-mortem* examinations. He did not agree with this view, and considered a hospital was not a proper place. With reference to Mr. Gerrard's accusation against the officers of the institutions just named—of either taking no interest in their profession and work, or of neglecting their duty—he felt bound to notice and reply thereto. He was unaware that the officers of either of

them were bound to examine specimens, much less report upon them, and was sure due attention was always paid to specimens, if considered sufficiently important, and the officers of these institutions gratefully acknowledged any properly-preserved specimens. Town or country practitioners sent them, but very many such, when they arrived, were so decomposed as to be valueless. He did not consider there would be any difficulty in finding a man qualified for the post of veterinary pathological anatomist, if a lucrative post were vacant. So far as the civility of the men at the slaughter-houses was concerned his experience was it was proportionate to the money they expected to receive; but in the establishment he had depicted the men would comparatively be bound to be civil, and the practitioner might do as he pleased with the carcase. Mr. Charles had uggested the difficulty of raising sufficient funds; but he believed, if their Council purchased a suitable building, funds would not be wanting; they could be raised by sending circulars round to members, asking them to invest, but, before they contemplated difficulties, he thought it would be well to form a committee, and see what could be done towards establishing such an institution.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

The usual quarterly meeting was held at the Queen's Hotel, Leeds, on Tuesday, the 20th April, the President, Mr. W. G. Schofield in the chair. The following members were also present, viz. Messrs. M. E. Naylor, Jas. Freeman, J. W. Anderton, J. H. Ferguson, Peter Walker, Parlane Walker, J. E. Scriven, D. Spillman, W. Lodge, and the Secretary. Dr. Goldie, Medical Officer for the Borough of Leeds, and Messrs. R. L. Robertson, and F. A. Cuthbert, Leeds, were present as visitors. Mr. R. L. Robertson, Leeds, was nominated for membership.

The *President*, in referring to the death of Mr. Cuthbert, alluded in feeling terms to the loss the Society had sustained through the death of its respected Treasurer, and moved that a letter of condolence be sent to Mrs. Cuthbert and family, expressive of the Society's deep regret at their recent bereavement.

The proposition was seconded by *Mr. Freeman*, and supported by *Mr. Naylor*.

Mr. J. H. Ferguson was elected Hon. Treasurer, *vice* Mr. Cuthbert.

The *Secretary* read a letter from Mr. Greaves, stating that steps were being taken to obtain a penal clause in a new Bill. After some discussion, in which Messrs. Naylor, Freeman, P. Walker, the President, and Secretary took part, it was unanimously resolved "That this Society support its movement with all available means," and it was also resolved, on the motion of *Mr. Naylor*, seconded by *Mr. Parlane Walker*, "That the President and Secretary draw up a petition to memorialise the Council to press forward the Bill without delay."

Mr. Parlane Walker then read the following essay on "Diseased Meat:"

Mr. President and Gentlemen,—A short time ago our excellent Secretary (Mr. Broughton) did me the favour to come over to Halifax to give his professional opinion on a peculiar case, which was then in my hands; and I should not now have presumed to obtrude myself upon your attention were

it not that, at the instigation of our friend, who, possibly having in his mind the exigencies of his position as Secretary, to provide something at least for your consideration, suggested that I should return him a *quid pro quo* for his able assistance by giving you a paper on the subject of the case, a discussion on which, in his opinion, would be useful to the Society.

Simply for the sake of raising the discussion, the case may be considered under the head of

What is Wholesome and what is Unwholesome Meat?

On the 4th February last I was requested to visit the farm of the defendant in this case, and on my way to the farm I got to know, from disinterested parties, that the cow whose carcase I was going to examine was really hanged, but had been stuck before it was dead. On my arrival I examined the carcase and internal organs minutely, and smelt it all over, and, from the condition of the carcase, the characteristic appearance of the internal organs, as well as from both horns having been knocked off, the whole place bespattered with blood, and that the animal was in a perfect state of health the night before, coupled with the straightforward tale of the defendant, his brother, and sister, I was fully satisfied the animal was strangled, and was stuck before the heart had ceased its functions. On the face of these facts I gave a certificate that it was fit for human food, and the man took it to Halifax Market, and on its arrival it was condemned and burned, and the man summoned. He duly appeared before the magistrates, and was confronted by a member of the sister profession, the medical officer of health for the borough; a M.R.C.V.S.; an empiric; a ruling butcher and a markets meat inspector. The owner of the animal produced my certificate, and, after some discussion, the magistrates adjourned the case for me to appear and defend the certificate. I did appear, in company with my friend Mr. Broughton and my brother Peter from Bradford, The line that the prosecution took was that the flabby nature of the carcase, and the congested appearance of the lungs and softness of the heart and liver, indicated that, in their opinion, the animal had been diseased for some time. The medical officer of health went the length of saying that the lungs, heart, and liver were in a rotten state. This was the kind of evidence we had to refute, and the prosecutor's cross-examination assumed the following shape. I may say, in the first place, we proved that the animal was in a perfect state of health at 10.30 the night previous, and was found almost dead from strangulation at 3·30 a.m.

In cross-examination by the town clerk, assisted professionally by the M.R.C.V.S.—

Question. Did you examine the lungs, and what method did you adopt? *Answer.* I did, in the customary method, with my hands and eyes.

Question. Did you make a section in the lungs? *Answer.* I did not consider it necessary to make a section, being so conversant with the unmistakable appearances of congested lungs from strangulation, having had two cases immediately preceding this one; when once seen, can never be forgotten.

Question. Would you believe the lungs to become dark in colour? *Answer.* I would, from the fact that glandular substance, highly congested with blood and exposed to the atmospheric influences for a short time, soon assumes a different aspect, and might have the appearance and consistency of tar when cut into.

Question. Was the heart flabby? *Answer.* Yes.

Question. Do you consider a flabby heart fit for food? *Question.* It depends on the predisposing causes and the surroundings of the case.

Question. What are the predisposing causes in this case? *Answer.* This poor animal was hung by the neck, probably for a number of hours, struggling with pangs of death to relieve itself, and in the greatest state of excitement and perspiration, until eventually it had to succumb to its fate, almost thoroughly exhausted, is sufficient, in my mind, to soften the heart of any animal, and for it to remain so.

Question. Did you examine the liver, and how did you find it? *Answer.* I found it congested, in like manner as the lungs.

Question. Would you believe it to be watery when you examined it? *Answer.* Quite possible that the blood had begun to break up, and the liquor sanguinis had left the solid parts, and might even be oozing through Glisson's capsule.

Question. Would, in your opinion, the carting of the carcase nine miles have a tendency to soften it? *Answer.* Very possibly.

Question. Do you consider soft meat fit for food? *Answer.* It depends on the predisposing causes.

Question. Can you give any predisposing causes in the case in question? *Answer.* Yes; this cow was in milk and lean, and every one knows that the principal stiffening agent is the adipose tissue or fat it contains, the great exhaustion the animal suffered. It is an authenticated fact that a hare run to death is not so firm or valuable in the market as the one that has been coolly shot. In a man strangled the rigor marks are very mildly developed, and this might also hold good in the lower animals.

Question. Don't you know that this animal died of pulmonary apoplexy? *Answer.* We have no such disease in cattle.

Question. Suppose we call it, instead, congestion of the lungs? *Answer.* I have never found congestion of the lungs as an independent disease in cattle; it is always accompanied with some mechanical agent, such as a potato or turnip in the throat, or from strangulation; and the only case I know on record of congested lungs, as an independent disease, arose at Smithfield Show, London, and which was caused by plethoric animals inhaling a dense foggy atmosphere. Of course, we have congestion of the lungs on the first stage of inflammation.

Question. Do you consider dark-coloured meat fit for food? *Answer.* It depends on circumstances.

Question. Suppose this animal was dead a few hours before it was stuck, would you consider it fit for food. *Answer.* I do, inasmuch as in a few hours there is no time for diseased products to get developed in the blood; if otherwise, why do not hares, rabbits, and other animals that are trapped and ginned come under the category of unwholesome food?

Oral confirmation of this evidence was given by Mr. Broughton and my brother, and written confirmation of our position was produced in court from Professors Williams and Axe; Messrs. Greaves and Taylor, Manchester, and Robinson, Greenock; and the case against the owner of the animal was dismissed. You will see from this cross-examination that the evidence in support of the case against the owner was altogether lame.

What did the medical officer of health know about congested lungs from strangulation and the appearances they present when for some time exposed to atmospheric influences? In his cross-examination he said the appearances of the lungs in question were not what he would expect to see from strangulation. I infer from that—and I have it on good authority too—that he never saw congested lungs from strangulation in his life, either in the human subject or any of the domesticated animals.

When we returned from court the carcase of another animal was in my yard to be examined, which had been slaughtered at my suggestion owing to prolapsus of the uterus; the history of it was well known and a certificate was given that it was wholesome. This case, too, would have been fought, but the animal belonged to a gentleman so that they did not care to encounter; consequently it was passed. A great deal of misconception obtains as to what is wholesome and unwholesome food, and of course it very much depends upon the antecedents of the case, and these two cases only indicate on what slender hypotheses meat is condemned, and how necessary it is to defend your own well ascertained convictions, these two carcases were undoubtedly fit for human food. The prevailing method of judging meat is to have it firm, bright, and clean, and to examine the internal organs and see that they are free from disease. This is a very safe system, but it does not hold good at

all times, inasmuch as an animal that has suffered from some purely mechanical lesion, and undergone more or less exhaustion, the meat of such will be more or less soft and moist, but still fit for food. I maintain the more an animal suffers from irritative fever and exhaustion that you have a corresponding amount of softening of the muscular and other tissues. Take, for example, a horse which has been over-driven, and dies from sheer exhaustion. On *post-mortem* examination, we find the whole of the internal organs and muscular tissues soft, hence the wisdom of allowing animals to rest after a fatiguing journey before slaughtering them. Another erroneous practice of condemning meat is from its dark colour. Now, meat may have a dark appearance and yet fit for human food, inasmuch as an animal that has been chased and heated, and then immediately killed, will be more or less flabby and dark coloured. Again, an animal which has suffered from irritative fever or any internal lesion, the carcase will have a tendency to be dark coloured. I believe it sometimes happens that as soon as the animal is struck with the pole-axe, death takes place at the heart, consequently, bleeding under such circumstances will not be favorable, and the meat will have a dark appearance. Even under the most favorable circumstances of bleeding the blood is not all expelled from the system; it is the blood which gives the reddish colour to the flesh, and why should a little extra blood left in the vessels constitute unwholesome meat? So long as the blood is pure the blood is the life thereof, and a commodity that is in daily use. It was affirmed in court by the veterinary surgeon for the prosecution that no correct judgment could be given until the animal had been dead twenty-four hours. This seems to me a wild proposition. Rather ought we to be able to give a sound opinion immediately after the carcase is hung up and the internal organs examined, providing the history of the case has been also ascertained. Without this it would be impossible in many cases to give a correct opinion whether it had been dead twenty-four hours or not. And here I might advance that it would be a wise precaution to give no certificate without having first either seen the animal suffer or ascertained reliably its previous history; and further, asking your forbearance in going a little wide of the declared object of this paper, how necessary it is that we should prepare ourselves, with all the care and support that our profession offers, in defending our position and opinion. We have to encounter medical gentlemen with all their distinguishing titles, and the weight that those titles too often impart, when the bearer of them trespasses upon our domains, the experiences of all of us will bear witness to this. How many times have medical gentlemen come into court, and given evidence on things they clearly do not understand touching our profession, and where, if the least preparation had been made by members of our profession, the opinion of these medical gentlemen would be shown to be fallacious? There are some things in animal pathology that they may be able to speak accurately upon from their experience of the human subject; but there are more things in heaven and earth than even they dream of in their philosophy. Let us, then, be undaunted even though we have to encounter a physician or two. It is astonishing what ignorance prevails amongst them when they get out of their own groove, and you would laugh were I to give you the manifestations of this that have come to front in my town. I have already trespassed upon your time more than I intended, and my object is not to offer you a scientific paper, and I should therefore content myself by suggesting a few practical hints on the reverse side by shortly enumerating what I think constitutes unwholesome meat. It is a prevailing practice here to certify as wholesome food animals that have suffered and even died from parturient appoplexy. This I consider highly reprehensible, because it is evidently a blood-poisonous disease, which is highly contagious in the human subject, and in my humble experience in the lower animals also. Again, an animal suffering from phthisis in my opinion is unfit for food, for how often have we found fat, well fed animals, when killed, positively full of tubercles, and no purer meat in appearance came into the market, the adipose tissue as white as snow?

I would go the length of saying that the milk of such animals is injurious. Yet who will say that such animals do not find their way into our butchers' shops? It is a disease that is very prevalent in this district, and I think it calls for a stamping-out process in any animal as soon as it manifests itself, for I believe it to be contagious. And, not to weary you, should it not be admitted that all animals suffering from blood-poisonous disease are unfit for human food? Also braxy in sheep and typhoid fever and measles in pigs come under the same head. These opinions are not advanced in any dogmatic spirit, but simply to excite discussion and to strengthen ourselves to meet these knotty cases which must from time to time confront us. In conclusion, I thank you for your kind attention, and I trust the homely character of this paper may be of some use. I shall be glad to hear an animated expression of opinion and find that the subject matter is not undernoticed.

In the discussion which ensued Mr. Freeman made some remarks on tuberculosis or calcareous deposits, stating that, in his opinion, the deposits were often caused by the nature of the soil upon which the animal was grazed.

Dr. Goldie said that he was pleased to be present upon this occasion. He thought that medical officers of health were fully qualified to examine and determine as to the condition of the internal organs of animals, and whether the flesh of animals was fit for human food. He also detailed the different modes of slaughtering animals as practised in this country. He also exhibited some specimens of diseased lung tissues, and pointed out the different pathological appearances presented.

The discussion was carried on by Messrs. Peter Walker, Freeman, Anderton, and the Secretary.

Mr. Freeman exhibited a remarkable specimen of osteo-porosis.

A vote of thanks was unanimously accorded to the essayist, proposed by *Mr. Naylor*, seconded by *Mr. Freeman*.

A vote of thanks was also accorded to Dr. Goldie for his able remarks upon the subject matter of the essay.

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

(*Continued from p.* 360.)

Professor M'Call afterwards offered the following remarks upon stricture or hour-glass contraction of the stomach of the horse:

With stricture of the œsophagus veterinarians have for long been intimately familiar, as also with various abnormal conditions preventing the free passage of food into and out of the stomach; but with the form and site of stricture to which I am about to refer it is otherwise, and, indeed, it is highly probable that it has to be described for the first time. As it is my desire to appropriate the support which this case gives to my ideas upon the subject of vomition in the horse, I shall, at the outset, refer to a few of the anatomical peculiarities of the œsophagus and stomach of the equine species.

Œsophagus.—The œsophagus is composed of muscular tissue and mucous membrane. The former is arranged in two layers; the superficial fibres run in a longitudinal, the deep in a spiral and circular direction. A little anterior to the point where the œsophagus terminates in the stomach, or

rather, is formed into the anterior or left half of the organ (for I think there can be no doubt as to the anterior half of the stomach of the horse being a continuation and a dilatation of the œsophagus), the muscular fibres become increased in number and thickness, and the tube itself *considerably narrowed in its calibre*. This narrowing at the cardiac end is so marked that the loose folds of mucous membrane in the non-dilated or quiescent state of the tube fill it to repletion, and, moreover, to the extent that *neither fluid nor solid can enter from the stomach into the œsophagus*.

If, for example, we introduce—as I have repeatedly done—the nozzle of a water-pipe into the œsophagus, the stream of water will wash out the contents of the stomach into the duodenum; but when we reverse the order of procedure—that is, insert the nozzle into the duodenum—neither liquids nor solids can be forced into the œsophagus. In short, if we tie the pipe within the duodenum, the pressure will rupture the walls of the stomach, and yet not a drop of liquid has forced an entrance through the cardiac orifice into the œsophagus. In all other of our domestic animals, and in the human subject, the œsophagus is as wide, if not *wider*, at its *cardiac extremity* as elsewhere, distinctly *funnel-shaped*, and the contents of the stomach can be washed into the œsophagus, or *vice versâ*, as desired.

Stomach.—The stomach of the horse is a single organ, but at the same time it might be affirmed, with equal truth, that this animal has two stomachs as that the ox has four. Veterinarians are familiar with the fact that internally the one half of the mucous membrane of the organ differs from the other; that the anterior half does not secrete gastric juice; beyond this, little more has been recorded.

If we carefully dissect and trace out the arrangement of its muscular and other structures, several important additions reveal themselves. When we distend the walls of the stomach with water or air, and ligature the cardiac and pyloric orifices, we observe that the organ is *constricted* in the *middle*, divided into two compartments, and the line of cleavage almost corresponds to the points where the cuticular and villous portions of the mucous membrane blend with each other. In some stomachs this line of division is very marked; in all it exists and divides the stomach into a left and right cul-de-sac, or cardiac and pyloric fundi. This division of the stomach into two parts results from a difference being observed in the distribution of the muscular fibres forming its walls, and is the reason for the statement made—that the left, or cardiac portion of the stomach is a continuation of the œsophagus, and nothing more. Now, what is the arrangement? If we boil a stomach, macerate another, and have at the same time a fresh stomach at command, with care we make out that the muscular tissue is arranged in three layers, or planes, as most accurately described in 'Chauveau's Anatomy,' and to which I refer those members who may desire to study the subject in detail. The superficial plane is a continuation of the *longitudinal* fibres of the œsophagus, or, if you prefer it, they are continuous with it. This layer more or less envelopes the whole organ, *and is thickest upon the cardiac portion*. In the middle layer the fibres run in a circular direction, and spread over all the stomach, and are thickest around the pylorus to form the sphincter. The deep layer is by far the *thickest* of the three, and is principally *concerned in forming the cardiac portion*. The structure and distribution of these muscular fibres, and their lacing and interlacing, explains why the stomach is and must be constricted in the centre; how the walls of the cardiac compartment are thicker than those of the pyloric fundus, and distinctly points to the conclusion that *considerable more muscular power* is needed to press or propel the food through the cardiac orifice, and along the left than the right cul-de-sac. In support of the inference which

I have drawn from a study of the arrangement of the fibres of the organ, I now produce the stomach of a horse which, as you will observe for yourselves, is divided into two distinct compartments in the line of division to which I have just referred. The case being unique in many respects to me, I have consulted all the literature which is to be found in veterinary works on diseases of the stomach, and upon which I could place my hands, but nothing akin to this stomach has been referred to. In human medicine, as an abnormality, "hour-glass contraction" of the stomach has been recorded, and apparently I would be justified in classing this as "hour-glass contraction" of the stomach of the horse; but, be this as it may, I prefer speaking of it as *stricture of the stomach in the median line.*

The following is the history of the case:

At the date of the animal's death he was nine or ten years of age, had been in the possession of his owners for upwards of three years, and was employed drawing wood. For the first eighteen months or so he did well, and to all appearances was a sound, healthy animal. About eighteen months prior to his being slaughtered, Mr. Mitchell, M.R.C.V.S., Cranstonhill, was desired to pay the animal a visit. Upon that occasion he found the horse presenting symptoms of colic, with attempts to vomit, but which were ineffectual, inasmuch as the food did not make its appearance. Fancying that a pin or some body might be lodged about the base of the tongue or pharynx, Mr. M. explored the parts, but failed in discovering a cause for the unusual symptoms of vomiting. Medicinal agents were administered, and in due course the animal got well. About a month after this Mr. M. was again desired to attend the horse, and upon this occasion he found his patient vomiting food by the mouth and nostrils. The food had a bad smell, and in the act of vomiting the abdominal muscles were powerfully contracted, the neck arched, and the head drawn towards the chest. Under treatment, the animal again recovered; but, at irregular periods of time, he had renewed attacks of abdominal pain, with vomiting of food. Gradually he fell off in condition, lost spirits and appetite; the vomiting and emaciation becoming more pronounced, he was at Mr. Mitchell's desire slaughtered.

Morbid Anatomy.—The stomach larger than usual, and upon its exterior presenting an appearance as if a ligature had been applied so as to divide it into two compartments in the median line, the line of division corresponding to the natural raphæ, to which I have referred at some length. A section of the wall of the cardiac half or compartment of the organ demonstrated enormous hypertrophy of the muscular fibres, but a similar section of the pyloric half demonstrated no increase of tissue. At a glance, the conformation of the œsophagus as it ends in the stomach is observed to be abnormal. Instead of being narrower, it is wider than at any other portion of its course, and is *funnel-shaped* and not unlike the appearance presented by the œsophagus of the pig and dog—animals which are known to vomit with facility and without pain or nausea. Continuing our investigation, we find that the line of constriction, so pronounced upon the exterior of the organ, corresponds to a hypertrophy of muscular tissue in an annular direction, and that hypertrophy is so great and complete as to divide the interior of the stomach into two distinct compartments, communicating with each other through a circular orifice only six inches in circumference. The cardiac half is the larger of the two compartments, and its cuticular investment is deficient in irregular patches all over its surface, but ulcerative disease has not commenced. Professor M'Call promised to report further when he had completed his examination of the stomach.

Professor Walley next introduced an instrument, which may be called a

"Compound Puncturator, Irrigator, Aspirator, and Drainer," and in doing so said:

Some time ago I directed the attention of the members of the Scottish Metropolitan Association to the beneficial effects of deep and repeated puncturing of indurated glands and fibromata. The good to be derived from the same operation in orchitis, mammitis, and parotiditis, is, I presume, well known to most of you. Hitherto, the instrument employed by me for the purpose indicated has been a fine exploring needle, a suture-wire director, or a narrow-bladed bistoury, the use of either of these instruments necessitating frequent introduction and withdrawal, in order to accomplish the desired end. While puncturing a fibroma in the *levator humerus* of a horse, one of my students, who was assisting me (Mr. Wm. Calvert), asked if an instrument could not be constructed for the purpose of inflicting several punctures simultaneously. My answer was in the affirmative, and on thinking the matter over, I determined to utilise the same instrument for several other purposes. After a short correspondence with a London firm (Messrs. Evans and Wormull), I succeeded in conveying my ideas to them with sufficient clearness to enable them to manufacture the instrument which I now introduce to your notice. Before describing it I must assume that you are all acquainted with the benefits to be derived from *irrigation* with stimulants of certain forms of growths, and with antiseptics of sloughing erysipelatous and carbuncular tissues, as also with the use of *drainers* (canulæ) for the dispersal of œdematous swellings. The instrument consists of a brass rose, into which are fitted seven short tubular projections; these again being provided with seven (movable) tubular needles, each having three or four perforations, at short intervals, a little distance from the point. By the use of small plugs, one only of these needles, or as many as may be desired, can be employed at once. For the purpose of puncturing, the rose is fitted on to a large ebony handle, and for the purpose of aspirating, or of irrigating, on to a four-ounce brass syringe. When required to act as drainers, the needles may be introduced separately, and allowed to remain *in situ* as long as may be thought necessary. The syringe is also provided with a movable nozzle, so that it may be utilised as an ordinary syringe. The instrument is not yet complete, as I intend to have it fitted with a much larger tubular needle, so as to admit of its being used for intravenous injection, or for aspirating the bladder of small animals, or superficial cysts of any kind. Further, a graduated piece of glass introduced into the side would be of great advantage, as would also several other nozzles of different sizes.

He then showed another instrument, which may be properly named "Walley's Compound Tubular Brace, with Surgical Bits," and in explaining its uses said:

In operating upon the rectum for fistulæ, abscesses, hæmorrhoids, &c., of large animals, in operations in the uterus, cervix, or os uteri, as for removal of tumours, in operations on the soft palate and posterior part of the mouth, and in embryotomy, I have sometimes felt much inconvenienced by not having a concealed instrument sufficiently large and powerful to be manipulated from the outside, without having to carry a small instrument into the cavities mentioned concealed in the hand. Reasoning upon the matter, I resolved to attempt the construction of an instrument which might be utilised in a variety of ways. I have here, then, a flattened tube composed of German silver and brass, with a chequered ebony handle, the whole measuring eighteen inches long. The handle conceals a screw, and the tube a steel staff (the screw and staff being continuous); the former attached to and worked by a small brass wheel at the end of the handle, the latter being provided at its free extremity with a movable slot, for the

purpose of receiving any instrument which the operator may desire to use; into the slot I can introduce a straight, probe-pointed Chassaignac, convex or round-pointed bistoury, a vulsellum forceps, a blunt and sharp-pointed hook, a saw, a hook-knife, a seton needle, a wire or chain écraseur, a spatula, trocar and canula, or any other instrument I choose; all the above mentioned, with the exception of one or two, can, by the aid of the screw, be drawn into and concealed by the tube, and projected to any length required. If it is thought desirable, the blade may be made much stronger; and further, I intend to have a short handle made so as to utilise them—with drawing knives—in other ways.

I also introduce a small instrument for the pocket-case, so constructed as to enable it to be used as an exploring needle, wire suture director, small trocar and canula, and milk syphon. The last two instruments were manufactured by Mr. Tennant, Teviot Row, Edinburgh.

JAMES ANDERSON,
Hon. Secretary.

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

A QUARTERLY MEETING of the Society was held in the London Hotel, Edinburgh, on Monday, the 3rd May, for the purpose of hearing a Paper read by Mr. Fleming on the "Spontaneous Development of Contagious Diseases." This being also the date of the Annual General Meeting of the Royal College of Veterinary Surgeons, there was a very large attendance of members and other veterinary surgeons from a distance.

In the absence, through illness, of the President, Mr. Connochie Selkirk, the chair was occupied by Mr. Borthwick, Kirkliston. Mr. W. S. Low, V.S., Burntisland, was elected a member of the Association.

Mr. Fleming then proceeded to read his paper, but press of matter obliges us to defer the paper and the discussion thereon till a future number.

On the motion of *Professor Walley*, a vote of thanks was accorded to Mr. Borthwick for presiding, and the meeting then terminated.

JOHN MCFADYEAN,
Secretary.

NORTH OF IRELAND VETERINARY MEDICAL ASSOCIATION.

A MEETING of the North of Ireland Veterinary Medical Society was held in the Thistle Hotel, Belfast, on April 22nd, 1880, J. B. Duncan, Esq., M.R.C.V.S., in the chair.

Present:—Messrs. Doris, Brown, Drummond, Kernshaw, Giffen, Simcocks, Dunlop, W. J. Johnson, and the Secretary. Visitors:—Professor Williams, T. Greaves, F.R.C.V.S., W. S. Core, M.D., H. Torrens, M.D.,

H. B. Murray, Surgeon, and K. J. Urquhart, Veterinary Student. A large number of letters of apology received by the Hon. Sec. were read to the meeting.

The minutes of the previous meeting having been read and affirmed, Mr. Dunlop vacated the chair in favour of the incoming President for the current year, J. Doris, Esq., Cookstown.

The *President* read his inaugural address, dealing with several of the leading questions now on the *tapis* in a masterly manner. The President afterwards exhibited an unique specimen of scirrhous cord.

An interesting discussion followed, in which Professor Williams, Messrs. Chambers, Simcocks, Dunlop, Greaves, and Kidney took part.

Mr. J. B. Dunlop then related a most interesting case of puncturing the bladder per rectum.

Professor Williams, Mr. Greaves, and others, criticised the case as recounted by Mr. Dunlop, the general opinion being very favorable to the successful operation as performed by Mr. Dunlop.

Professor Williams next addressed the meeting on the practical treatment of disease, &c. The professor exhibited Volkmann's instrument, which he specially advocated as being efficacious in the surgical treatment of splint. He also exhibited Chassaignac's drainage tube, and especially recommended its use in obstinate cases of quittor, &c. In the treatment of wounds Professor Williams prefers as a deodoriser carbolised water to carbolised oil. The professor next touched on the subject of constipation, expressing his opinion that the removal of constipation by forcible means was often calculated to defeat its own ends, aloes, for example, being often eliminated from the system by the kidneys. He believed in the non-purgative treatment in enteritis, and said, to secure a beneficial result by the administration of opium, it must be exhibited in large doses, say—Pulv. Opii ʒj, or Tinct. Opii ʒviij, or in injection of morphia gr. viij to be used. Professor Williams also referred to tetanus as being peculiar to certain districts and drew attention to the different methods of treatment now adopted—nitrite of amyl, Calabar bean, subcutaneous injection of morphia, and drew special attention to the good results which he had seen follow the administration of bromide of potassium.

Dr. Core, Dr. Torrens, Messrs. Greaves, Simcocks, Dunlop, and the Secretary having spoken to the address by Professor Williams,

Mr. Greaves, F.R.C.V.S., read a paper on "Veterinary Medical Association," drawing special attention to the "penal clause," compulsory apprenticeship, preliminary examination in hands of council and examiners to be veterinary surgeons only. Mr. Greaves spoke on veterinary medical associations as follows:—In rising to make a few observations on veterinaey medical associations, although to many of you I am personally unknown, I am not really so to all, since it will be remembered that I had the honour to take part in the inauguration of another, in fact, the only other veterinary medical association in Ireland in 1869. I may remark that I entertain strong opinions of the great value and importance of these associations, having taken a deep interest and an active part in them from the first, *i.e.* over twenty years, by being either a member or an honorary associate of every association in England and in Scotland. I may, therefore, be permitted to feel that I can speak of them with some authority; and at my time of life, having been actively engaged nearly forty-six years in my profession, much of this time I have occupied (as President of the Royal College of Veterinary Surgeons or member of Council) a leading position, acting a part which has in some degree given a tone and direction to my profession, I hope and ask that I may be excused if I assume to myself a standpoint which will enable me without egotism to offer some advice to

my professional brethren generally, and to this Association in particular. In the term of life I have indicated I have in all my writings, addresses, and votes endeavoured to ventilate and keep prominently to the front the various subjects and reforms which the more advanced thinkers have considered were necessary to the wellbeing of our common profession. We have carried during the last few years to a successful issue ten important measures, which I have enumerated in one of my papers; we have four other important measures, as I have also shown, and which I am anxious to see if possible carried to a successful issue before I die. They are:—1st. "The Penal Clause;" 2nd. "The Apprenticeship Clause;" 3rd. "The Preliminary Examination of the Student when he enters College placed in the hands of the Council;" 4th. "The Court of Examiners composed of veterinary surgeons only." Hope is strong within me that these things will be done, but in respect to what has been done, allow me to say we are much indebted to our late President, Sir Frederick Fitzwygram, and to the various veterinary medical associations in developing public opinion, and bringing a sort of pressure from without upon the Council, and we shall look to you to lend us your powerful aid in future. At this very moment they are exercising this power (and let me tell you here they are a power, and a great support to those members of Council who urge on popular measures) by memorialising the Council to at once apply to Parliament to obtain an Act of Parliament to secure for the profession the penal clause! At the last meeting of Council, a fortnight ago, Mr. Fleming moved that we apply to Parliament for this Act, Mr. Whittle seconded it, and I supported it. A committee was appointed to draw out a form, and a rough draft will be laid before the Council at our next meeting in July, when it will be discussed. I feel little doubt there will be severe opposition to it, and it will materially strengthen the hands of those members who are in favour of progress if this and every other association will petition the Council to apply and if possible obtain for our profession this just and long-desired measure. The Lancashire Veterinary Medical Association, at their meeting last week, took action. They unanimously decided to memorialise the Council to this effect, and offered to contribute their quota of the expense; the Yorkshire Association has done the same. You will perceive by this that you can serve your profession in more ways than one; but this is when an influential body like you decide resolutely to act your part. I wish here to remind you that there are many ways in which these associations can render important services to the profession generally, as well as to each member individually. They create a better opinion and feeling within us towards each other; they tend to beget and develop a more correct knowledge of each other's disposition and intellectual status; this fosters a better acquaintance, a greater confidence and friendship. They have a great power in restraining within us any desire for detraction or a feeling of animosity arising from envy or jealousy; they often bring about a better understanding between competitors, changing enmities for fast friendships; they give opportunities to correct false and unjust impressions or opinions of each other's character, and which may have rankled in the breast and tended to embitter each other's life; but besides all this, we improve one another, become better practitioners, and more useful members of society. This must follow as the day does the night when we frequently meet, discuss, and interchange ideas on scientific and practical subjects in a frank and proper spirit. I have never attended a single meeting without deriving some information which has benefited me, and I could take home with me and apply it to some useful purpose, and in this way the associations have laid me under a deep debt of gratitude to them. In conclusion, let me beg of you most earnestly to remember—that every-

thing depends upon ourselves individually to make our profession what we wish it to be; let us never show a carelessness, an indifference in the performance of our duties; let us be diligent and industrious, cultivate kindly, pleasant, and agreeable manners, be gentlemanly and honorable to each other, and in all we do, avoid above all things making charges out of all proportion to services rendered; and then I say it must follow, as the day does the night, provided always that we possess a thorough practical knowledge of our business, that we shall be able to make and sustain a character and position for ourselves which will be everything we can desire.

An animated discussion followed the reading by Mr. Greaves of his highly interesting paper, after which it was proposed by *Mr. Kidney*, seconded by *Mr. Bradshaw*, supported by *Messrs. Simcocks* and *Dunlop*, and carried unanimously, that the North of Ireland Veterinary Medical Society do petition the Council of the Royal College of Veterinary Surgeons in favour of the penal clause.

Votes of thanks having been accorded to the outgoing office-bearers, to Professor Williams, Mr. Greaves, and the other visitors, a most successful meeting was brought to a close. A pleasant time in fraternal gossip was enjoyed after dinner, whilst inhaling the soothing properties of the fragrant weed.

GEO. KIDNEY, *Hon. Sec.*

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

A GENERAL meeting of the members of the above Society was held in the Medical Institute, Liverpool, on Friday, 14th May.

Present:—The President, Mr. P. Taylor; Messrs. Thos. Greaves, A. L. Gibson, R. S. Reynolds, Jas. Storrar, R. C. Edwards, Wm. A. Taylor, E. Faulkner, Wm. Whittle, and the Secretary.

From the reports of the Secretary and Treasurer, it appeared that the Society now consists of 200 members, and the accumulated funds to upwards of £1500 clear of all liabilities.

Since its formation, the Society has pecuniarily and otherwise assisted in a great number of cases, and the necessity for such a society abundantly proved. It was especially urged on the members the necessity of their paying in their subscriptions as early as possible, and saving the time of the officers (who are all honorary) being applied for the purpose of dunning.

Votes of thanks having been passed to the officers for their past services, the following gentlemen were appointed trustees, and instructed as to the investments of the funds:—Messrs. P. Taylor, Greaves, R. S. Reynolds, and Whittle.

The other officers were unanimously re-elected:—President, Mr. P. Taylor; Vice-President, R. S. Reynolds; Treasurer, Thos. Greaves; Hon. Secretary, Geo. Morgan; Council, Thos. Taylor, Wm. Woods, Wm. Whittle, Jas. Freeman, Wm. Broughton, J. S. Carter, Jas. Storrar, Francis Blakeway.

Considerable discussion arose as to the correct meaning of Rule 8, referring to the powers of the Investigation Committee, and an amend-

ment of this rule proposed, by *Mr. Greaves,* was ultimately carried, in advocating which he made the following remarks:

Your officers have an authority to interview the defendant and hear from him his statement of the case before we form our opinions. In some cases we had an opportunity to interview the plaintiff, and then found our first opinion was an incorrect one. I maintain, therefore, that it is your duty to authorise us to seek an interview with the plaintiff if possible, and thus be better enabled to lay the true facts before the Council. In one case in which your officers acted thus, they saved the funds of the Society £40, in another, in which they were prevented doing so, although they had a strong inclination, the Society was mulcted upwards of £90, which might have been saved had we possessed such a rule as follows:—"That in every case the officers shall have the power to seek an interview with the plaintiff as well as the defendant, and if in their opinion it will be for the interests of the defendant and the Society, to endeavour to arrange terms of settlement, subject to the approval of the Council." I am emboldened the more to urge this in consequence of the fact that in every case we have had an interview with plaintiffs, we have found them open to reason and desirous of settlement. I am aware few solicitors would advise this course; their cry would be you are sure to win, while the opposition use precisely the same argument, but I say it is by far the best for these cases to be fairly considered, and decided by the common sense of a council of experienced veterinary surgeons.

After an expression of opinion by the various gentlemen present, the amendment was ultimately carried, to be read along with Rule 8.

After a vote of thanks to the President for his services in the chair, the meeting terminated.

GEORGE MORGAN,
Hon. Sec.

NEW MEMBERS OF THE PROFESSION.

AT the meetings of the Scottish Section of the Court of Examiners of the Royal College of Veterinary Surgeons, held in Glasgow, on April 13th, the following students from the Glasgow Veterinary College received the diploma, and were admitted members of the profession:

Mr. Allan Pollock Blue . .	Eastfield, Mearns, Renfrewshire.
— Thos. Cunningham Bowie .	Kilbarchan, Mearns, Renfrewshire.
— Thos. Anderson Douglas .	Fenwick, Ayrshire.
— Richard Hughes . . .	Llanarmon, S. Wales.
— Wm. Jas. Gray Johnson .	Fountainville, Belfast.
— Alexander Milligan . .	Cornwall, Wigtonshire.
— Jeremiah McCarthy . .	Leap, Co. Cork.
— George Hill Pollock . .	Bridgeton, Glasgow.
— William Stevenson . .	Howwood, Renfrewshire.
— Robert Stevenson . .	Hassall Street, Newcastle, Staffordshire.
— James Wyper . . .	Vincent Street, Glasgow.

Messrs. Blue and Hughes were distinguished by having passed with *Great Credit.*

The following students passed their Second Examination at the meetings of the Court of Examiners held on April 19th and 20th:

Mr. Michael Yeats Lees.
— Alexander Macadam.
— Frederick Foster
— James Arthur Gosling.
— Robert Glass.
— William Watt.
— Henry Rogers.
— Richard Ebbett.
— Robert Roberts.
— Hugh Bradley.
Mr. John Freeman.
— Jas Morton Howat.
— William Pettigrew
— John Blackley.
— John Smith.
— John Taylor.
— Robert Black.
— James Nisbet.
— Thomas Maclay.
— Alexander Crighton.

Mr. John Freeman passed with *Very Great Credit*, and Messrs. Macadam, Gosling, Glass, Watt, Rogers, Bradley and Taylor, passed with *Great Credit*.

At the several meetings of the Scottish Section of the Court of Examiners of the Royal College of Veterinary Surgeons, held in Edinburgh, on April 14th and 15th, the following students passed their Final Examination, and received the Diploma of the Royal College of Veterinary Surgeons:

EDINBURGH NEW VETERINARY COLLEGE.

Mr. James Wood Ingram . .	Manchester.
— Alfred Moritz Michaelis .	Old Trafford, Manchester.
— Frederick James Richmond	Blackpool, Lancashire.
— John Richard Simpson .	Bedale, Yorkshire.
— Arthur Joseph Dobbyn .	Waterford, Ireland.
— William Swithenbank . .	Moorside, Oldham, Lancashire.
— James Johnston Fraser .	Keith, Banffshire.
— George Sandeman . .	Kirriemuir, Forfarshire.
— Archibald Munro . .	Salisburgh, Holytown, Lanark.
— Thomas Caldecott . .	Knutsford, Cheshire.
— George Whitehead . .	Barnsley, Yorkshire.

Messrs. Ingram, Dobbyn, Swithenbank, Fraser, and Whitehead, passed with *Great Credit*.

EDINBURGH VETERINARY COLLEGE.

Mr. Alexander Grey . . .	Edinburgh.
— William Calvert . . .	Middleham, Yorkshire.
— William Ryan . . .	Limerick.
— William Hill . . .	Houghton Regis, Beds.
— Christopher Black . .	Batterstown, Co. Meath.
— Alexander Henderson Gentle	Edinburgh.

Messrs. Grey, Calvert, Ryan, Hill, Black, and Gentle, passed with *Great Credit*.

The following students passed their Second Examination:

EDINBURGH NEW VETERINARY COLLEGE.

Mr. William Woods.
— Thomas Green.
— Isaiah Leather.
— Fredk. Huntington Osgood.
— Frederick Whittaker.
— Henry Cooper.
Mr. William Graham.
— John Jones.
— Charles James Martin.
— John Francis Healy.
— Arthur Frederic Appleton.
— Fred. Eugene Rice.

Mr. James George Bell.

Messrs. Woods, Green, Leather, Whittaker, Graham, Healy, and Rice, passed with *Great Credit*.

EDINBURGH VETERINARY COLLEGE.

Mr. Richard William Burke.
— Thomas Gilchrist.
— James Gibson.
— John Joseph Doyle.
— George Marks Davey.
— Clement Burston.
— Thomas Wright.
— John Bull.
— Wm. Watt Dollar.
Mr. Lionel Llewelin Leach.
— John Alex. Thompson.
— William Fairbairn.
— Robert Beech.
— Patrick Dunden.
— John Beattie.
— William Cassells.
— Peter Manuel.
— Wm. James Powell.

Mr. Robert Wm. Powell.

Mr. Wm. Watt Dollar passed with *Very Great Credit.* Messrs. Burke, Gilchrist, Gibson, Doyle, Davey, Burston, Bull, Thompson, Fairbairn, Beech, Cassells, Wm. Jas. Powell, and Robert Wm. Powell, passed with *Great Credit.*

The following students passed their First Examination:

EDINBURGH VETERINARY COLLEGE.

Mr. Bernard Martin.
— Patrick Daniel Reavy.
— Thomas Cunningham.
— John Rowland Dykes.
Mr. Geo. William Tennant.
— Tom Harrison.
— William Hackett.
— Wm. Johnston Smith.

Mr. Geo. Wm. McArthur.

Messrs. Harrison and Smith passed with *Great Credit.*

EDINBURGH NEW VETERINARY COLLEGE.

Mr. George Phelan.
— Jas. Fraser Murray.
— John Brizill.
Mr. Joseph Abson.
— William Keing.
— Fredk. Percy Carter.

Mr. Colin Campbell.

Messrs. Phelan, Murray, Brizill, Abson, and King, passed with *Great Credit.*

Veterinary Jurisprudence.

John Arnott, of 13, Torriano Mews, Torriano Avenue, Camden Road, was recently summoned for not giving notice to a police constable of the fact that he had in his possession or under his charge a horse affected with glanders and farcy. He was further summoned for leading or driving on the highway the horse so affected. The case having been proved, Mr. De Rutzen fined the defendant £15 and £1 12s. 6d. costs in one case, and 1s. fine and 2s. costs in the other.

John Hales, of 13, Early Mews, Arlington Road, Camden Town, was fined £15 and 12s. 6d. costs for not giving notice of a glandered horse in his possession.

ARMY APPOINTMENTS.

Gazette, May 25th.

VETERINARY DEPARTMENT.—Vet.-Surg. James Edward Elphick has retired on temporary half-pay. The under-mentioned gentlemen to be Vet.-Surgs. on probation:—Henry Thomas William Mann; George Richard Griffith.

OBITUARY.

WE have to record the sudden death of Mr. Douglas Winter, M.R.C.V.S., Enfield. Diploma, April 27th, 1866.

THE

VETERINARIAN.

VOL. LIII. No. 631. JULY, 1880. Fourth Series, No. 307.

Communications and Cases.

REMARKS ON HAY POISONING.

By T. Spencer Cobbold, M.D., F.R.S., Professor of Botany, Royal Veterinary College.

Until I recently perused Professor E. Semmer's brief notice in the May number of the *Revue für Thierheilkunde und Thierzucht* it never occurred to me that any deleterious properties resided in the nearest allies of our little caryophyllaceous chickweeds. The subject is so important in relation to hay-poisoning, and it is so likely that injurious effects from this source may have been overlooked in this country, that I think it desirable to call the attention of the veterinary profession to the matter. According to Semmer (who quotes from observations by Renelt and Paljuta, those by the former authority being recorded in the *Archiv. f. Thierheilk.*, published at St. Petersburg, 1879) Mr. Renelt describes several cases of poisoning from hay which contained much *Stellaria* (starwort). It is not expressly stated that the animals affected in Renelt's cases were cattle, but the title of the paper implies as much (*Ueber den Einfluss des Sternkrautes auf die Hausthiere*). The motion of the animals was awkward, their hinder parts weak and the extremities œdematous. There was fever, sweating, redness of the conjunctiva, a stupefied condition, with frequent inability to stand or walk. The

treatment adopted consisted in changing the food, cold applications to the head, and the administration of saltpetre internally.

Professor Paljuta, of Charkow, described in a separate brochure the pernicious effects of *Stellaria graminea* of the South Russian steppes. A number of oxen of a drove which were fed with hay containing a quantity of *Stellaria* became affected with colic, and seven died. It appears to have been noticed that beasts were frequently ill on pastures where *Stellariæ* abounded; but it is added that the plants when dried in hay lost their pernicious properties in six months.

Of still higher interest is the statement that out of 300 artillery horses, which, during the Crimean War, were fed with hay containing *Stellaria*, no less than seventy fell during the first twenty-four hours, whilst the others remained ill for a long time. It was also further observed that colonists' horses, which had refreshed themselves whilst marching over the wastes abounding with *Stellariæ*, were continually ill. As regards the particular starwort at fault, it seems that the especially hurtful form is *Stellaria graminea*, var. *hippoctona*. This is very prevalent in the Cherson, Ekaterinslaw, and Taurischan districts, being particularly hurtful to animals that have not been previously resident in these localities. Renelt supposes that the poisonous properties of Stellaria are due to the presence of a narcotic principle which, in course of time, becomes volatilised in dry hay and consequently loses its poisonous effect.

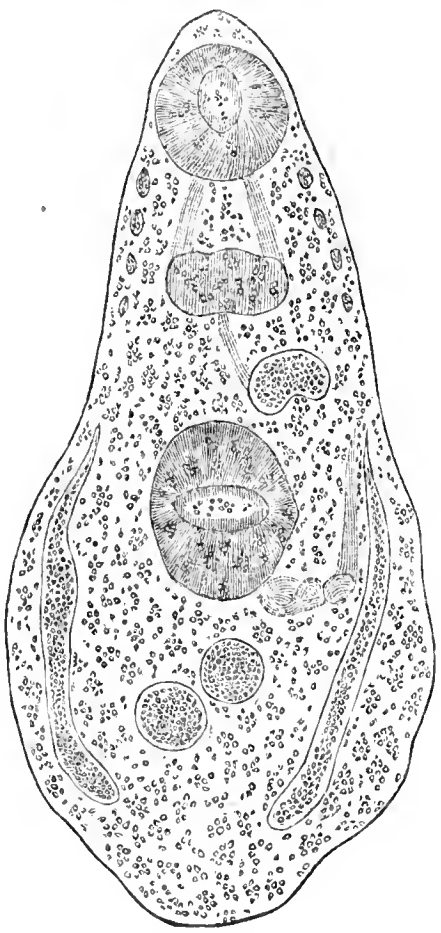
In the June number of Alois Koch's *Revue* Professor Semmer gives an interesting account of the noxious effects of various species of *Equisetum*. These plants, it is needless to say, are rarely present in good upland hay.

OBSERVATIONS ON A NEW TAILLESS CERCARIA (*C. INCISTIDATA*) FROM THE LIVER OF THE ESCULENT FROG.

By Professor Edward Perroncito, M.D., Turin.

In 1874 I found in the liver of a large esculent frog a white-yellowish spherical nodule, equal in size to a hemp seed. Having opened it, a little white-yellowish worm came forth, which was endowed with very brisk contracting and stretching movements.

On examining it with the microscope, it was seen to be a not fully-developed distoma (tailless Cercaria), the description and drawing of which I here subjoin. It has an



Cercaria incistidata, Perr.

approximative shape to Siebold and Bilharz's distoma Heterophies, a maximal length of 3·496 mm., and a maximal breadth of 1·596. Two suckers, one anterior, the other ventral. The transversal diameter of the superior sucker is 0·404, the longitudinal 0·352; the longitudinal diameter of the opening 0·168, the transversal one 0·152. The ventral sucker, too, has an ovular shape, with a longitudinal diameter of 0·500 mm., the transversal one of 0·448; the transversal diameter of the opening 0·260, and the longitudinal 0·188. For its inferior part, and on the right side, is situated an organ, tortuous at its basis, which continues horizontally and on the same side, then rises aloft and becomes thinner and thinner, till it loses itself in proximity to the semilunar body.

Between the two suckers is found a yellow body of a peculiar form, probably representing a very large, strong, and muscular pharynx. It has the transversal diameter of 0·272 mm., the minimal longitudinal one 0·160, the maximal 0·184.

Laterally, on the right of, and above the ventral sucker,

is perceived a similunar body, transversely placed like a gland, formed with a membrane and some cells contained in it. This semilunar body has a total breadth of 0·216 mm., a length (starting from the tangent of the anterior point of the superior curvature to the tangent of the posterior edge of the swellings) of 0·144. The internal swelling has the transversal diameter of 0·108, the internal one of 0·080.

On both sides, laterally to the ventral sucker, issues an apparently globular tube, that extends in forming a curve with its convexity outwards, in the ventral part of the animal. The left ventral lateral tube is long, 0·820 mm.; it presents nearly at the beginning a swelling measuring 0·168; after the swelling it gets a diameter of 0·096, and ends in an obtuse point. The right ventral lateral tube is long, 1·200; it is destitute of a prominent swelling, and has a maximal bigness of 0·120. These tubes consist of elements analogous to those of the above-mentioned semilunar body; they have, however, a darker-yellowish colour, and likely represent the beginning of the two branches of the digesting tube.

In the anterior ventral region, behind the sucker and somewhat on the left, are visible two spheroidal bodies, formed by a capsule and some cellular contents. The capsule is of a connective nature, studded with a great many little round nuclei, brightly reflecting the light, and of the diameter of 1—2 ft. The contents are formed by round cells with a finely-granular protoplasma, with a nucleus and some nucleola.

These two spheroidal bodies very probably represent the testicles. Of these, that which lies below and more on the left, is the larger, and has a transversal diameter of 0·208 mm., the longitudinal of 0·192; the right one, on the contrary, placed almost in the middle line, measures transversely 0·192, longitudinally 0·160.

Now, it is very difficult to detect what species of distoma this Cercaria belongs to, and I never met with any others to try experiments for the purpose. Should, perhaps, this larva have fully developed itself in some animal species feeding on frogs? It is highly probable.

Note by Dr. Cobbold.—This little trematode, of which Professor Perroncito has already given some account in the *Annali della R. Accad. d'Agricolt. di Torino*, forcibly reminds one of the *Distoma luteum* of the common water-snail (*Paludina vivipara*); and, but for the circumstances that Dr. Pagenstecher failed to rear sexually mature flukes in frogs fed with the pupal flukes from the snails, I should have

been inclined to suspect some genetic relation. Comparing Pagenstecher's and Perroncito's figures of *Cercaria incistidata* and *Distoma luteum* respectively, the resemblance is very striking; and, moreover, the size of the sexually immature fluke from the water-snail only about one fourth of the worm from the frog. Obviously, also, Perroncito's pupal trematode, though only called a tailless Cercaria, is structurally somewhat more highly differentiated than the so-called *Distoma luteum* of the snail. It might be worth while to compare Perroncito's Cercaria with the larval *Distoma squamula*, which resides in capsules in the muscles and beneath the skin of the common frog (*Rana temporaria*). If these forms be identical, then, I suppose, that the sexually mature worm resides in the intestine of the polecat. On this subject Zeller's paper in Siebold and Kölliker's *Zeitschrift* (Bd. xvii) should be consulted.—T. S. C.

SYNOPSIS OF CONTINENTAL VETERINARY JOURNALS.

By John Henry Steel, M.R.C.V.S., F.Z.S., Demonstrator of Anatomy at the Royal Veterinary College.

Summary.—M. Jolly on "The Treatment of Charbon by Intravenous Injection of Iodine." *Herr Feser* on "The Transmissibility of Charbon to Fish." *MM. Arloing, Thomas, Cornevin,* and *Perroncito,* on "Quarter Ill in its relation to Arthrax." *Prof. Perroncito* on "Fowl Cholera." *MM. Toussaint* and *Bollinger* on "The Transmissibility of Tuberculosis bovina." *Dr. Willems of Hasselt,* "Preliminary Note on the Bacterium of Pleuro-pneumonia Contagiosa Bovina."

M. Jolly has recently attempted the treatment of splenic fever by means of intravenous injection. M. Bouley summarises his work in the Chronique of the *Recueil* for 15th May, 1880. A typical outbreak of splenic fever took place in the Commune of Gien. In one case M. Jolly observed a black swelling surrounded with serous engorgement occupying the whole of the intermaxillary space. The true nature of these cases was proved by inoculations conducted by MM. Jolly and Chauveau independently.

In 1875 the *Recueil* contained the results that Stanis Cezard obtained by means of iodine medication in charbon; this determined M. Jolly to experiment similarly. In

February, 1875, a case presented itself, a heifer exhibiting all the signs of charbon. The disease had already lasted six hours. Intravenous injection apparatus not being to hand, M. Jolly endeavoured to introduce a solution of iodine into the jugular by means of a small funnel, but this became blocked up by clots, so at last it was determined to administer the iodine solution in drench. Immediately after administration the animal fell as if thunderstruck, and was expected to die every moment, until at the end of an hour her distress ceased. She got up and returned to her stable. A second dose (less by one half) having been given her similar but less intense effects followed. That evening the state of the heifer was much improved. The following morning she was lively, active, and greedily devoured her food; and, having been separated from the rest, bellowed constantly, and made efforts to break her fastenings and return to her original quarters. This did not last. On the afternoon of this day of apparent convalescence the heifer died, in spite of the administration of another dose, which was followed by effects similar to the others. Autopsy showed the presence of false membranes, the result of peritonitis, besides the ordinary lesions of charbon. In 1876 the disease again broke out in the same place; an empirical remedy which had proved successful in one case, and generally caused a temporary remittence of symptoms, was tried in association with iodine preparations administered by the mouth. (This remedy consisted of vinegar, salt, and mustard.) This outbreak caused the loss of twenty-one animals. Then M. Jolly obtained the apparatus of Dieulafoy for intravenous injection. The disease again appeared in 1877. When M. Jolly was called in six cows were affected; of these three were just dead, and two were *in articulo mortis*. On these latter he tried the intravenous injection of ten grammes of solution of iodine in ten grammes of warm water. This was done as an experiment, for the state of the animals gave no opportunity of benefit. A slight temporary amendment followed the operation, but the next day the animals died. But in another stable on the same farm eight affected animals, treated by means of intravenous injection of iodine and administration of the same agent in drench, recovered. A cow in calf, from a third stable, having been violently attacked by the same disorder, the farmer and proprietor, with whom M. Jolly had left full directions, resolved to try injection of iodine by the jugular. They gave larger doses than had been administered to the other animals, and iodine also was given in drink. The success was complete, the

cow recovered, and in due time gave birth to a calf, which was sold at a maximum price. The same results were obtained in another case. The animal was a heifer, and again the farmer and proprietor were the operators. In December, 1877, the disease again appeared, and M. Jolly tried the injection of iodine as a preventive means on twenty-nine beasts. Of these he found afterwards that three became affected, and with them he repeated the injection, and all three recovered. On the other hand, out of five animals (adults and heifers), all affected except one, on which the intravenous injection was tried, the symptoms became so greatly aggravated that recovery of the affected beasts was given up as hopeless. On the following day, however, they were out of danger, and all recovered. The disease manifested itself in a fortnight's time in three of the twenty-nine inoculated animals, and terminated in death, though intravenous iodine injections were tried on one and iodine drenches on another. The disease was so rapid in the third that there was no time for treatment. M. Jolly repeated the injections for the survivors on 14th January, 1878. Three of them were already affected at the time of operation, and for them the dose was increased, doubtless excessively, for two of them suddenly fell. But the effects were evanescent, and they recovered, not only from the medicine, but also from the disease. In spite of these injections which were intended to be preventive, almost all the remainder of the herd fell ill, but only one of them died! Thus, where death used to be the rule during an outbreak of charbon, it has now become the exception, but it must not too hastily be inferred that this is due to the iodine. M. Jolly has observed the behaviour of the disease on this farm since 1873. It did not appear for a period of nearly two years, from the commencement of 1878 to December, 1879. If during that period M. Jolly had resorted to his preventive injections, he might reasonably have attributed the immunity to this, whereas facts show that the causative influences had simply ceased to act.

M. Jolly thus describes his method of procedure:—"I place the animal as for bleeding, having previously prepared the apparatus and the fluid for injection. The instrument, the canula, and the trocar, are tried with tepid water, to ensure their proper working. That done, I place in a clean glass, warmed by means of a stew-pan, equal parts of very pure tepid water and of solution of iodine prepared according to the formula of Stanis Cezard (16 to 100). I fill the instrument with it, and this I have held by an intelligent assistant. Then the animal being supported as for bleeding, I place

myself on his right, since the needle can be most readily introduced here. The vein being well raised, I make a small button-shaped opening through the skin with the point of a straight bistoury. This prevents the effort which would be otherwise required in piercing the vessel. I then, having thus exposed the vein, take a trocar, No. 3 or 4, and plunge it by a single thrust into the vessel and from below upwards. As soon as the needle has penetrated the vein, the escape of blood through the canula will indicate the trueness of its course. I then rapidly remove the cord from the vein and adjust the injecting tube to the mouth of the canula. Then the assistant, at my word of command, forces in the dose, measured by the degrees marked on the instrument; this I vary according to the age and strength of the animal and the severity of the attack. Thus, I use the following doses :

	Grammes.		Iodine.
Animals weighing 400 kil. (20 kil. of blood)	40—45	(ʒx—ʒxj	= 3·10—3·50
,, ,, 250—300 kil., 3 years old (15 kils. blood)	30	(ʒviiss)	= 2·35
,, 18 mos. to 2 years old	20	(ʒv)	= 1·50
,, 1 year to 18 months	10	(ʒiiss)	= 0·78
,, 1 year and less	5—8	(Say ʒj)	= 0·39—0·58

As a preventive means, I reduce the dose to one-half. (We have inserted the approximate English doses. The method of intravenous injection will be familiar to students of the 'Handbook for the Physiological Laboratory'). Feser, of Munich, has attempted to resolve the question of the transmissibility of charbon to fish. It has been supposed by some that cold-blooded animals cannot convey the contagium of this disorder nor afford a nidus for growth and multiplication of *Bacillus anthracis*. We have recently been informed of a case in which fish died in large numbers, and where they were thrown up on the banks of the river the cattle became affected with anthrax (Mr. T. C. Toop, M.R.C.V.S., in a paper on "*Anthrax*"); Jessen states that in 1826, during the excessively warm summer, while charbon raged among horses, many fishes with malignant ulcers were taken in the River Wolcho. Forel, Duplessis, and Ogle affirm that a disease resembling charbon, in 1867–68 destroyed a large number of the fishes in Lake Leman, but that disease, although associated with Bacteria in the blood, was not transmissible to other fish. Corti describes an outbreak which was observed in the Po, notably among eels. But, in spite of the mortality which these epizootics have occasioned, we are not warranted in positively considering them anthracoid. Oemler's inoculations show that carp

and dorys resist repeated inoculations as well as ill-effects from a liberal supply of fresh charbonous material as food. These fishes, without exception, remained unaffected, even when made to live in water containing the anthrax parasite. Feser inoculated twenty-five fish (pike, carp, and tench) by injecting $\frac{1}{10}$ cub. centimetre of anthrax blood (fresh from a horse, and proved efficacious by its destruction of two rabbits) underneath the skin of the belly of each. These fishes were shut up in a chamber, and placed in an arm of the Tsar, the water of which had an average temperature of 5°—7° C. All the fish were examined daily, but showed no signs of disorder, and were sold after ten days' observation. This negative result did not suprise Feser. The internal temperature of these fish being but little above that of the surrounding water certainly did not allow the Bacteria to develop and multiply, which is essential to charbonous infection. According to the researches of the learned Dr. Koch, it is quite the exception for Bacteria germs to develop in a temperature below 18° C; if the temperature remains below 12°, they undergo no change. Feser thinks that to arrive at a definite result as to the transmissibility of charbon to fishes, it will be necessary to make many attempts to inoculate fishes kept in water of a temperature above 18° C.; and, therefore, to experiment on species capable of supporting high temperatures (*Wochenschrift f. Thierheilkunde, &c., Augsbourg*, No. 5, 1880, and *Journal de Méd. Vét. de Lyon*, Mar., 1880). *Emphysema infectuosum*, "Black-leg," has been recently alluded to by us in our "Synopsis" as a subject of investigation by French observers. *MM. Arloing, Cornevin*, and *Thomas* are working most energetically in their endeavour to trace the true relations of this disorder to splenic fever. In their name, M. Bouley presented to the Academy of Sciences at its sitting of 31st May, 1880, a paper in which are embodied the results obtained by them hitherto.

"In Germany, Feser and Bollinger call this disease *emphysemato-gangrenous tumour*, and Feser says he has reproduced the disease by inoculating with the soil of the marshes near which live the cattle liable to its attacks. In France, MM. Boulet, Josse, and Vernant have supposed, from clinical facts, that there is a difference in nature between splenic fever and black-leg; but a careful demonstration of this has not yet been given."

"In the blood of animals which die from 'symptomatic charbon' (the name with which Chabert designated 'black-leg') generally no foreign element is visible. Sometimes we

see a few granules, which are isolated, mobile, and difficult to determine histologically, and rod-like bodies, which are still less frequent. But, under conditions other than those of ordinary observation, the blood is full of corpuscles, ovoid, highly refractive, separate, or aggregated into chains of two or three, and of short and freely movable rod-like bodies. These are very numerous in the serosity of the tumour, but also are present in considerable number in the inter- and intra-muscular connective tissue, as well as within the contractile fibres of the tumour. They also may be found in the lungs, spleen, kidneys, and lymphatic glands. The Bacterium stationed in these organs, whence it may be removed by scraping, differs from the anthrax Bacterium in its objective and biological characters, and in its pathological effects. It is shorter and larger, is freely movable, rounded at each extremity, and has near one of them, but never at the centre, a bright nucleus, which is not invariably present. With the tissues of the tumour and distilled water we have obtained a pulp rich in Bacteria; when injected into the thickness of the muscles or into the subcutaneous areolar tissue it causes disorders which vary in characters and importance, according to the seat of inoculation and the species of the animal inoculated. Our inoculations constantly produced death of the calf and the sheep in thirty to sixty hours. They produced warm and painful œdema of the part when injected subcutaneously, the swelling being crepitant, especially in the calf, and extending gradually into the dependent parts; injection into the muscles caused the appearance of a tumour resembling that which occurs spontaneously. Guinea-pigs inoculated almost always die. We have seen one develop an enormous swelling, which ended in the spontanoous bursting of two abscesses, the virus having already passed through the system of several subjects. It produces local effects (gangrenous eschars) on white rats; life is jeopardised, but generally the animal survives. The rabbit, inoculated with the pulp of a tumour of an ox, collected some hours before death, died, presenting the local signs of quarter-ill; but the pulp prepared from the tumour of an ox two days after death, or from the fresh tumour of the sheep, generally produced only abscess and sometimes pyæmic accidents."

"The ass and horse resist inoculations; they only have a local engorgement of the muscles, and the neighbouring areolar tissue painful and warm for a few days, but which thoroughly disappears. The dog and the fowl seem to entirely resist the microbium of quarter-ill. The pulp filtered

after Pasteur's method gives a reddish liquid, which produces no effect on inoculation."

"*Conclusions.*—1. The 'symptomatic charbon' of bovines is communicable by inoculation to the ox and to some other animals. 2. It is transmitted by a microbium which develops in the muscular and connective tissues of the tumour, but is rare, or even absent from the blood. Therefore it must be sought for, in the tumour especially, for purposes of inoculation. 3. This microbium is retained by the porcelain filter. 4. By its characters, the effects it produces, and the species of animals adapted for its support, it differs much and sharply from *Bacillus anthracis*. 5. Hence black-leg of the ox must not be confused with splenic fever in the group of anthracoid disorders."

"We will pursue our researches, and in a later note will make known our results with regard to the histological characters of the microbium and its importance from a medical point of view." It will be satisfactory to those of us who remember that recently *M. Perroncito* was superseded in his determination of the true nature and pathological value of the microbium of fowl cholera by *Toussaint*, to find that that excellent observer, in the same number of the *Recueil* which contains the paper by the French worker, advances his claim to the discovery of the Bacteria of quarter-ill as long ago as 1872. It will be seen that he observed and described this organism as accurately as MM. Cornevin, Thomas, and Arloing. He noted that it is distinct from *Bacillus anthracis*, but failed in transmitting the disease by inoculation. He also claims to have seen organisms *in the blood*. This organism, which he names *Bacterium carbunculare*, has undoubtedly been made known to science by the labours of Perroncito, as the following extracts from his paper will show:

"These are the observations which I published on the 10*th January*, 1873, in the first number of the *Economia Rurale*, of Turin, being at that time attached to the public abattoir service of that town .... On 20th May, 1872, a calf suffering from black-quarter was slaughtered, and in the blood-plasma we observed almost round granules, few in number, and with a well-marked movement .... The blackish liquid expressed from the diseased parts, and examined twenty-five minutes after the death of the calf, contained a great number of Bacteria, presenting special characters, and worthy of note. They were shaped like short fine rods, unjointed, and most of them bearing, at one of their extremities a rounded granule, of the same diameter

as the Bacterium, highly refractive, and yellowish. We observed also others, which, in place of being cut off sharply, presented a rounded contour at their extremities. There was present in great abundance a molecular substance intermingled with fatty drops, and containing numerous granules with sharply-defined outlines, and also a kind of Cryptococcus. The movements of the Bacteria were singular, *and by certain characters they differ from the charbon Bacteria of Delafond* . . . . The movement was not undulatory, like that of vibriones, but rather, as we might say, '*leaping*' in the thickness of the fluid of the microscopic preparation. Much struck with this, I have made many observations, and always found this to be correct. These special elementary forms are closely allied to the *Bacterium cuneatum* of putrefying blood observed by Professor Rivolta, of the University of Pisa, in septic metritis of a bitch, and in a mare, which died after a similarly prolonged disease; but the refractive granule is at the larger, not at the smaller, extremity."

Did space permit, we would give Perroncito's paper at length, but the above passages are the pith of it, and, it seems to us, are quite sufficient to substantiate his claim. But Perroncito—also in the same paper—has something to say on "Cholera of Fowls," and urges that he not only saw granules in the blood of animals which had succumbed to this disease, but also appreciated their Bacterian nature, and communicated the disorder by inoculation with the blood. He admits the inaccuracy of the plate attached to his mémoire, but urges that this is due to error by the engraver. He is willing to show "M. Toussaint and any other French colleagues, as many as will honour my humble laboratory on the occasion of the Congress of Hygiène, which will shortly take place in Turin, the original drawings which I made of the microbium or micrococcus, whether isolated or united into chains." Again, he urges that throughout his paper he used "granule" as synonymous with "micrococcus." Thus, the legend of the plate appended to the mémoire is: "Preparation of the blood of a fowl, in which are found normal elliptical red globules, red circular globules variously developed, and others in the act of proliferation, or showing buds of various size and form; free nuclei; free, numerous, rounded or elongated granules (*micrococcus*)."

The learned professor continues: "When we desire to convince the adversaries of the doctrine of living virus it is necessary, in my opinion, to progress in these observations and experiments with the greatest scientific exactitude, and

never to pronounce on a fact unless it has been absolutely demonstrated. Faithful to this principle, although I had observed, described, and even figured the microbium of fowl cholera, though convinced of its pathological significance, as may be perceived on perusal of my observations, I did not feel authorised to particularise it as the sole cause of the disease before completion of more experiments similar to those which have been undertaken with so much success by MM. Pasteur and Toussaint. But I desired as a preliminary measure to go to Paris, consult with M. Pasteur, and work in his laboratory, in order to attain sufficient acquaintance with the methods of culture of virus. I, indeed, made the journey in September, 1878, but family misfortunes recalled me to Turin in a few days, and later materials were wanting, so I found myself unable to try the experiments on the culture of virus which I had seen carried out in the laboratory of Pasteur. To continue the special observations of which I speak it would have been necessary to find a method of complete isolation of the microbia, such as M. Chauveau did long ago with glander corpuscles, to wash them well, and finally to inoculate with them to see if they would reproduce the disease. But even supposing I had attained my aim, would I have been able to affirm, from this single result, that the granules or morbid germs were microbia or micrococci in the true sense of the term as used by Hallier? In spite of my private conviction that they are truly germs, that they might be termed micrococci after Hallier's definition, it would have been necessary to cultivate them to obtain not only other identical microbia, but also the development of a higher micromycete. But those who have tried cultures even of the sporules of *Trichophyton tonsurans* know how very difficult it is to exclude specimens from invasion by foreign germs, and they know also that the results of Hallier's experiments have been very rarely confirmed in a solid manner. In my descriptions of the microbium having the form of round or ovoid granules isolated or in pairs, I named it micrococcus to indicate a microscopical *coccus*, a germ corpuscle, rather in the sense of Chauveau and Pasteur than after Hallier." With regard to M. Toussaint's observation that the mémoire of Perroncito was published only in April, 1879, the author shows us that in June, 1878, Dr. Baron Ungern Sternberg, translated the paper into German, and it appeared in the October, 1878, number of Müller's *Archiv für Wissenschaftliche und practische Thierheilkunde*. "The real state of affairs is that my most careful observations on the typhoid epizootic

or cholera of fowls commenced on the 15th October, 1877, and I presented my mémoire to the Royal Academy of Agriculture of Turin, on 2nd February, 1878. Since, then, my Toulouse colleague discovered the parasite in question on the 16th October, 1878, we must conclude that he observed it one year after I did so."

M. Toussaint has not been idle lately. A paper of his, *Contribution to the Study of the Transmission of Tuberculosis* was presented by M. Bouley to the Academy of Sciences, and appears in the minutes for 29th March, 1880. The conclusions are thus summarised by the author:—"These experiments show that the lesions in the pig are those of acute tuberculosis and that they involve death in a very short space of time—a few weeks. Tuberculosis of the pig is analogous to "Galloping Consumption" of the human subject (bovines, on the contrary, are most frequently affected with chronic tuberculosis). From this it results that young pigs from tuberculous parents bear up only for a short time against the disorder and die young, and that in adults which become tuberculous the rapid progress of the disease prevents reproduction. With regard to contagion the experiments also confirm the view that tuberculosis is transmissible with the greatest facility. (1) By ingestion of tuberculous material. (2) By hereditary transmission or milk supply. (3) By inoculation with tuberculous matter or blood. (4) By simple cohabitation.—*Revue Vétérinaire*, June, 1880.

In the *Wochenschrift f. Thierheilknde und Thiersucht*, I, 1880, and the *Journal de Médecine Véterinaire et de Zootechine de Lyon*, May, 1880, are recorded observations by *Bollinger*, of Munich, on tuberculosis resulting from ingestion of the uncooked milk of tuberculous cows. In this are mentioned the experiments made by this observer some time ago and noted by us. He also says:—"If bovine and human tuberculosis are not identical, at least they have many points of similarity. The introduction by inoculation of bovine tubercle into other animals almost always leads to phenomena analogous to those of bovine tuberculosis. Of a lot of six pigs, two were fed on cooked milk, two were kept as check animals, and two fed on raw milk. The two of the first set, on autopsy, were found to be highly tuberculous. In the subjects of the third category intestinal inflammation was met with; the glands of the neck and of the intestine were caseous. The check animals were healthy. Two experiments made on monkeys, as well as two on a goat and a guinea-pig, failed. Thus Bollinger considers that the milk of tuberculous cows given

for a long time as food must always cause miliary tubercles and tuberculous degeneration, but it must be admitted that the danger of transmission is not so great as might be thought; if it were otherwise, this disease would be more frequent in pigs. In these animals it is very exceptional, though they are often given the milk of phthisical cows. With regard to the danger of transmission of tuberculosis of the ox to man we know nothing positive, but we cannot absolutely deny it. In 1846 Dr. Klenke described many cases in which children became affected with scrofula after having been fed with milk from tuberculous cows. Experiments made at the Veterinary School of Dresden, in the same direction as those of Bollinger, failed without exception. *Dr. Willems*, of Hassalt, in a letter to M. Bouley, dated 23rd April, 1880, states that he has succeeded in cultivating the special corpuscles which he mentioned in his mémoire on *Pleuro-pneumonia epizootica* (1852.) This he has done by Pasteur's method to the eighth generation. They were especially lively in an extract of beef. He says, "I am going now to inoculate horned beasts with this product of cultivation and to submit others to the influence of the liquid vaporised to lead to its introduction through the natural channels"

ON PLANTS IN RELATION TO ANIMALS.

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

(*Continued from p.* 393.)

In continuation of the *Papilionaceæ* we now direct attention to the three following genera, namely:

1. *Trigonella* . Herbs, with curved, many-seeded pods.
2. *Melilotus* . Herbs, with straight, one- or few-seeded pods.
3. *Medicago* . Trifoliate herbs, with pods more or less curved or spirally coiled.

1. The *Trigonella* is better known to the horse- or cow-leech than to the educated veterinarian practitioner. Its seeds, which have a smell not unlike that of the pig, from which the herb has got the name of "Old Sow," have somewhat of the aromatic flavour of the *Coumarine*. They are much used in the various nostrums of horse-doctors and grooms, and lately it has come much in vogue as part of

the various mixtures known as cattle spices. In fact, no seed has been more employed for quackery of all kinds than that of the *Trigonella fænum-græcum* or Fœnugreek. At best it can have no active medicinal principle; at the same time, if it acts as a spice in flavouring vapid or washed-out hay, so as to make it more palatable, it may be of some slight service, but when used for flavouring inferior meals, under the name of concentrated cattle food, it is a delusion and a snare.

The *T. ornithopodioides*, Bird's-foot Fœnugreek, is a somewhat uncommon native species, of which Mrs. Lankester says:

"It is placed in the same genus as *Trigonella fænum-græcum*, the common Fœnugreek, which was formerly cultivated by the Romans, and is still employed in the agriculture of the South of Europe. The seeds have a medical reputation, not as given internally, but as poultices, fomentations, and emollient applications. An old remedy in the Pharmacopœia, '*Oleum e mucilaginibus*,' contained these seeds, but they are now no longer used, except by grooms and farriers, in veterinary medicine."

2. *Melilotus*.—Has a strong but a more agreeable flavour than the Fænugreeks. We have three doubtful natives, as follows:

Melilotus	*officinalis* .	Flowers bright yellow.
,,	*arvensis* .	Flowers light yellow, sometimes inclining to white.
,,	*alba* . .	Flowers white.

The first of these is the common melilot, which is sometimes so abundant, and especially on sandy and gravelly banks by the sea-side; it is called the common melilot, as it is the more common form in England.

The following is an interesting account of the general uses and folk-lore of this species:

"At one time this plant was cultivated in England for fodder, but it is now seldom seen, having, like the medick, given place to the clover. In Switzerland and the neighbouring countries it abounds in the pastures, and is an ingredient in the green Swiss cheese called Schabzeiger, which is made in the Canton of Glarus, and is by many persons highly esteemed. It is stated in many books that this plant enters into the composition of the Gruyère cheese, which is altogether erroneous. The Schabzeiger cheese is made by the curd being pressed in boxes, with holes to let the whey run out; and when a considerable quantity has been collected

and putrefaction begins, it is worked into a paste with a large proportion of the dried herb melilotus reduced to a powder. The herb is called, in the country dialect, 'Zieger kraut,' curd herb. The paste thus produced is pressed into moulds of the shape of a common flower-pot, and the putrefaction being stopped by the aromatic herb, it dries into a solid mass, and keeps unchanged for any length of time. When used it is rasped or grated, and the powder, mixed with fresh butter, is spread upon bread. It is either much relished or much disliked, like all substances of a similar taste and smell. The whole plant has a peculiar scent, which becomes more perceptible when it is dry, and has some resemblance to Anthoxanthum, the sweet-smelling vernal grass.

"The flowers are sweet-scented, and a water distilled from them is used for giving flavour to various substances. In medicine this herb has had its day. It was at one time considered emollient and digestive. It is recommended by Gerarde in all manner of disorders—for a poultice the juice to be dropped into the eyes to 'clear the sight;' alone with water, to heal wens and ulcers; and also, mixed with a little wine, it 'mitigateth the paine of the eares, and taketh away the paine of the head.' That the melilot was at one time a very common crop in England we have Gerarde's testimony, for he says: 'For certainty no part of the world doth enjoy so great plenty thereof as England, and especially Essex, for I have seen between Sudbury, in Suffolk, and Clare, in Essex, and from Clare to Hessingham, very many acres of arable pasture overgrown with the same, insomuch that it doth not only spoil their land, but the corn also, as cockel or darnel, and is a weed that generally spreadeth over that corner of the shire.'"*

3. *The Medicago.*—Medick is a genus nearly allied to the clovers, being, indeed, trifoliate, with small flowers; the corollas, however, in decay, do not cover the fruit, which latter, instead of being a straight legume, is spirally twisted in some species, so much so as to present the aspect of a coiled univalve shell. There are several species, or so-called species, but those with which we are more particularly concerned may be described as follows:

Medicago	*falcata* . .	Pods linear, curved.
,,	*sativa* . .	Pods reniform, coiled at the tips.
,,	*lupulina* . .	Pods slightly curved, reticulate.
,,	*maculata* .	Pods with double coils and a double row of hooked spines.

* See Syme's New Edition of the 'English Botany.'

The first of these is rarely met with. It is, however, recorded as having been found in several counties, and we have met with it at Bradford Abbas, Dorset, near to a grist mill, so that we have no doubt of its having been introduced in foreign corn.

The *M. sativa* is found on railway banks and on the borders of arable fields, doubtless the result of cultivation, as it was formerly much more grown as a forage plant than it is at present. Why it should not increase in cultivation, rather than diminish, is beyond our comprehension, as at the present moment we are cutting a second crop this season from a patch on our own farm, where we have found it to be very productive, and to be much relished by horses, cattle, and sheep, all of which animals eat it greedily, indeed, too much so, which is perhaps one cause of its want of favour, as it often disagrees with animals, but we have heard that, if cut the day before being used, and given in moderation, it is a highly salutary soiling plant, and we recommend a patch to be grown near every stable, if only as an alterative and occasional laxative for the horses.

The *M. lupulina* is found everywhere, and is, perhaps, our only truly native species. It is known on the farm by the name of hop trefoil, but it should be distinguished from the hop trefoil of the botanist, which is really the *Trifolium procumbens*. We grow it largely in shifting pasture crops, mixed with one of the ray grasses, such as *Lolium italicum*, in light sandy fields, and *L. perenne*, in brashy or more mixed soils. It is a very prolific seeder, so that its seed is cheap, and, as it is a really good feeding plant, it is a general favourite with the farmer.

Medicago maculata is the larger of a series of species characterised by a black dot in the centre of each leaflet, and a spinous or pectinate seed-pod. They are all of them introduced plants, having probably been brought from the Mediterranean region and a portion of Central Asia.

We may, then, take the medicks for our present purpose as representing a series of agricultural plants, differing greatly in their details, but all more or less useful. They may be summarised as follows;

Medicago.—The medick genus, one of the Papilionaceæ, and distinguished by its more or less spirally-twisted legume. The more important series are the following:

M. sativa, the purple medick or lucerne. This, though found apparently wild on the borders of fields, has, doubtless, escaped from cultivation; it is distinguished by its purple flowers and upright growth. Its herbage is green

and succulent, and has the advantage of being early, on which account it has been highly extolled as an agricultural plant. It yields two rather abundant crops of green food in the year, of a quality highly relished by horses and cattle.

M. lupulina, the black medick, or nonsuch, is, at first sight, so much like the yellow trefoils as to be generally known by farmers as the hop trefoil or hop; it is, however, distinguished by its naked black legume. It is used in farming to mix with grasses and clovers for artificial or shifting pastures, in which it often assumes a luxuriance of growth well befiting it for this purpose.

M. maculata, remarkable for its spirally-coiled, prickly legumes, has, from the quantity of herbage which it grows, been recommended for cultivation as a green fodder plant; but it is scarcely equal to the former, while in hay the long prickles to its seed-vessels render it very objectionable.

In the present series of plants we seem to have a set of more or less importance, for while the trigonellas and melilots may be considered as adapted for flavouring purposes, for which a small sprinkling of their seeds may be added to the clover-field to give perfume and stimulating qualities to artificial grasses, the seeds of others may be mixed with meals of different kinds for feeding purposes.

In the lucernes and medicks we have a series adapted as soiling plants, but, from their laxative properties when in the green state, they should be used with caution. When, however, they are made into hay their medicinal action is very much diminished.

VETERINARY SCIENCE IN AMERICA.

By "Examiner."

In an article published in the January number of the *Veterinarian*, 1880, John Henry Steel, demonstrator of anatomy, gives a *résumé* of veterinary matters on this side of the Atlantic for the benefit of English readers. The article will be found interesting, although there are many veterinarians in the United States who will not agree with some of the opinions expressed. Leaving them, however, to correct the article, in so far as that country is concerned, if they feel so disposed, it is necessary to point out the grave errors into which the writer—evidently through ignorance—has fallen in regard to Canadian colleges. The article in

question shows very clearly the importance of writers for the public press—and especially such a reliable journal as the *Veterinarian*—obtaining full and correct information before dealing with a subject, or expressing an opinion thereupon. For, in this case, an injustice has been done, although quite unintentionally on the part both of the writer and the editor of the journal.

In writing of the Quebec and Ontario veterinary colleges, Mr. Steel expresses a preference for the former institution, his information being derived, evidently, from the head of the Montreal school. The unfairness and gross prejudice which marked Professor McEachran's articles in the *Review* excited attention at the time, and he was publicly corrected, but Mr. Steel has entirely overlooked that fact.

We will now briefly examine the grounds taken by Mr. Steel in preferring the Quebec over the Ontario College; eaving it to the unprejudiced public of our profession to say whether any such "preference" is warranted, as expressed in the article under consideration.

First, in regard to matriculation. The Montreal College claims a higher standard in this. If the truth be told in regard to it, the test is little more than "nominal" at either place. That it is so in Ontario is not denied, that it is so in Montreal we have the assurance of those who know. This being the case, we submit that the institution which pursues the straightforward course is the more worthy of public confidence—even though its printed announcement be not so flashy, and does not read so well to parties at a distance—who have no other means of judging.

The next point, and one on which the advocates of the Quebec College lay much stress, is that the students may attend the lectures given in McGill's University on chemistry, physiology, &c. By implication, and for all that appears in the article under consideration, the students at Toronto have no such privilege. Only deficient or one-sided information could have caused Mr. Steel to make so misleading a statement. As a matter of fact the students of the Ontario Veterinary College attended the lectures on chemistry delivered by the foremost exponent of the science in the dominion, Professor Croft, of University College. Recently the Ontario Government, recognising the national importance of the college, has made arrangements whereby another Professor of University College, Professor Ellis, delivers a course special to veterinary students. In no other institution, then, can the students have better facilities for the study of chemistry than at Toronto.

Then, as to physiology. The lecturer on that subject in the veterinary college is the lecturer on the same subject in Toronto Medical College. Unprejudiced minds will at once admit that in this regard the Toronto students occupy the better position. For, however excellent the lectures on physiology are at McGill's College, they are and must be lectures on human physiology, not calculated to supply the special needs of veterinary students. While the Toronto students are guaranteed by the fact of the two lectureships being filled by the same gentlemen of the same ability, being at their service as that commanded by medical students, they have a course of lectures more suitable than can be got at any medical college.

For what may be termed veterinary physiology has many points of difference from human physiology. To claim credit for this method of teaching physiology to veterinary students is only a little less absurd than to claim credit for teaching anatomy in the same way. What would be thought of a veterinary college which made no provision for special instruction in anatomy, but whose students had "the great privilege of attending the lectures on anatomy delivered in a medical school or even university?" A proper knowledge of veterinary anatomy could not be gained thus, nor can a proper acquaintance with the physiology we require be obtained without special provision therefor. At the same time, if any veterinary student in Toronto wishes to attend the lectures given in the medical college, he is at perfect liberty to do so.

In the next paragraph, Mr. Steel—again through ignorance we cannot doubt—implies that while the Quebec College has written examinations, the Ontario College has not, the fact being that for years the latter institution has put its students to the above test, as well as the customary oral one.

The only other point of preference as stated is that the college located in the Province of Quebec asks three sessions instead of two. In an old country like England this is very desirable. But it must be remembered that our country is new, and that the demand from all parts of the continent for good veterinarians to take the place of charlatans is very great. Remembering this, and the fact that Toronto requires her graduates to spend their vacation with a veterinary surgeon, it is not surprising that many parts of the country prefer the services of a gentleman from Toronto to one who has passed through the more ornamental (so far as the curriculum is concerned) course at Montreal.

Reference is made to the somewhat unpleasant feeling

between the colleges. It is quite true that such exists, but it may be truly said that it has not originated with the authorities at Toronto. The principal, Professor Smith, has too much at heart the interests of the profession at large to be a party to this were it not forced upon him. Through the college which he controls he has done more for the profession than any one on the continent, elevating it from a degraded state to the excellent position it now holds. The credit for this achievement cannot be taken from him by others; for the graduates of other institutions are so exceedingly few that their influence is scarcely felt. The very greatness of the work done by Professor Smith, however, and his success in it have roused jealousy in the minds of some who, although common gratitude should have impelled them to a different course, take opportunities to depreciate instead of assisting them.

Through a sudden change of government the authorities of the eastern institution have just now some patronage at their disposal. Considering their high-sounding professions it might be expected that their influence would be used for the benefit, not the disgrace of veterinarians. But this fact —incredible as it may appear to the profession in Britain— is that in districts where a Quebec graduate could not be had, the authorities of this professedly model college used their influence for the appointment of non-professional men, vulgarly known as quacks, as port inspectors rather than allow the employment of well qualified Ontario graduates. Can professional jealousy further go?

Such things are not pleasant to write; not pleasant, it may be supposed, for the Fellows of the Royal College to hear of, for they, as a body, are gentlemen jealous of their professional standing and honour. Whether unworthy conduct on the part of one of their members involves the whole in disgrace is for them to consider. In the mean time it will not seem strange to British veterinarians that there is little cordiality between the institutions under consideration, one of which is so "progressive" as to encourage charlatanism in its worst form.

It does, however, seem strange, and is somewhat annoying to the readers of the *Veterinarian* on this side of the water to find that those connected with the metropolitan college can be misled into making the serious mistakes we have had under consideration.

[We have preferred to insert this communication without note or comment.—Eds.]

Pathological Contributions.

CATTLE PLAGUE.

This disease has made its appearance at several villages in the Province of Sharkich, Lower Egypt. A veterinary surgeon was despatched to inquire and report as to the existence of the disease, and in his report he stated that the disease had prevailed for at least six weeks, but its existence had been concealed by the villagers, who had been utilising the flesh, hides, and bones of the dead animals.

Orders have been issued to isolate the infected district as completely as possible, and to adopt proper hygienic and other measures to stamp out the disease.

The Kingdom of Hungary remains free, but cattle plague exists in Croatia, Slavonia, and in the military frontier.

Doctor Heidenstam has presented a report on the cattle plague. From Cyprus we learn that to the end of May, 1540 animals had been attacked and 1447 had died. The disease continues.

In a communication just received from Mr. S. Wiltshire, Colonial Veterinary Surgeon, Maritzburg, Natal, alluding to cattle plague in the Mauritius and Madagascar, he says that "the latter place is now thought to be free from the disease; but that in the former it is still believed to be existing." No importations take place into Natal from infected countries.

In addition to his other appointments, Mr. Wiltshire now holds that of Chief of the "Cattle and Sheep Departments," so that all matters relating to the diseases of these animals, the nominating of inspectors, and receiving returns from the "sheep inspectors," are superintended by him.

PLEURO-PNEUMONIA.

During the four weeks ending May 15th, only two cases of this disease were reported in the Netherlands. Both the animals were in South Holland where the disease appears to be still lurking.

In Ireland most satisfactory reports have been issued by

the Veterinary Department in reference to pleuro-pneumonia. During the week ending June 20th, forty-seven case were returned, while for the corresponding week in last year seventy-nine animals were reported as affected.

In Great Britain the disease still continues to decline. During the nine weeks ending May 29th this year, 453 cases were returned. In the corresponding period of last year 734 animals were slaughtered or died affected with this disease.

SWINE FEVER.

This disease was reported to exist in thirty-three counties in Great Britain during the five weeks ending May 29th, and 1088 animals were returned affected. During the corresponding period in 1879 the number was 1970.

FOOT-AND-MOUTH DISEASE.

We have no information of the existence of foot-and-mouth disease in any part of the United Kingdom.

Facts and Observations.

Testing for Nitric Acid in Presence of Nitrous Acid. By A. Piccina (*Gazzetta*, 9, 395—396).—This method is useful for detecting minute quantities of nitrates in the presence of large quantities of nitrites, and is founded on the property urea has of decomposing the latter in acid solution. Urea is added to the solution containing the nitrate, and it is then gradually added to another solution of urea in dilute sulphuric acid. As soon as the evolution of nitrogen due to the decomposition of the nitrites has ceased, some iodised starch is added, and then a fragment of zinc, when a blue coloration is produced if any nitrate is present. —C. E. G.—*Journ. of Chem. Soc.*

THE VETERINARIAN, JULY 1, 1880.

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

NATIONAL VETERINARY CONGRESS IN BELGIUM.

WE have received an invitation from the Committee of Organisation of the National Veterinary Congress to assist at the meeting which is to be held on July 8th at Cureghem-lez-Brussels, and at the same time we are asked to refer to the principal regulations under which the Congress is to be carried on.

The rules provide that, in conformity with the resolution of the General Assembly, convoked by the circular from the office of the Veterinary Association (dated March 12th), that a Congress should be held at Cureghem, near Brussels, on July 8th, and should continue for at least three days, with the object of strengthening the fraternal bonds which ought to unite the members of the body corporate, and of submitting to discussion some questions, professional and otherwise, relating to the subject of veterinary medicine.

The Congress will include—

"An Honorary President, M. Rolin-Jacquemyns, Minister of the Interior."

"Honorary Members," viz. those who, although not veterinary surgeons, have been invited to assist at the Congress in recognition of their talent and position.

"Effective Members," a title which implies that its holders belong to the professional body of the School of Veterinary Medicine, or members of the veterinary profession resident in Belgium, and having the right to practise in the country.

"Associated Members," veterinary surgeons who, being resident in other countries, have, nevertheless, studied in the Belgian veterinary schools.

"Aggregated Members," foreign veterinary surgeons who do not fulfil the conditions relating to associated members,

but who may be presented to the Congress by two associated or effective members.

After the institution of the Congress by the President or his delegate, assisted by the Committee of Organisation, the election of the necessary officers will be proceeded with, and then the subjects which have been proposed for discussion will be considered, viz.:

1. Déontology of Veterinary Medicine.
2. Inspections of Alimentary Substances of Animal Origin.
3. Legislation on the subject of Hereditary Vices.
4. Organisation of the Veterinary Civil Service.

It cannot be denied that the range of subjects is a wide one, and includes matters of importance to the profession. Our professional brethren on the Continent are more familiar with the arrangement of such meetings as the one to which we have referred than we in this country are, and it is to be wished that our members were more apt to take advantage of the opportunities which occur to associate themselves together for the discussion of matters connected with veterinary science and politics.

There are many points which are constantly made the subjects of private communications, and occasionally of public comment in our professional Journal, which might be all the better for the more thorough consideration which they would receive at a regular congress.

Quite recently the Royal Agricultural College held a Congress, at which many of the old professors and students assisted, and the results were most satisfactory; and we cannot help thinking that such meetings, whether they are held for the discussion of grievances or the mere exchange of compliments, are calculated to promote, as our Belgian confrères say, the strengthening of those bonds of fraternity which ought to unite the different members of our body corporate.

Extracts from British and Foreign Journals.

DISEASES OF SHEEP.

(Paper read at the British Pharmaceutical Conference.)

By W. W. Stoddart.

At the end of the year 1877 a farmer residing in the neighbourhood of Bristol requested me to investigate the death of some sheep which had taken place every autumn without any assignable cause, so much so that a heavy loss was annually incurred. Many visits were consequently paid to the farm for the purpose of finding out the cause of disease. I noticed that the sheep were fed only on the natural herbage grown on the spot. It consisted of two kinds of clover, the ordinary Dutch (*Trifolium repens*, L.), and the common purple (*T. pratense*, L.). With these were the ray grass (*Lolium perenne*, L.), or, as it is commonly but erroneously spelled, "rye" grass. A strict inquiry being made as to the symptoms, the farmer informed me that they were always the same and generally supervened in the month of August, when this very peculiar illness on the farm became prevalent. It took the form of dysentery, inflammation of the bowels, diarrhœa, the evacuations resembling coffee grounds, afterwards succeeded by exhaustion, collapse, and death.

Analyses of water and the soil were made for the purpose of detecting any deleterious metal or other irritant poison. No satisfactory result followed, and the cause of illness seemed to be mysterious and inexplicable. At length I heard that the ewes sometimes slipped their young, which gave a remote suspicion that the cause of all might be due to ergotism. An inquiry was then made as to the presence of gangrene, when the unexpected but significant remark was made that, although the farm was on a dry, porous, sandy slope, yet the sheep always had the "foot rot," even in the summer, which defied all the remedies that usually proved effectual. With this idea in my mind, and while watching the lambs feeding, I noticed that they avoided the old mature plants, while they greedily devoured the young green ones.

On examining more minutely the former, I noticed several well-formed, purplish, dark-coloured ergots were projecting from the paleæ, but could not discover a single specimen on

the younger fresh plants. Several of these ergots were then taken home for chemical and microscopic examination. I made a considerable number of sections which exactly coincided with the beautiful and truthful engravings in the paper by Tulasne, in the *Annales Sc. Nat.* for 1853, "Sur l'Ergot des Glumacees." While here I must stop to express my admiration both at the accuracy of these microscopic delineations and the description of the metamorphoses of this curious fungus. I thought that this would be a good opportunity of studying the growth of this vegetable, and that the result of my observations during the following year may prove to be of some service in the cause of pharmacy.

During the next few months I had only the old and nearly dead stems of the *Lolium* on which I could work, but on the 12th of April I obtained some specimens of the *Lolium perenne* in which the commencement of the inflorescence was just to be observed. Soon afterwards I made several sections of caryopsides, on which were many thousands of conidia, which seemed rapidly to multiply and to completely fill some of the grains till they protruded far beyond the blumes. In two or three days the sclerotium state of the mycelium began to change colour and assumed a purplish-brown tinge. The sclerotium seemed now to have arrived at what was formerly termed the "sphacelia" condition, and was soft, while the upper portion was wrinkled. The exterior was white from the growth of the hyphæ, which seemed to grow with marvellous rapidity till at length only a small portion of the pistil remained free. Although the conidia were so numerous, I never noticed any on the androecium, even when examined with a one sixth of an inch object-glass, while close to them four or five of the caryopsides were completely filled with the little conidia, which are blunt and ellipsoid-bodies, about $\frac{5}{1000}$ mm. to $\frac{7}{1000}$ mm. in length, and from $\frac{3}{1000}$ to $\frac{45}{10000}$ mm. in breadth. They are curved and divided into two parts, each part containing a nucleus. On touching them with a drop of diluted sulphuric acid, a cilium or minute flagellum was extruded, and when placed in water had a vibratile motion. On examining suspected flour, bread or pastry, the microscope would always show these conidia, especially with the addition of a little chromic acid.

In the third week of May several small drops of a syrupy substance made their appearance on the stem near the spikelet. If dissolved in a little distilled water and placed under the microscope the solution would be seen to contain the conidia, and hence, I suppose, gave rise to the supposition

that the honeydew was intimately connected with the formation of ergot by aiding the growth of the mycelium. But it most probably only attracts and adheres to insects, who by this means convey the conidia to other spikelets, and thus spread the infection to other grains. This saccharine mixture instantly reduces the copper solution of Trommer's test, thus showing the presence of sugar. When boiled, a slight milkiness is produced and not removed by nitric acid in excess, pointing out the presence of albumen. At this period the ergot attains its full development and gives no blue with iodine, because by the well-known metastatic power of fungi all starch is removed and an oil substituted. Of this oil, ergot sometimes contains about a third part of its weight.

At this period of its growth each sclerotium gives off the odour of trimethylamine when treated with potass, and produces a red colour. With spontaneous evaporation, after mixing the honeydew with alcohol and a little ether, minute octahedra of mycose are formed and may be seen with the lens.

On July 18th I first gathered fully formed and mature ergots, which I now produce. They have a dark exterior with a white interior, and give the ordinary red infusion.

On August 1st one of the lambs was taken ill with the usual inflammatory symptoms. The feet also in a few days had a gangrenous appearance, which did not seem to be alleviated by any of the usual applications of silver nitrate, carbolic or cresylic acids. The affection of the feet strongly reminded me of "clavellisation," so destructive among the flocks of Italy, France, and Moravia, and has frequently been supposed to have been a variety of variola.

The fungus has now reached the limit of its vegetative or myceloid growth, which plainly ends at the sclerotium stage as our medicinal agent called ergot, by means of which the embryo and most of the caryopsides have been destroyed.

The hyphæ are now ready to spread in every direction, and thus extend the vegetative growth, from which only we derive the peculiar medical properties of the *Claviceps* in their greatest intensity and power on the animal economy, and it is now that the greatest effects are produced, which are included under the name of "ergotism."

A *post-mortem* examination of the sheep showed the presence of the conidia among the "coffee-ground" looking fæces. The fungus having now arrived at this stage awaits for appropriate weather and other suitable conditions for the fructifying metamorphosis.

At the end of August one or two of the ergots that had fallen with the stems on the grass on the damp ground I placed, for more convenient observation, on the moist soil of a flower pot. In a few days I noticed on the dark cuticle of the sclerotium several minute excrescences, from which gradually emanated some stalks about 11 to 18 millimètres in length, each supporting a minute round head about four millimètres in diameter, in fact, furnishing good characteristic specimens of *Claviceps purpurea*.

It is not to be wondered at that these fungi should have received the names of sphæria or torrubia, because they so much resemble the growth so often described as being found on the heads of caterpillars or larvæ, and used as a medicine in China and Japan.

A very remarkable change now took place in the oil that was so noticeable so long as the condition of sclerotium continued, but directly the mature *Claviceps* appeared the oil oxidised, dried up, and was found no longer. The round heads of the fungus now become covered with a large number of brown dots, which eventually became the openings of pear-shaped sacs or asci of the perithecium. If a section was made with a sharp scalpel each ascus was seen to be filled with a glutinous substance containing seven or eight spores. These last adhered to the ergot, looked like a powdery coating, and causing the production of many thousands of conidia on each ergot and ready for the evolution of fresh mycelium.

This seems to me the true mode of development of *Claviceps*. It commences and proceeds with the vegetative growth till it reaches the sclerotium stage, and at that period possesses in the greatest vigour the medicinal characteristic of ergot.

I have, I think, conclusively found that ergot has the greatest medicinal power in the month of August, and that the experience of six or seven years shows that the same changes take place in the plant at the same period of every year.

It has been known to medical men that the so-called essence of ergot is so uncertain in its efficacy that many, in order to ensure success, have determined to use the powder itself. Dr. Kluge, of Berlin, observed some years since that, for some reason or other, the properties of ergot varied according to whether it was gathered *before or after the harvest*. In the former case it had energetic action, while in the latter it was frequently powerless.

The sheep were distinctly seen to choose the young green

grasses and to particularly avoid the older and ripe ones, probably directed by the odour of trimethylamine, for I found that I could not produce this odour till the sclerotium was fully developed and the starch completely gone.

I therefore think the following conclusions may be safely drawn :

1.—That for all medicinal purposes, or pharmaceutical preparations, ergot ought to be gathered in the months of August or September.

2.—That ergot always attains its greatest intensity at the end of the vegetation period.

3.—That the medicinal powers of ergot diminish or disappear as soon as the fructifying period commences.

I have chemically and microscopically examined the ergots produced from the *Lolium perenne* while the plants have been living. The infusion was first treated by the ether process of Stas. On the evaporation of the ether an oily residuum was obtained, containing a minute quantity of a resinous substance. The extract was then dissolved in alcohol, afterwards mixed with water, and filtered. Chloriodide of mercury caused a precipitate reminding one of a vegetable alkaloid.

I did not detect any crystals of cholesterine that are said to exist in *Secale cornutum*, but phosphoric acid was clearly shown by using molybdate of ammonia and nitric acid.

In toxicological investigations the microscope is the most to be depended upon. The conidia are very abundant and may always be detected in bread, pastry, or flour, especially if acetic or chromic acids be used to make their presence more evident. The one sixth or one eighth of an inch is a sufficiently high power. I always find that this mode of detection is preferable to the use of potass and distillation alone. The little conidia may be generally observed in the intestinal canal of a poisoned person or animal.

INOCULATION OF FOWLS.

THE learned in fowl-farming are well aware what a fatal and disastrous malady is that which goes by the name of chicken cholera. Remedies have been tried without avail for many years, and it has required the scientific exertions of two nations to discover both the nature of the disease and the best method of dealing with it.

Signor Peroncito, of Turin, seems to have been the first to establish, in 1878, the theory that the so-called cholera is due

to the presence of living organisms in the blood; and M. Toussaint, who practises as a veterinary surgeon at Toulouse, has followed up the discovery by writing what is described as "a masterly treatise" on the subject. The *microbe*—such is the title of the live creature which does all the mischief—has been kept alive and propagated by these gentlemen by various devices, and they have found it quite possible to prepare a lymph containing specimens of this kind with which the inhabitants of the hen-roost may be inoculated. Having got thus far in their experiments, it was easy for the men of science to give the cholera to any unsuspecting hen which might fall into their clutches, and, as the malady is highly contagious, nothing could be more simple than to spread the infection through a whole yard.

Unfortunately, the first result of doing so by artificial means was that 18 out of every 20 fowls inoculated perished under the process. The difficulty was to find or prepare a lymph which would not produce such dire effects; and this is what M. Toussaint now claims to have accomplished. He is, however, for the present resolved to keep his secret to himself, and not to let his system be discredited in the public mind by allowing experiments to be conducted by ill-qualified practitioners. He claims to be able, by performing the inoculation with what he calls the "modified virus," to guarantee the patient against cholera, and only to lose the lives of about 5 per cent. amongst the fowls thus infected.—*The Globe.*

INFLUENCE OF THE PHYSICAL CONDITION OF SUPERPHOSPHATE ON ITS VALUE.

By P. Wagner (*Bied. Centr.*, 1879, 336—339).

The soluble phosphoric acid in superphosphate on coming into contact with the lime of the soil is converted into an insoluble form, and consequently does not penetrate into the soil; this is especially the case with a soil which contains much limestone, the author finding in one experiment that 93 per cent. of the soluble phosphoric acid had, after three hours' contact with a calcareous soil, become insoluble; the more quickly this conversion takes place the less is the penetrating power of the phosphoric acid, and the more necessary it becomes to have the superphosphate in as fine a state of division as possible, and well mixed with the soil.—J. K. C.—*Journal of the Chemical Society.*

A NEW SORT OF FORAGE.

One of the main difficulties encountered by our cavalry in Zululand, and also, in a less degree, among the mountains of Afghanistan, was the transport of forage. In European warfare, the obstacle is not of such serious consequence, but the German military authorities have, nevertheless, addressed attention to the matter with a view to the discovery of some less bulky sort of food for horses. Captain Bonde, formerly of the 93rd Highlanders, and now colonel of artillery in the Venezuelan army, claims, in a letter to a military contemporary, that the required object will soon be attained by means of "meat meal," a new manufacture of South America. This meal is composed of shredded meat baked with leaven and bruised oats into a sort of coarse bread, which horses readily eat and thrive upon in a remarkable degree. The German Government has already experimented with the compound, and according to the report of their proceedings there would seem fair reason to expect that meat meal will soon come into general use for military purposes. A number of horses belonging to the German cuirassiers were fed on meat meal, instead of their usual ration of oats, previously to the last autumn manœuvres, and the report says that this squadron showed marked superiority to the other horses throughout the operations. So successful was the experiment, that the Prussian War Office has given orders for it to be carried out on a more extensive scale under the supervision of Professor Dunkelberg, and should the results agree with the preliminary test, the meal will become thenceforth a recognised form of military supply. The Professor, who has already given considerable attention to the matter, believes that the meal would also be found very useful in racing stables, as it does not produce fat, but goes to form hard muscle. Captain Bonde supports this theory with his own personal experience: Having served a good deal in South America in a military capacity, he bears testimony to the superior hardiness of the horses fed there with meat meal instead of ordinary forage. In presence of this evidence, no time ought to be lost in the institution of experiments by our own Government. England, more than any country in the world, is deeply interested in discovering some more portable forage than those on which her widely-scattered forces have now to depend, and if meat meal supplies this want, without being too expensive—on that important head Captain Bonde is silent—our cavalry ought certainly to be supplied with it as soon as possible.—*The Globe.*

ABORTION IN COWS.

The following circular, which had been drawn up in compliance with a previous resolution, was then read, and adopted after a short discussion on the advisability of publishing the last question, Mr. G. F. Roumieu expressing his belief that the contagious nature of the disorder was a subject upon which reliable conclusions could only be formed by scientific men. This view was not, however, upheld by the Chairman and other speakers.

To the Members of the British Dairy Farmers' Association.

In order to obtain a full inquiry into the causes of abortion in cows, with a view to the publication in the *Journal* of a paper on this subject, the following questions have been furnished at the request of the Council by Professor Axe, of the Royal Veterinary College. Members who have had case of abortion among their cattle, and who have paid any attention to the circumstances connected therewith, are requested to kindly answer these questions as fully as possible in the order in which they are given, and to address replies to the care of the Hon. Secretary, British Dairy Farmers' Association, 446, Strand, London, W.C. Each answer should be headed with the number of the question it refers to.

1. Give the number and breed of cows in stock at the time when abortion prevailed, the proportion of pregnant animals, and the percentage of cows affected.

2. At what season of the year did the malady occur, and at what period of utero-gestation.

3. State the age of the cows having aborted, and the number of calves they have previously had, and if in any it has occurred more than once.

4. What was their condition in regard to flesh and general health?

5. State the condition of weather prevailing at the time and previously to the event.

6. Were the affected beasts housed or at pasture?

7. State the nature, quantity, and quality of food used during the three months prior to and at the time of abortion taking place; and note any sudden change that may have been made immediately prior to the event.

8. Indicate the source and quality of the water used, and the general system of management adopted.

9. Were all the cows that aborted in calf to the same bull,

and is there any marked disproportion of size or age between the former and the latter—or any want of vigour on the part of the bull?

10. Were any signs of ill-health, such as foot-and-mouth disease, or any other ailment, noted before or after abortion?

11. Can you refer abortion to any of the following causes, viz:—Goring or squeezing, severe exertion, such as running or leaping, or being leaped upon by other cows or young bulls, to fright, sudden surprise or excitement, as produced by thunder, hounds, &c., &c., to any offensive odour, or access to the cleansing of a recently calved cow, or to the cow herself.

12. Have you any reason to suspect as the cause of abortion any plant, such as the horse-tails or sedges, savin, foxglove, ergotised grain, or rusted straw, any medicament, salted food, or roots grown with artificial manure?

13. Do you consider it contagious? if so, state fully the facts on which your opinion is based.

Mr. E. C. Tisdall observed that he hoped replies to the questions would not be restricted to the members of the Association, as it was essential, in order to effect a successful result of the object aimed at, to obtain the opinions of as many breeders as possible. He also hoped that some of the editors of the agricultural journals would have a few words to say on the subject.

The Hon. Sec. was accordingly instructed to write to the papers to that effect.

A vote of thanks to Lord Chesham for presiding closed the proceedings.—*Mark Lane Express and Agricultural Journal.*

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Monthly Council, Wednesday, June 2nd, 1880. Present, the Duke of Bedford, President, in the chair.

REPORT OF VETERINARY COMMITTEE.

The Hon. W. Egerton (chairman) reported that the committee had received from Dr. Greenfield the following report on the investigation into anthrax and allied diseases at the Brown Institution:

In my former report, published in the last volume of the Society's *Journal*, I gave the results of my experiments so far as they were completed to the middle of February.

It may be remembered that the chief results of the experiments, briefly stated, were—

1. That splenic fever may be transmitted to a bovine animal by direct inoculation from a rodent; that the disease thus given, though severe and possibly fatal, is not usually so, and that the modified attack of the

disease confers a certain degree of protection from subsequent attacks communicated in the same way; so far, at any rate, as the experiments had been carried.

2. I showed also that the fungus which constitutes the essential contagium, when grown in successive generations in a cultivating fluid, was still capable of giving rise to the disease, being in one case fatal to a cow in the first generation, in another fatal to a sheep in the fourth generation. My experiments also showed that an attack thus communicated, causing severe symptoms, appeared to be equally protective against results from future inoculations with the disease given directly from the guinea-pig.

I pointed out that, although I applied as severe tests as were at my command to ascertain the degree of protection conferred, it was yet desirable to perform the more crucial test of direct contagion from another bovine animal; and that, if the experiments were successful, the precise method of performing the protective inoculation, and the durability of the protection, would require further investigation. Having regard, also, to the small number of animals as yet experimented on, it would be desirable to repeat similar trials on others.

Keeping these points in view, I have continued the experiments, and have inoculated two other animals with similar results. In one case also which had just recovered from the first attack at the time of my report, I have ascertained by further inoculations that protection had been conferred. Thus in all, I have added three more to the cases of success by this method. In one of these the disease was given by the fourth generation of the cultivated fungus, and the symptoms were severe.

So far as concerns the crucial experiment, that of exposure to direct contagion from another bovine animal, I have not as yet had any opportunity of making it, and am still waiting the occurrence of some outbreak, of which I hope we may receive early information. But I have just received some material from other animals which is known to be highly infectious, and am about to make experiments with it.

Since my previous report another very interesting and equally important point has become clear, which may, I hope, prove of great value in future. It is that, when the virus of the disease (the fungoid organism known as *Bacillus anthracis*) is artificially cultivated in an indifferent fluid, by the method of successive generations which I have described in my report, each succeesive generation becomes less active than its predecessor, and when inoculated, acts not only with less intensity, but more gradually, and often in a somewhat different manner. This modification takes place to such a degree that when the cultivation has been carried to the 14th or 15th generation it may be introduced with impunity into the system of a mouse, which is one of the animals most susceptible to the poison.

Apart from its scientific interest, this fact will doubtless prove to be of practical value, for by its means it will be possible to obtain a virus of sufficient activity to produce an attack of the disease which shall be protective, but not of sufficient severity to be dangerous, or in any way injurious to the animal inoculated.

With regard to any apprehended ill-effect upon the animals thus inoculated, I may say that the cows which we have used have thriven remarkably well, and none so well as that which has been more severely tested.

I hope in a future report to give the details of these investigations, which have necessary been extensive and complicated.

I venture, therefore, to urge upon the Society the importance of continuing these experiments so as to bring them to a complete and decisive result. In order to this, further outlay in the purchase and keep of animals and other expenses will be necessary, which will involve the renewal of the grant for the ensuing six months.

Dr. Greenfield's chief difficulty had been to obtain early information of the outbreaks of splenic apoplexy and quarter-evil.

With reference to the resolution of the Council at the last meeting concerning an investigation into fluke disease, Professor Simonds had reported as follows:

Having in my capacity as Consulting Veterinary Surgeon been requested to consider the terms of this resolution, and advise the Committee in reference thereto, I submit that such inquiry should be undertaken, and that a commission should be appointed for the purpose.

1. It is desirable that an approximate estimate of the extent of the loss which has taken place chiefly among cattle and sheep should be formed.

2. That an explanation of the circumstances of the disease having prevailed to the greatest extent in the Midland, South, and South-Western Counties, and been comparatively of little importance in the Northern division of the kingdom, and in Scotland should be given.

3. That correct information may be widely distributed as to the best means to be adopted to prevent the fluke epizootic, more especially in seasons of the greatest danger, such as that of 1879, and for the treatment of infected animals, with a view to arrest the progress of the malady.

4. That fresh investigations be made into the life-history of the fluke, doubts having been expressed by agriculturists and others of the correctness of the description given of the method of its development and entrance into the bodies of animals.

5. That the statements in particular of sheep becoming affected in some water-meadows and not in others in the same district and at the same period of the year, be tested by direct experiment.

6. That investigations and experiments be also made to determine whether embryos of flukes cannot be conveyed by other means, especially by the hay cut from wet and low-lying meadows, as well as by the feeding of animals the on grass or partaking of the water in such situations.

The Committee recommended that, under head No. 3, a paper should be written for the *Journal* on the practical treatment of the disease and the conditions under which it is developed; and under head No. 4, that Professor Rolleston should be asked to write a report on the life-history and development of the fluke, and to make local inquiries into the subject. The Committee applied for a grant to be placed at their disposal to enable them to carry out these investigations.

Mr. Dent stated that the *Journal* Committee had considered the report of the Veterinary Committee, and proposed to invite Professor Rolleston to undertake the scientific portion of the inquiry into the nature of the fluke disease, and a competent gentleman to investigate and report upon the recent outbreak, and the best practical measures that have been or may be carried out for its prevention and cure. With respect to the practical portion of the inquiry, it was thought that the gentleman selected should himself go into the districts which were particularly affected, and also, if he considered it necessary, into the districts only partially affected. From the reports already sent to the Secretary, it was evident that any well-informed person would have no difficulty in finding out much valuable information. Then there was the question

raised by Mr. Rawlence of flukes being found in the livers of calves which had never tasted anything but their mothers' milk. It was important that such matters should be investigated; and he might add that Professor Simonds was ready to give any assistance that lay in his power. Some gentlemen supposed that the disease might be transmitted by the hay made in wet and low-lying meadows, and the botanical authorities would also be glad to give their assistance to the practical man who might be appointed. Mr. Dent added that he could not help thinking they might get a paper which would interest agriculturists very much, and be of considerable service in warning them as to treatment, both preventive and curative. As Chairman of the *Journal* Committee, he was chiefly anxious to get a paper which the farmers would read; but he hoped the Council would agree to an investigation of both the practical and scientific parts of the subject.

Mr. Jabez Turner said he should like to say a few words on the practical side of the question. He had that morning received information which showed that the subject of flukes, in both sheep and cattle, and their development, was very imperfectly understood in certain districts; and he thought that the proposed inquiry, if undertaken, should be a very full one. He was in possession of particulars from the County of Huntingdon of two young and valuable horses dying from the effects of these creatures, and also a statement of flocks of sheep which has been lost, in some parts to the extent of 70 per cent., and in other parts entirely, which have never been on water-meadows, but always kept on high land. He trusted that if a commission were appointed it would not entirely consist of scientific gentlemen and veterinary surgeons, but that men of practical character would be associated with it.

Mr. James Rawlence, referring to his remarks at the last Council meeting, said he was now able to incontestibly prove the accuracy of his statement as to flukes being found in the livers of young calves which had never had access to any food other than milk from the cow, as in his presence the veterinary surgeon had cut out the flukes from the livers of such animals.

Mr. Randell confessed that his business at the Council meeting was simply and solely to oppose the application for a grant of £500 to inquire into the question of fluke disease, which, he saw from the agenda, was about to be asked for. He was, however, very glad to find that the committe did not now think of expending so large a sum; and he fully admitted that one part of the inquiry which they proposed to make was likely to be of great value. He denied the necessity of inquiring into the extent to which flocks have been affected; that was, unfortunately, sufficiently known. He denied also that it was necessary to inquire into the means of preventing rot in sheep. The means had been known for generations. Sheep would be rotten if put on water-meadows and undrained clay land in wet seasons; but he was quite convinced that the disease might be prevented on other descriptions of land. This could be done by getting sheep in the habit of licking salt, which they should always be in a position to have free access to. Under these circumstances it was only upon land where no man in his senses would put sheep that there was any danger. He did not like to parade his own practice; but he might be pardoned for doing so on this occasion. The farm which he held was a notoriously rotten farm before he took it. Since it came into his occupation, which was more than forty years ago, the number of sheep kept upon the farm had been more then quadrupled, and yet he had not had one rotten sheep during the whole of that time. He could give instances of other farms where the same thing had hap-

pened. He was very glad to see that it was not proposed to carry out the recommendation of Professor Simonds, that an inquiry should be undertaken as to the extent of the disease, and seeing the fact was patent that rot could be prevented by using proper means, and had been insisted upon in the agricultural journals for the last hundred years, he thought they should incur no further expense under that head. The theory that an abundance of salt was hurtful was contrary to his own experience, which proved that no harm whatever occurred to sheep which had constant access to salt from the time of their birth. The committee having modified the proposed grant and altered the scope of the inquiry, under all the circumstances of the case he was inclined to coincide with their views, and he therefore begged to second the adoption of the report.

Mr. Bowly thought the money would be very well laid out. An instance similar to that mentioned by Mr. Rawlence had been brought before the Cirencester Chamber of Agriculture on Monday. A ten-weeks'-old calf, which had never tasted anything but milk, was found to be full of flukes. He admitted that salt was a very good thing, although last year his own experience was that it perfectly failed.

The *Earl of Ravensworth* said he had taken a little trouble, since the Council last met, to inquire from really practical men the losses in their experience. He hoped to obtain some more explicit information, but in the mean time he should like to mention one curious fact. It was in reference to the Border itself, and he could not find that where ordinary caution and wisdom had been exercised in herding the sheep on hillsides that one case of rot had occurred. As many members of the Council were aware, on the borders of Northumberland and Cumberland there were certain mosses or "floes," and great outbeaks had occurred in those places. That in itself indicated that if fair and reasonable precautions were taken these serious losses might be obviated. On his own estate, in the case of two tenants, the land was very peculiar, being very strong clay, where drainage was very difficult owing to the want of fall, and almost the whole of the sheep had been lost. On other parts of the estate the animals had not suffered. He mentioned this latter fact to show the local character of the disease.

Colonel Kingscote said his only fear was that it would be found perfectly impossible to accomplish what the Council wanted for anything like the sum named. So many people would be anxious to give evidence; and if the gentleman chosen to conduct the practical investigation was expected to go east, west, north, and south, he was sure he would not be able to do it.

The *Hon. W. Egerton* said that the intention of the committee was that the gentleman should have the assistance of all information coming to the office of the Society, and that he should seek out such other facts as would enable him to prepare a useful report for the *Journal*.

The report of the committee was then adopted.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETINGS OF COUNCIL, HELD WEDNESDAY, JUNE 16TH, 1880.

Present:—The President in the chair; Professor Axe; Sir F. Fitzwygram; Messrs. Batt, Blakeway, Cartwright, Coates, Collins, Cox,

Dollar, Dray, Freeman, Greaves, Harpley, Morgan, Reynolds, Taylor, Whittle, Woods, and the Secretary.

The *Secretary* read the notice convening the meeting.

The *Secretary* laid on the table the Attendance Book of Members.

The minutes of the last meeting were read and confirmed.

A copy of the Annual Report from the Veterinary Department of the Privy Council was laid on the table, and a vote of thanks was awarded for the same.

Application was made for the Diploma of the Royal College of Veterinary Surgeons by members holding the Highland and Agricultural Society's Certificate, which had been verified by the Principals of the various Colleges.

Diplomas were granted.

Letters were received from Messrs. Cartwright, Cox, and Dunn, acknowledging the honour of election as Vice-Presidents.

Letters were also received from Professors Simonds, Walley, and Williams, and Mr. Robertson, of Kelso, regretting their inability to attend the meeting.

The *Secretary* stated that he had received a letter from a Mr. H. Wand, stating that, on account of an attack of congestion of the lungs, he had been unable to pursue his studies in order to obtain the certificate from his teachers.

The *President* said that Mr. Wand must be informed that he must study the requisite number of terms, and forward the usual certificate.

The *President* said that a letter had been received from Professor Bentley, asking the date of the examination in July.

The *Secretary* said that, in a letter received from Professor Simonds, he had fixed the 6th of July.

The *President* said it would be well to inquire of Professor Simonds whether there was to be a first examination.

The *Secretary* said he had received a letter from Mr. W. T. Olive, of Briton Ferry, Glamorganshire, asking what are the conditions of registration in the Supplementary Charter of August last. He had been in practice since 1860, but he was not a holder of the Highland and Agricultural Society's certificate. He was informed, in reply, that registration under the Supplemental Charter was only given to those gentlemen who held such certificate.

A letter had also been received from Mr. Edward Davies, dated 18th May, in which he stated that he had attended four sessions at Edinburgh, and that he came up for the minor examination under the old rules twice, and was rejected. He asked on what terms he might start under the new rules.

The *Secretary* was instructed to reply that Mr. Davies must commence *de novo*.

The Penal Clause.

The *Secretary*, referring to the motion which had been brought forward at the end of the Annual General Meeting held in Edinburgh by Mr. Dollar, in regard to the Penal Act, stated that he had since received three letters from the Yorkshire, Lancashire, and Liverpool Veterinary Medical Societies, in support of the above-mentioned Act.

The *President* said that, as Mr. Dollar was now a member of the Council and a vice-President, he would be able to bring forward his motion in the proper way.

The *Secretary* was instructed to acknowledge receipt of the three communications.

General Sir F. Fitzwygram's Motion.

The consideration of the notice of motion given by Sir F. Fitzwygram as to the advisability of appointing a second Examiner in each subject in the Pass Examination was postponed on account of the absence of Mr. Williams, who had expressed his desire to be present at the meeting, but who had written to say he was unable to be present.

Mr. Fleming's Motion.

The *President* moved: "That steps be immediately taken to obtain an Act of Parliament for the protection of the title of Veterinary Surgeon." He had no doubt they were all acquainted with the terms of the motion, and of the feeling of the profession in regard to it. He had nothing more to say in the matter. He believed the Council had expressed its opinion that steps should be taken to carry out the terms of the motion, and it now remained for them to say what steps should be taken. He would leave the matter in the hands of the Council, and he would suggest that no time should be lost in taking those steps.

Mr. Greaves said he had always had a strong feeling in favour of getting what would be a simple act of justice done to the veterinary surgeons of England. He was present at the Veterinary Medical Associations when this matter was brought before them, and also at another association in Belfast. He could assure the Council that the feeling throughout the country had been strongly in favour of obtaining an Act to retain the penal clause to prevent men calling themselves veterinary surgeons who were not veterinary surgeons. Up to the present time they had had the difficulty of the Highland Society operating against them, because the members of that Society were not members of the College. Now that that difficulty had been superseded, there seemed to be no obstacle in the way. He thought the time had come when Parliament should be applied to for an Act, and that as soon as possible. He asked the President what the possible cost of obtaining the Act would amount to?

The *President* said he could form no estimate.

Mr. Collins proposed the appointment of a small committee to consider the matter, and to report to the next meeting what steps they proposed to take.

Mr. P. Taylor seconded the motion.

The *President* suggested that the small committee should be merged into the Parliamentary Committee. This being agreed to,

The appointment of the Parliamentary Committee was then proceeded with, and the following gentlemen were elected as members:

The President, Sir F. Fitzwygram, Messrs. Batt, Collins, and Cox, Mr. Dollar, Mr. Greaves, Mr. Harpley, and Mr. Woods (three to form a quorum).

The following motion, of which notice had been given by the President, also came up for consideration:—"That before a medical gentleman is allowed to appear for any examination, he shall furnish sufficient evidence as to the legal qualification he holds in medicine or surgery."

The *President* said it was well-known in different parts of the country that diplomas were issued which conferred no legal status at all in medicine, and the veterinary profession, with other bodies of a similar kind, were exposed to be imposed upon by men who held the medical diplomas. He thought that those who came up to receive a diploma should give evidence that they were qualified members of the medical profession in some part of the world or another. He, himself, had an instance of one gentleman coming up for examination, and he did not

know he was a medical gentleman until after he had examined him; but the College had no evidence that he was a medical gentleman. He thought it was necessary that such evidence should be furnished, in order to make the College secure. He begged to move the resolution.

Mr. Reynolds seconded the motion.

Mr. Collins asked what constituted legal evidence. There were certain universities and colleges abroad that were supposed to be recognised or not recognised as the case might be; but there was no definite rule laid down. If the bye-laws were carried out strictly, it would not be necessary to obtain legal evidence. If they were legally qualified practitioners, what further evidence was necessary?

The *President* pointed out that the bye-law did not lay down anything with regard to presenting the legal testimony. It was only taken for granted. It had been settled by the Council that the standard of the Royal College of Surgeons, or the Royal College of Physicians, should be taken as a guide in this matter. These were the bodies which were most likely to know what schools gave a proper medical course of study, and what schools issued a proper qualification. The motion he proposed made it compulsory on the candidate to present his diploma of qualification in order that the Council might not be imposed upon.

Sir F. Fitzwygram thought there was a misunderstanding about the matter. He did not think any man could present a medical diploma recognised by law unless he was on the General Medical Register. Mr. Loch had told him that no diploma whatever was recognised by law except the diplomas of those on the General Medical Register. If a man showed that he was on that Register there was an end of the matter.

At this point the *Secretary* read from the Calendar of the Royal College of Surgeons the names of the recognised medical faculties in foreign countries.

The *President* said it was well known that the Royal College of Physicians and the Royal College of Surgeons recognised certain medical faculties in America and the Continent as legal faculties, which were qualified to give diplomas in medicine. He thought they would find in the bye-laws that that was the case. The rules of the colleges he had mentioned also recognised certain medical schools especially in America. The Royal College had a case lately where, on inquiry, it was found that the diploma was of no legal value.

Mr. Greaves wished to ask whether none but those whose names were on the Register of the Royal College of Surgeons or the Royal College of Physicians could be listened to. Although the name was not on the Register, still he ought to be allowed to come up for examination if the investigation into his case was satisfactory.

Sir F. Fitzwygram said that the present rule only allowed those whose names were on the English Medical Register, and if they admitted gentlemen with qualified foreign diplomas they would have to enlarge their existing law.

The *President* said that the impression on his mind was that medical gentlemen holding a qualification from a medical faculty recognised by the Royal College of Surgeons or the Royal College of Physicians were competent to study under the bye-laws of the Royal College of Veterinary Surgeons. If his impression was erroneous the Council had been acting wrongly, because two American gentlemen had claimed and received the benefit of the bye-law.

Mr. Morgan proposed as an amendment:—"That no gentleman be allowed to escape the first term before he comes up for examination whose name is not on the British Medical Register."

Mr. Collins seconded the motion. It was a clear and defined line. It could thus be ascertained whether the applicant was a member of the English Colleges or not. If he were a foreigner the information could not be so well obtained.

The *President* wished, before the amendment was put, to inform the Council that it would place the Examining Board rather in a fix. Already at Edinburgh there was an American gentleman studying who applied to be exempted from the first term ; but it was discovered in reference to the rules of the Royal College of Veterinary Surgeons that his diploma was not recognised in this country ; therefore he had to study the full term. And he thought there was another gentleman at the Royal Veterinary College, also an American, and that he was exempted from the first term of study. When he came up for his final examination what was to be done with him ? He would have to go back to his first term of study.

Mr. Collins said that in this case an exception might be made.

Prof. Axe said it was worth while considering if they, as a Council, had power to reject a pupil who was presented to them for examination.

Mr. Taylor asked whether if the applicant said he had the diploma of some college he should forego the first term of study.

Prof. Axe said it seemed to him to be a question of arrangement between the student and the College. He simply suggested to the Council that it would be worth while to consider whether, on a student coming up for his first examination, receiving his certificate from a college, the Council had the power to reject him.

Mr. Cox asked what college was referred to.

Prof. Axe said he meant any college. Supposing a gentleman entered himself as a student at any of the recognised schools in England or Scotland, the College would admit him on certain terms, providing he should attend two or three sessions as the case might be, on consideration that he had passed certain examinations abroad. If the colleges admitted him, had the Council power to reject him or decline to examine him.

The *President* said that the Royal College of Veterinary Surgeons could not give a diploma to unworthy students. It had the right to obtain the fullest proof that the gentleman who presented himself was a legally qualified medical gentleman because he was exempted from a very important period of study. This object in bringing the motion forward was to furnish the Royal College with proof that a man was really a well-qualified man at a properly legalised university or faculty of medicine. He thought that the Royal College should exercise every care in ascertaining who those were upon whom they intended to confer their diploma.

Prof. Axe said that the way in which the matter was put seemed to suggest that there was an obstacle. He took it that it was not within the province of the Council or of the Examiners to decide on the qualifications of a man by his antecedents. If a gentleman presented himself he thought it was for the Council and Examiners to decide on his qualifications by the merit he manifested in his examination, and not by the fact as to whether he had passed through any college or was exempted or not at any school. It seemed to him that schools were responsible for the gentlemen they received for teaching purposes. He did not think, from the manner in which the matter was put, that the Council was in a legal position.

Mr. Cox said that the Council surely had the power to determine

under what circumstances the student might offer himself. It seemed very important that there should be a rule for the College as to whom they would present. The difficulty seemed rather to be in determining as to which medical faculties, colonial or foreign, should be accepted.

The *President* then put Mr. Morgan's amendment to the meeting.

Mr. Collins withdrew his seconding of the motion, because he said he was not aware when he seconded it that so many different colleges were recognised by the Royal College of Surgeons.

The amendment was lost, and the President's motion was put and carried.

The names of three members had been received as candidates for Fellowship Degree.

On the motion of *Mr. Cox*, seconded by *Mr. Freeman*,

The President, Mr. Collins, Prof. Duguid, and a member of the College of Preceptors, were reappointed Examiners for the Fellowship Degree.

It was resolved that the examinations take place in London on the 6th of July, and that the examinations in Scotland would be held at the usual period if there were any students to examine.

Election of Committees.

The following gentlemen were elected members of the various Committees:

Museum Committee.—The President, Professor Pritchard, Professor Axe, and Mr. Coates.

Finance Committee.—Messrs. Cartwright, Greaves, Harpley, Morgan, Taylor, and Coates.

House Committee.—Messrs. Batt, Greaves, Harpley, and Pritchard.

Register Committee.—The President, Messrs. Coates and Collins.

Sir F. Fitzwygram and Messrs. Collins and Dollar were appointed as a small committee to take into consideration some better means as to the mode of voting paper for the annual elections.

On the recommendation of Mr. Coates, it was resolved not to print the Register until after the examinations, as it would be desirable to enter the names of those who would then be admitted.

Library Committee.—Professor Axe, Mr. Blakeway, and Mr. Harpley were appointed members of this committee.

New Building for the College.

The President again called attention to this subject and to the necessity of some active steps being taken in the matter. He thought the profession had some claim on the Farriers' Company, who had plenty of funds, and who would, no doubt, be willing to assist in the matter.

In the course of some conversation it was suggested that a deputation should be appointed to wait on the Farriers' Company in order to lay the views of the Council before them. It was also suggested that representations should be made to the Government on the subject, but the feeling of the Council seemed to be that the present session would be rather inopportune. It was subsequently arranged that Mr. Batt, who was connected with the Company, should make inquiries privately as to the feelings of the Company in regard to the proposal, and to report the result to the Council at the next meeting. Also that next Parliamentary Session a quorum of the Parliamentary Committee be appointed to wait upon the Lord President of the Council in order to present their views.

The names of Professors Simonds, Brown, Pritchard, Axe, Walley, and Williams, were added to the Parliamentary Committee.

The *Secretary* read the result of the Fitzwygram prizes, as follows:

The Fitzwygram Veterinary Prizes.

These prizes were open to all students who graduated at the Royal College of Veterinary Surgeons, and to the students who had obtained their diplomas during 1879-80.

The Examiners were Mr. H. J. Cartwright, of Wolverhampton, Mr. Thos. Greaves, Manchester, and Mr. Faleoner King, of the School of Medicine, Edinburgh.

The names of three candidates only were entered on the list: one from the Royal Veterinary College, one from the Edinburgh Veterinary College, and one from the Edinburgh New Veterinary College.

The Written Examination took plaee in London and Edinburgh on Tuesday, 4th May, and Wednesday, 5th.

The following is the result:

	Anatomy. 300	Physiology. 300	Pathology. 300	Chemistry. 100	Materia Medica. 125	Botany. 75	Total.
No. 35	235	215	200	46	84	44	824
„ 37	250	245	275	78	120	52	1020
„ 38	165	250	215	36	91	46	803

Mr. James Wood Ingram, No. 37, of the New Veterinary College, Edinburgh, was the only one who obtained qualifying marks in eaeh subject; the other two (Nos. 35 and 38) failed.

The First Prize (£50) therefore is awarded to Mr. Ingram; there being no other qualified competitor he was not required to go through the examination in Part 2 (praetieal).

To No. 35 the Donor kindly presented £15; ditto to No. 38 £10.

The terms of the competition were: that eaeh eompetitor should obtain two thirds of the marks allotted to each subjeet.

Mr. W. H. Coates officiated as Superintendent.

A. W. Hill, *Secretary.*

Mr. Dollar moved "That a committee be appointed to eonsider the best steps to make Clause 12 of the Supplementary Charter available for the benefit of the profession, and to report thereon." He explained his motives for bringing forward the motion, remarking that the present elause was a "white elephant," and was of no use to the profession. He was of opinion that a set of rules should be drawn up by the Council to define their diseiplinary powers, the same as were held by the other professions.

After some eonversation the subjeet was allowed to drop.

The *President* gave notice that he would move "That on and after the year 1884, no eandidate for the diploma of membership shall be allowed to present himself for the final examination unless he shall have given suffieient proof that he has served a pupilage of at least one year with a duly-qualified member of the profession, and during that time has conducted himself satisfaetorily.

A SECOND SPECIAL MEETING

Was then held, to take into consideration the amendment of Bye-law No. 4 by Mr. James Collins.

Mr. Collins said that this was a matter affecting the votes of members abroad, partieularly the army members serving in India, and asked leave

of the Council to refer the matter to the Committee that had already been appointed in connection with the votes of scrutineers.

This was agreed to.

To suit the convenience of members from a distance it was resolved, on the motion of *Mr. Blakeway*, seconded by *Mr. Dray*, that the time of the Council meetings should in future be 3 o'clock instead of 4.

The Council then adjourned.

CENTRAL VETERINARY MEDICAL SOCIETY.

At an ordinary meeting of this Society, held at No. 10, Red Lion Square, W.C., on June 3rd, in the absence of the President, Professor Axe took the chair.

The *Chairman* introduced a specimen, together with a sketch made during the process of bone production, more especially to show the very perfect condition the limb exhibited, inasmuch as it appeared a very material improvement upon the pathological changes which had previously ensued upon an accident relating to it. In Mr. Olver's (Tamworth) communication he said: "In October, 1878, being in attendance on some horses at a farm, I was asked to look at a yearling heifer that had fractured its near hind leg a fortnight previously. The owner of the animal had attempted to set it (but in an unsatisfactory manner) by encasing it within four straight boards, and wrapping the whole with bandages saturated in tar. The weight of the appliances in themselves scarcely permitted the animal to move, and it was very emaciated and suffering great pain. The owner expressed a wish to have everything done that was possible. I removed the so-called splints and bandages, dressed the wound at the front of the fetlock, extending up the metatarsal bone, with carbolic acid, covering it with a plaster-of-Paris bandage. Observed a change on October 25th, when I again applied a plaster bandage higher up the front, leaving an opening for discharges, and dressed the wound and passage with carbolised acid, in the proportions of one part to seven, regularly applied night and morning, and ordered the animal to be kept quiet and well fed. On November 29th I took off the bandage, when the whole lower third of the metatarsal bone came away, which I kept and sent to Professor Axe. At that time I applied another bandage on the previous one to strengthen the leg."

The *Chairman* said he asked to be allowed the leg for dissection whenever the animal was slaughtered, which was just lately, when he received the piece of bone, and heard from Mr. Olver that she had made a capital carcase, and had grazed in the fields last summer, but was a little lame. Mr. Olver had not examined the leg, and was curious to know how nature had filled up the cavity. He concurred with Mr. Olver in believing that, so far as the ox tribe was concerned, the specimen appeared unique; the portion of the leg was perfectly straight; there was no deformity in connection therewith. He received the specimen with a portion of the plaster-of-Paris bandage upon it. He had made a careful examination of the tendons and ligaments; they were in their natural position, and seemed fused together by inflammatory growth. In reference to the inferior part of the metatarsal bone, it was perfectly reinstated, and with the very slightest possible degree of deformity, which only appeared in a slight bulging, due to original decay. Thought the specimen exceedingly interesting, especially as Mr. Olver had detailed

the measures he adopted; it served to illustrate, in a striking manner how, under favorable conditions, when parts are placed in a state of rest, they would become reinstated, notwithstanding that considerable portions of the bone may slough away. He had known several instances of broken bones of horses, but never saw anything like the present specimen. In answer to inquiries, the Chairman further said the animal was fed up fat for the butcher. The accident occurred about the 10th or 11th; had then been lame a fortnight; it did not show whether it was a tumour or a fracture. Five weeks after the event Mr. Olver removed the piece of bone shown; on February 17th he removed the bandage, on which date the animal, practically speaking, recovered. In four months the bone was restored. The animal was killed only recently (March 22nd), and he (the Chairman) received it to-day, about eighteen months after the accident.

Mr. J. Moore doubted if one of the small bones originally came off the leg.

The *Chairman* said the detached piece and metatarsal were just as received by him; the latter had skin on, and a scar on the skin. The small bone was taken out five weeks after the accident. New-forming growths of bone increased very considerably; it had been six weeks altogether detached from the source of nutrition. The periosteum was removed from it, severed from the blood-circulation, isolated from nutrition, dry, and shrunk.

The *Secretary* said one could see the upper union.

Mr. Shaw observed there was ossification going on.

The *Chairman* said there was not the slightest doubt about the new bone; it bore every trace of having been fractured, or having a tumour. He had stuffed the skin and the hoof; it was cumbersome or he would have brought it that evening.

The *Secretary* said he presumed they were aware that in removing diseased joints or other parts of bone in man it was very possible to have a very free use of the limb again from the growth of fresh bone that takes its place. He had witnessed an operation on a man where it was expected. In horse practice there was little opportunity of seeing how nature would recuperate the loss of bone, but in dog practice the advantages offered were great, and nine cases out of ten do well; in some the growth of bone was incredible. A horse might do even better than a dog if it would nurse its leg.

Mr. G. A. Banham asked how the plaster was usually applied.

Mr. Hunting explained his method of applying it, and said he frequently used them; it was difficult to take them off. Seven or eight years since he had a heifer with a fractured metatarsal bone; the animal, which recovered, had had several calves since then.

Mr. Price had found a gutta-percha bandage better than the plaster-of-Paris one. Cases of fracture should be bound round with cotton wool or lint, and then covered with gutta percha, softened in hot water, right round the limb; it would then remain any length of time, and could be removed easily by laying it open with a knife. In a few days, if the limb swelled, a hot iron could be drawn round to expand the gutta percha. He thought it a capital thing; it could be had any thickness, and applied better than any other bandage.

Mr. Sheather observed it was better to apply a little oil to one's hands; one could get the gutta percha on better.

Mr. A. Broad then read a paper on "Glanders and Farcy," the discussion on which was adjourned to the next meeting.

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

SPONTANEOUS DEVELOPMENT OF CONTAGIOUS DISEASES.

A Paper read by Mr. Fleming.

Since the introduction of the experimental method of research into the study of disease, great and striking progress has been made in general and special pathology; and while human medicine has been benefited to a proportionate degree, veterinary medicine has largely shared in the advantages it has conferred. And perhaps in no branch of medicine—human or animal—have the benefits to be derived from the experimental method been so marked as in the investigations into the nature of those maladies we term "contagious," "zymotic," or "specific." The spontaneous origin of these disorders had, up to a comparatively recent period, been a generally accepted notion—indeed, an article of faith or doctrine which is, at least for some of these diseases, still held by many medical and veterinary practitioners. But the doctrine of spontaneous origin or generation did not alone find disciples among medical men. Biologists and others believed that at least the more minute organisms could be generated or developed *de novo*, when circumstances were favorable; and only a few months ago a lively discussion agitated the world of science as to whether microscopical germs might not be created in particular fluids, under certain special conditions. This was probably the last occasion on which we shall hear of spontaneous generation; for the admirably-conceived and well-executed experiments of Pasteur, but more especially those of our own countryman, Tyndall, appear to have set the question at rest for the present, if not for ever. But it was not until the adoption of the experimental method in biological research, by men of genius and unwearied industry, that the question of so-called "spontaneous generation" obtained this definite solution, and the doctrinal notions generally held up to the other day only received so severe a blow that they may now be considered as dispelled and defunct. These notions were certainly losing their hold somewhat before the publication of the convincing demonstrations of the experimenters I have just alluded to; and it is possible that the increased intelligence developed by the rapid progress of scientific research during the first half of this century did much to bring about more reasonable opinions with regard to the generation of organised bodies. From the very earliest times the most absurd ideas prevailed with regard to the spontaneous creation of creatures—real or unreal—and of the largest dimensions and most complex organisation; and even so late as the time of Spallanzani, the notion of spontaneous generation was so fully and unreservedly believed in that it was popularly accepted that creatures so large and perfect as mice could be developed *de novo*.

But if the doctrine of spontaneous generation was in some respects absurd in the extreme, yet it produced no very harmful results in a general way; and it was only when it asserted its sway in medicine that baneful effects were observed. The desolating scourges of mankind that swept over wide continents and carried off countless myriads of people, were ascribed, in the earlier ages of the world, to an irate deity or the vengeance of wrathful gods, whose murderous chastisements could only be averted by sacrifices, charms, and incantations. In more modern times, when superstition had less influence on the mind, these

pestilences were sought for in, or attributed by the more learned to, cosmical or terrestrial phenomena over which man had no control. The doctrine of contagion was, it may be said, only very recently adopted with regard to the most markedly transmissible of these disorders, and it was far from being universally entertained by medical men or veterinarians; while even among those who most strongly favour it, it never appears to have been doubted that these diseases could be spontaneously generated through certain influences connected with atmospheric or telluric phenomena. But it must be confessed that, among veterinary surgeons in this country, up to a very late date, the doctrine of contagion was not received with much favour, if it was at all understood. Certain it is, that when we were invaded by two of the most serious of all the animal plagues, some forty years ago, their transmissibility from diseased to healthy animals does not appear to have been suspected. They were due to "something-in-the-air," and as the action of this "something" could not be controlled, or its effects averted, these desolating pestilences were freely allowed to extend themselves everywhere over the land, and to be carried to our colonies, where they continue to ravage and destroy—a startling evidence of the results of unacquaintance with their early history and lack of perception on the part of those who then ruled in veterinary medicine in Britain. This lack of knowledge, and stern belief of "something-in-the-air" theory of disease, has been a source of terrible loss to the country during the period mentioned, and has done more to bring our agriculture to its present low ebb than almost any other cause which can be named. The ever-memorable invasion of cattle plague in 1865 affords a painful instance of the "something-in-air" and the "spontaneous-generation" fallacy, when the public was misled, and the necessary measures neglected, in order that these hobbies might be ridden. The lesson was a most severe, but it was a useful one, and it did more to abolish these fallacies, so far as they had reference to animal diseases of the contagious class, than anything else that could have happened. Nay, even human medicine reaped much benefit from the scourge, as it was most strikingly demonstrated how diseases which owe their existence to their contagious properties only may be checked or completely suppressed. Thus did public hygiene or state medicine receive one of its most potent arguments for ample recognition by the country, and the advantages of its application to the preservation of the health of mankind and animals obtain its strongest proof.

I have alluded to the experimental method of investigation as that which has done medicine most service in abolishing the spontaneous generation notion of contagious diseases; and it must be admitted that we owe it to the microscope to having provided us with the clearest and most satisfactory solution of the problem as to the cause of these disorders; while the same instrument has lent invaluable aid in settling the spontaneous development question.

To the microscope we are indebted for the establishment of the doctrine of animate contagia, and for all the knowledge we possess as to the physical characteristics of these contagia. It is true that, some centuries ago, the most serious maladies of mankind were supposed to be due to minute organisms, which invaded the body and produced the disturbances that marked the course of the disorders. Thus (*Scrutinium Physico Medicum C. Pestis dicitur*, Rome, 1658), so long since as 1658, asserted that animacules were the cause of malignant and pestilential fevers, which differed in essence and symptoms according to the nature and venoms of these creatures. The celebrated Dr. Mead (*Exposito Mechanica Venenorum*, 1749) entertained similar views with regard to

the plague; and in 1730 Dr. Thomas Fuller, who has given us the first exact description we possess of sheep-pox in this country, is very explicit. He writes: "My settled opinion is, that in regard every effect is necessarily such as its cause; it must needs be that every sort of venomous fever is produced by its proper and peculiar species of virus. And that the manner and symptoms of every such fever is not so much from the particular constitution of the sick as from the different nature and genus of their specific venom which caused them. And I conceive that venomous febrile matters differ, not in degree of intenseness only, but in essence and *toto genere* also; and that venemous fevers are for the most part contagious." (*Exanthematologia, or an Account of Eruptive Fevers, especially the Measles and Small-pox:* London, 1730.) Dr. Fuller also speaks of the contagia as particulate, or consisting of particles.

But it must be confessed that the notions regarding contagious diseases were hazy in the extreme, and it was not until the experimental method and the microscope had been introduced into pathological research that our knowledge of them began to be exact and comprehensive. The idea that the active principles of the contagia were vital, and that each possessed individual characters, was until then mere speculation.

I think the time has now arrived when the knowledge thus acquired should be utilised in formulating something like fixed principles with regard to these diseases, and deciding once and for all whether contagious disorders can or cannot be spontaneously generated. From almost every-day evidence it would seem that no definite opinions are held on this point; and in our own profession the preponderating tendency is, perhaps, to consider them as capable of being originated, at least in some instances, without any pre-existing contagium. This appears to be the case, at any rate, with two diseases—rabies and glanders. I have myself held this opinion, and am ready and willing to confess that, whenever I am confronted with convincing evidence of error, I am not ashamed to admit that I entertained erroneous ideas. We may be wise at twenty, but we should be wiser at forty. For certain other maladies of an exotic kind—as rinderpest, foot-and-mouth disease, sheep-pox, and zymotic pleuro-pneumonia—I have never admitted their possible spontaneous development, at least in this country; but with regard to glanders and rabies, I have, until not long ago, remained in doubt. I am now entirely of opinion that no contagious disease can be so generated, and the reasons for arriving at this opinion I will give.

By the term contagious or infectious, I do not refer to those disorders solely due to animal or vegetable parasites, of which scabies and tinea may be taken as examples; it is generally accepted, I believe, that the acari and epiphytes producing these diseases cannot be developed except from pre-existing organisms of the same kind. By the above terms I mean maladies which are transmitted from a sick animal to a healthy one by mutual touch or contact, or by particles of matter from the former, suspended in the atmosphere or carried by various media—particles which find admission into the system of the exposed animal by one channel or another, and constitute what is designated the "contagium" or "virus" of these diseases. What differentiates this poison from other animal poisons, such as that of reptiles or septicæmia, is that the minutest quantity will, when introduced into the body, produce its effects as certainly as the largest, owing to its peculiar property of indefinite multiplication, and give rise to as marked effects in the thousandth generation as in the first.

With many of the diseases—according to some authorities, with all—certain organisms have been discovered in the blood and other fluids, which are looked upon as the special agents in producing the characteristic effects that mark each disease. These organisms are the so-called "germs;" and the theory which now generally finds acceptance among the more advanced pathologists, with the regard to the production of these maladies, is named the "germ theory." This theory is certainly the most satisfactory which has ever been proposed to account for the production, course, and extension of these diseases; and it is supported by all the facts that present themselves in our study of these affections. The particles or germs of a contagium may well and aptly be compared to the germs in the seeds of plants. No plant can be produced without seed, and the germ in this seed must be endowed with vitality—it must be living. The seed requires a congenial or suitable soil, and other accessory conditions, for the growth of its germ; but when buried in the soil, and placed in the most favorable condition for development, it does not at once become a plant. There is a definite latent or germinative period in the evolution of every plant, during which nothing is seen, but, nevertheless, germination is progressing; then comes the eruptive period, when, certain changes having been accomplished, the young plant becomes visible; then arrives the stage of blossoming and seed production—the seeds ripen, and every one of them can again, under suitable conditions, reproduce the parent plant and multitudes of germinal seeds. Every seed becomes converted into a plant exactly like that which produced it: the seed of a carrot will not produce a turnip, neither will an oat develop a thistle.

"Like genders like, potatoes 'tatoes breed,
Uncostly cabbage springs from cabbage seed."

The seed of each plant has its own special phases of evolution, which are as peculiar to it as its physical or other attributes, and man can effect but little in modifying these.

Zymotic or contagious diseases, such as those of which I am now speaking, bear the strongest analogy to plants in this respect. Each, I assert, has its own special germ, which can only develop its own particular disorder—never any other. This germ can no more be spontaneously developed than can the seed or the plant. It has a life, an individuality of its own, which nothing can transmute or alter. As the carrot seed will not grow into a turnip, nor the oat produce a thistle, so neither will the germ of cattle plague develop foot-and-mouth disease, or that of rabies give rise to variola. The germs of each zymotic malady are as distinct and independent as different kinds of plants or different kinds of animals; and these germs can be no more transmuted into each other than can the plants or animals. The organism of a susceptible animal receives the germs of a particular disease as the ground receives the seed—there is a characteristic period of latency or germination, during which the most careful observer can detect no change; then comes the eruptive period, with the manifestation and definite course of the symptoms, which characterise the malady as distinctly as the leaves, the flowers, &c., characterise the plant when the multiplication of new germs has reached its maximum stage, and these can infect any number of other susceptible creatures into which they may be sown. Another feature in these zymotic diseases gives them an additional resemblance to the growth of seeds. One attack protects against another, for perhaps years, if not for life—the germs will no longer grow in that soil, and the organism is endowed with immunity. We know that the rotation of crops is an absolute essential in agriculture; the

soil will not for any length of time grow the same kind of plants, and some exhaust it sooner than others.

If I am justified in asserting that zymotic diseases are due to the action of specific germs, possessed of vitality and special characters as absolute and marked as those which produce plants or animals—and every fact with which I am at present acquainted supports this assertion—then am I as justified in asserting from all the evidence before me that these germs cannot be spontaneously generated. Life only springs from preceding life—no combination of influences or conditions known to man will produce a plant or animal without a seed or germ—the causes so often invoked as operating in the production of specific diseases are utterly insufficient, as they can no more develop them without the pre-existing germ than man can be developed without pre-existing man. Zymotic disorders never spring up *de novo*. We might as well admit the appearance of a plant where no seed had been sown, as the advent of one of these disorders without a previous germ. I quite agree with Sir Thomas Watson when he says, that "a disease is supposed to be generated *de novo* when the evidence is negative only, and consists solely in our inability to trace with the eye the continuity of a chain whose connecting links are known to be invisible." To conclude from this that no chain exists is palpably absurd. There are a thousand unsuspected ways in which the invisible contagium of these maladies may be conveyed.

Organic matter endowed with vitality, and composed of living particles, cannot be created by man, nor do we know of their independent creation. The chemist or mineralogist may form crystals of organic or inorganic matter, but no one can create a seed, a blood-corpuscle, or a secreting cell.

In adopting the argument I have done, the question may be asked, and has been asked, "How did these diseases first originate if they cannot be developed independently now?" Well, that question is no doubt pertinent enough, but it is like many more of a similar kind—more easily asked than answered. The answer will be forthcoming when we know how man, animals, and plants originated. All matter has had an unknown origin, and so have plants, animals, and specific diseases. To assert that the latter may be spontaneously developed, merely because we cannot explain how they first originated, is as absurd as to maintain that a tree or an animal may appear without the pre-existence of parent trees or animals. Assuming that these maladies are solely due to the presence of specific germs, and that these germs must exist in order to produce them, then we need not bewilder ourselves in inquiring into the how and wherefore of their first production any more than we need do into the origin of the first man, first dog, or first elephant. These things are beyond our knowledge, and we can only deal with matters as they present themselves to us.

Rinderpest is not a European disease, and I am not aware that any but writers in the public papers in 1865-66 ever said it could be developed here. When little was known regarding it, we were informed many years ago that it was developed in Southern Russia. We now know that it is an Asiatic disease, and that so far from being spontaneously generated it is always traced to a contagious source. The Russian veterinarians have tracked it into Central Asia, but they have never been able to discover where it was generated. Its existence depends solely upon its contagious properties, and the violation of every hygienic law will not produce it. When its contagium is destroyed in a country it will not again appear, unless a fresh supply is introduced

rom an infectious centre. This is one of the diseases which can be extinguished, just as noxious plants or animals can be exterminated.

Contagious pleuro-pneumonia and foot-and-mouth disease belong to the same category. They have been extended over the world solely through their contagious properties, and they cannot be spontaneously generated anywhere. We can trace their existence and diffusion for more than a century, and their ravages and extension have been simply owing to the fact that they were not looked upon as contagious, but due to "something in the air." For nearly thirty years they were allowed to scourge this country unchecked, and we permitted our colonies to be invaded by them, because we could not recognise their being purely contagious disorders. Within the last few years this recognition has taken place, measures have been adopted which should have been taken thirty years ago, and now these two maladies are almost unknown in the land. Sheep-pox is never seen here, except as an introduced disease; and it could be easily extinguished on the Continent if proper measures of occision and isolation were enforced. In Denmark it is unknown, because diseased sheep are never allowed to enter.

Rabies is a malady about which doubts might be entertained as to its being always due to its contagious properties, but I am now convinced that its speed, and indeed its existence, depends solely upon its contagium. There are several parts of the world in which it has never been seen, merely because it has not been carried to them; and the dogs in them live, and are subjected to exactly the same external influences as in regions where this terrifying and fatal disorder is frequent. The irregular, and oftentimes extremely protacted, period of latency, the long distances travelled by rabid dogs, the readiness with which bites may be inflicted by them on healthy dogs without the wounds being detected, and some other circumstances attending the evolution of this disease—all conspire to render its origin sometimes obscure, and make it appear as if it could arise spontaneously. I feel certain that rabies is a contagious malady which could be stamped out by the adoption and enforcement of special sanitary measures.

Tuberculosis is another cruel disorder which the evidence of every day goes to prove is contagious and infectious, and that its existence and spread depend upon its infective principle. It is becoming more and more prevalent, simply because its infectiveness is not recognised, and it is all the more serious for the reason that it may be communicated from the bovine species to man and other creatures. This disease could also be extinguished by proper measures.

There are several other contagious maladies belonging to this category, but I will omit noticing them, and come to one which is at present very prevalent in London, and indeed throughout the country, and is causing much loss and inconvenience. This is glanders—a notoriously contagious disease of solipeds, transmissible to mankind and several other species of animals, and nearly always fatal. While many veterinarians would be disposed to admit the non-spontaneity of some of the other contagious maladies, I feel inclined to believe that there are indeed but few who would grant that this disease also belongs to the specific class which cannot be developed through aught save its own special contagium. In our text-books and in lectures, in our consultations and discussions, it is set down as a malady capable of spontaneous origin, though it is also admitted that it can be extended by contagion. The causes which are supposed to produce it are said to arise—I quote from new edition of one of our veterinary text-books—from debilitating influences, "such as old age, bad food, over-work, exhausting diseases, and general bad

management; from specific miasmatic or animal poisons, such as those generated in localities where large numbers of horses are congregated together in camps, barracks, large cab or other establishments, even where the stables are well ventilated, lighted, drained, and the animals well attended to in every way, but more particularly where the stables are ill ventilated, badly drained, dark and foul. Horses, when crowded on board ship, are very liable to this affection, and the Arabs in transporting their horses from Arabia to India always choose that part of the year when the passage is shortest, lest the accidents incident to a long voyage might oblige the hatches to be closed, and want of ventilation promote the development of glanders." The writer continues: "I have also observed that glanders is developed in new stables, where the walls are not thoroughly dry, where, in fact, in common language, they are said 'to sweat;' and, finally, glanders occur as a sequence to exhausting diseases, more especially if the animal be old or of a bad constitution. These causes, and a generally vitiated condition of the animal system, may be said to produce glanders—(1) By causing the introduction into the blood of vitiated or decomposing material generated in the external surroundings of the animal; (2) by inducing the formation of degenerated material within the animal system; (3) by preventing the excretion of the degraded constituents normally generated within it by natural tissue changes, or excessively formed within it by various disordered functions, or introduced into it from without. The most common forerunner of glanders, more particularly of that form of it known as farcy, is the disease commonly called *diabetes insipidus* or polyuria. It cannot be said that in diabetes there is any obstruction to the excretion of degraded tissue; indeed, the reverse is the case, excretion of urine being enormously increased. If we look deeper into the matter, we shall, however, see the polyuria is but a result of rapid tissue changes, rapid emaciation of the body being a most prominent symptom, with debility arising from degradation of tissue and from the presence of the degraded materials within the circulatory fluid. So apparent is this condition that it has been truly said that diabetes, when arising from no cognizable cause, is often indicative of a general breaking up of the constitution."

Now all this long string of supposed causes operating in the production of glanders is nothing more or less than mere hypothesis, destitute of a single fact to support it. Glanders is not, and cannot be, produced by anything save the glander contagium. It is a purely contagious disease, and owes its production only to its contagious principle. Not one or all of the causes combined will give rise to it, though they may favour its evolution when the contagium has been introduced. Among horses all my life, and for a quarter of a century in a position to watch the genesis of disease, such as falls to the lot of few veterinary surgeons, as a result of my experience and close study of this malady in particular, I firmly maintain that none of the causes popularly supposed to develop glanders will do so. It is mere theory to assert that they can, and the existence of such a theory constitutes a standing danger to the public interests; for as long as it is accepted so long will the scourge prevail. It was the existence of a similar theory which kept zymotic pleuro-pneumonia and foot-and-mouth disease for forty years devastating the country, and it is high time it was abandoned with regard to glanders. The vitiated, decomposing, or degenerated material theory, the degraded constituent notion, is baseless. Glanders is only produced from glanders, and nothing else. A soliped will not have the disease unless he is infected with it; and the maladies or morbid conditions which are

said to develop it I have always found to be only indications of the disease itself. In those parts of the world to which glandered horses have not been carried it is totally unknown, though we find in these countries all the causes enumerated as capable of producing it. Take Australia and New Zealand, for example. Glanders has never been witnessed there, and yet horses are exposed to all the influences to which they are subjected in glander-haunted countries, such as our own; indeed, these influences are more pronounced, perhaps, there than here. I have made particular inquiries among friends at the Antipodes who are in a position to know, and they all assure me that, no matter how severely horses are worked, or how much they may be crowded in foul stables, or badly fed, this disease never appears, not even as a sequel of disorders.

During the war in Mexico the French army horses were exposed to terrible fatigue and privation, very many perishing, and yet glanders did not appear. Yet the disease was not unknown in Mexico, for at Vera Cruz in 1847 it was seen there for the first time. It appeared among mules and horses placed in stables which, a few months before, had been occupied by some squadrons of United States cavalry during the war between the two countries. As is well known, glanders is a very common disease in the United States, and no doubt the Union cavalry horses carried the infection with them. The French veterinarians found in Mexico all the causes which in Europe are said to develop glanders, but no glanders occurred among the horses under their care.

Crowding on board ship is said to produce glanders, and especially when the ventilation is bad or defective. A favourite illustration in proof of the spontaneous development of glanders on board ship is that afforded by the expedition to Quiberon. The cavalry horses had not been long on board the transports before it was necessary to close the hatchways during stormy weather, and after they were disembarked the disease broke out among them. But it must be remembered in those days few stables were free from glanders, and its prevalence among army horses was very great. It is therefore more than probable that infected horses were put on board these ships, and that the close confinement and foul air not only developed it sooner, but accelerated its spread among the other horses.

At one time I was a believer in this ship-board genesis of glanders, but on reviewing the facts relating to the outbreaks which came under my own immediate observation, I am now satisfied the infection had been conveyed on board.

For many years a very extensive trade in horses has been carried on between Australia and India—the Indian remount establishment drawing largely upon the resources of the first-named country. The voyage is a very long and heavy one, and sometimes—what from storms, bad ventilation, and other causes—the mortality is large; but there being no glanders among the horses when embarked no glanders is developed during the voyage, nor yet afterwards, unless they come in contact with diseased horses.

The recent campaign in Zululand furnishes us with the same kind of evidence. A very large number of horses were sent from this country to Natal—perhaps the longest sea voyage ever made by troop horses. There being no glanders among the horses of the British army, these animal were embarked free from infection. One ship, the "Borussia," since lost, encountered fearful weather in the Channel and the Bay of Biscay. The ship was badly adapted for the duty, and some of the hatches (those not boarded up above the deck), and all the ports had to be closed, while

she tossed about in the gale, with huge seas breaking over her. For four days the weather was terrible, and when it is considered that each horse had only about 320 cubic feet, the condition of the animals may be imagined, especially as the voyage was partly in the tropics. Yet neither in this instance, nor yet in any of the others, was glanders produced.

If we look at glanders from a pathological point of view, we shall find that, unless we are ready to make admissions which are entirely opposed by facts, we cannot believe in its spontaneous development. The malady to which it is most closely allied, perhaps, is human Syphilis. Yet will any one assert that this can be spontaneously developed? Will any amount of uncleanliness, overcrowding, bad ventilation, disintegrated tissue, or polyuria, produce this horrible disorder? Go to any medical man, show him a hard or Hunterian chancre, and tell him it came of itself. What would his answer be? And what should ours be with regard to the maladies I have specified? I leave you to judge. It must ever be borne in mind that so long as we consider them capable of spontaneous development so long will they be with us, harassing and destroying. It is only when we really believe them to be solely dependent upon their contagious principles for their existence, and act accordingly, that we can control them. Accept the doctrine that they cannot be regenerated when once destroyed, and that their destruction is as possible as that of injurious plants or animals, and we need not be troubled with them for long. Destroy the germs which produce these diseases and you have for ever rid the world of them. This is a grand result to have attained, even theoretically; practically, it is quite capable of achievement. Sanitary science indicates the course to be pursued. It is for enlightened governments to act upon those indications, and for veterinarians to carry out the necessary measures faithfully and energetically, until germ-producing diseases shall no longer afflict the animal world and rob mankind of pleasure and profit—(applause).

Principal Walley thought all present would agree in the main with what Mr. Fleming had said with reference to contagious diseases, though some of his conclusions might be dissented from. Mr. Fleming acknowledged that at one time he believed certain diseases could be generated *de novo*. So it was with him (Principal Walley), and to some extent he retained that belief, notwithstanding the arguments of his friend Mr. Fleming. Pleuro-pneumonia and foot-and-mouth disease disease they might say were not spontaneously produced, but in splenic apoplexy, for example, they found a disease which originated under such circumstances that it was impossible to trace its connection to pre-existing disease. It broke out in districts far removed from the seat of the disease, and under special circumstances of feeding—and sometimes feeding alone—which the "contagion" theory could not account for, and which seemed to indicate that an alteration of the system of feeding would have obviated the disease. Another example militating against the "contagion" theory was the outbreak of gonorrhœa in cattle, which often appeared among cattle where no trace of the disease formerly existed, and where there was no proof that the animals had been in contact with infected sorts. The majority of stock-breeders, as they were aware, kept bulls specially set apart for their cows; and they were for the most part, he believed, entirely used for service in the owners' herd. Yet every now and again they heard of outbreaks of this kind among these cows. They could not say there was a specific virus obtained from the progenitor, for it frequently broke out in herds under such circumstances as that no argument could induce him to believe that it had not generated spontaneously. He thought it was going a

step too far, and indeed begging the question, to ask them to suppose that the germs of such diseases as gonorrhœa and splenic apoplexy had been preserved and handed down from generation to generation. Still in the majority of cases he believed the disease was due to contagious generation. If, as had been said, the first germs were the evidences of a higher than merely human power, then it must be admitted that the same power existed still, and spontaneous generation need not therefore be deemed impossible (applause).

Mr. Hunting, London, supported *in toto* the views of Mr. Fleming, and, as a pupil of Professor Gamgee, contended that contagious diseases could be stamped out by proper sanitary measures. In support of the non-spontaneity theory, he mentioned that prior to 1750 distemper in dogs did not exist in this country, and was traceable to Peru, whence it came to Britain *via* Spain and France.

Mr. Robertson, Kelso, expressed their indebtedness to Mr. Fleming for his visit. With the general tenor of the excellent paper just read he agreed. On particular points Mr. Fleming had thrown a firebrand into the camp of veterinary surgeons. Especially in regard to glanders he agreed with the paper, though his own experience was not so extensive as that of some who had extended experience in large cities and centres. He suspected, however, that when they came to put their finger on the *locale* of a particular organism they would find that glanders originated from glanders. For the germ theory, he thought there was a preponderating weight of evidence, though as to whether the organisms were the entity of disease or merely the carriers there might be doubts. He proposed a hearty vote of thanks to Mr. Fleming.

Principal Walley seconded the vote, which was carried with acclamation.

Mr. Fleming, in reply, thanked the meeting for the kind reception accorded to his paper. He knew of no subject of greater importance, or more likely to elicit thought and discussion. They were in a transition state in regard to the doctrines of contagion, and it was well that the profession should keep itself alive to every improvement made. Every step made in the way of progress concerned very materially the national health and wealth. Contagious maladies had been a source of national disease and, to some extent, of national discredit, as they had been rather remiss in dealing with them. From neglect of opportunities which should have been seized the country had already suffered largely. In selecting the subject of his paper he had in view what concerned the national welfare, and to raise a discussion on points which were of great public importance.

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

The sixty-third quarterly meeting of this Association was held at the Medical Institute, Hope Street, on the 14th May, 1880. C. W. Elam, Esq., President, in the chair.

There were present—Messrs. R. S. Reynolds, J. Welsby, E. Kitchin, and Dr. Greenway, Liverpool; P. Taylor, W. A. Taylor, Hopkin, and Russell (Dragoon Guards), Manchester; Dacre, Altrincham; Whittle Worsley, Storrar, Lloyd, and R. C. Edwards, Chester; Gibson, Birmingham; Stone, Walkden; and Barrow.

Letters of excuse were received from Tom Taylor and S. Locke, Manchester.

The minutes of the previous meeting were read and confirmed.

Mr. R. C. Edwards, of Chester, was nominated by Mr. Whittle; Mr. Kitchin, Liverpool, by Mr. Lloyd; and Mr. Stone, Walkden, by Mr. Morgan, for election as members of the Association.

A letter was read from the Secretary (Mr. D. Hutcheson), tendering his resignation in consequence of having received an appointment under Government at the Cape of Good Hope.

The *President*, on behalf of the society, wrote in reply, accepting his resignation, expressing regret at the loss of his valuable services, and wishing him every success in his new undertaking. It was proposed by Mr. Greaves, and seconded by Mr. Reynolds, that Mr. W. Leather be appointed honorary secretary in place of Mr. Hutcheson. Carried unanimously.

The *President* took the opportunity of congratulating the members on the success of their candidate, Professor Brown, who had been re-elected a member of the Royal College of Veterinary Surgeons.

It was resolved, "That the members of this association view with pleasure and satisfaction the steps that have been taken by the Council of the Royal College of Veterinary Surgeons to obtain a Penal Clause, and that this association will gladly render the Council every assistance possible (pecuniary if necessary), in order to obtain the desired clause.

Mr. Faulkner, Manchester, then read a paper on "The Use of the Trocar and Canula in cases of Flatulent Colic."

Mr. President and Gentlemen,—In introducing a subject for discussion this evening, I feel that one emanating from an older or more able member would prove more interesting and instructive, but when requested by your energetic and industrious President to lend a helping hand in the emergency arising from Professor Axe's inability to be present, I could not decline, more especially when, as a junior member of this association, I considered it to be my duty to render what little assistance I could as a small recognition of the much good and increased knowledge derived by myself from time to time when attending these meetings.

The use of the trocar and canula in cases of flatulency or tympany in horses, I am aware, is open to controversy, and although the operation of puncturing the intestines has been known for a length of time, yet at the present day it has not come into general practice. Having ascertained its practical utility, I for that reason bring it before you in order to elicit the opinions of those who may have given it a fair trial, and in the hope that others may be induced to gain the necessary confidence to follow up and test for themselves the use of an instrument that to me has proved of incalculable service, notwithstanding that when I commenced the operation I was aware that in many quarters it was looked upon with suspicion and regarded as dangerous, but now I feel satisfied it can be performed with impunity. When properly done there is no danger of injuring any vital organ.

Some six years have elapsed since I first used the trocar and canula in cases of flatulency, during which time I have had every facility for thoroughly testing the operation, and, as a result, have come to regard it as invariably successful when performed in time, when every other known means have failed, being capable of relieving the sufferings of our patients and restoring to health the animal placed under our care. During this time I must have operated on over thirty cases, and not

in a single instance has the operation been productive of fatal or dangerous results, and rarely has it been attended with any untoward result.

Previous to my adoption of this practice it had frequently been my misfortune to see valuable animals suffering from great pain, excessively distended in their abdomen with gas, or tympanitic, breathing hurried and difficult, surface of the body bedewed with cold perspiration, stupid at times, at others almost delirious, pulse rapid and feeble, and accompanied with a whole train of death-like symptoms, which in spite of a speedy application of the best known remedies died. A *post-mortem* examination revealed a lesion of the diaphragm, stomach or intestines, but in some cases an entire absence of any such lesion existed, death being brought about by blood poisoning from absorption of noxious gases or asphyxia. In such cases I have attended for hours, exerted myself to the utmost, but unsuccessfully; have felt powerless and distressed in consequence of my inability to relieve the suffering patient; hence I came to the conclusion that a new departure was needed, and as every fresh innovation is eyed suspiciously by unprofessional and some professional people, I for a time practised in secret.

I will now, with your permission, deal with the subject more definitely under the following heads, viz.:—I. The cases to be operated upon. II. The trocar and canula to be used. III. Mode of operation, part operated on, and why? IV. The result.

I.—Whenever called to an animal presenting *considerable* distension of the abdomen from accumulation of gas in the intestines, suffering abdominal pain, and otherwise urgent symptoms, I introduce the trocar and canula *at once* (do not wait until you have great prostration), which frequently affords immediate relief and renders further treatment often unnecessary; but I always administer an aloetic ball or Ol. Lini, with Ol. Tereb., thereby stimulating the bowels to remove the cause of the flatulency. In other cases the tympany may not be excessive but the protracted abdominal pain almost continuous. Here you may give exit to the gas with considerable benefit to your patient.

I do not introduce the trocar and canula, unless it be an urgent or protracted case, without first applying the usual remedies.

II.—The instrument I use is six inches in length and a quarter of an inch in diameter, made by Messrs. Burgess, Willows, and Francis, London; its length enables it to enter the bowels in extreme or slight distension. The others I have here for your inspection, and are, in my opinion, extreme in being too short or too long. The small one, in some cases, will not reach the bowel; the other will, on account of its length, pass into the ingesta, and become blocked.

III.—Invariably the right side is the most suitable from its prominency. I have the animal bridled, placed alongside the wall or partition, and, if of a vicious nature, a foot held up; I then make an incision a quarter of an inch in length in the space midway between the external angle of the ilium, the transverse process of the lumbar vertebræ, and the last rib, viz. the right hypochondriac region. The trocar and canula being then thrust in, slightly downward and forward, enters the cæcum; the trocar is then withdrawn, giving exit to the gas, which you can hear rushing through the canula. If the latter becomes blocked it is necessary to re-insert the trocar. After the gas ceases to escape the canula may be removed.

My reason for operating in this region is that you enter the cæcum, a bowel invariably containing much gas under these conditions, and here you have the termination of the ilium and commencement of the colon,

so that, under favorable circumstances, one puncture may possibly relieve the pressure in the three intestines. In some cases the operation on the right side does not entirely remove the distension, which is evident by a fulness on the left side. You may here introduce your instrument in the left side, which enters the single colon, liberating gas, but to the same extent as on the right side; the puncture may also be repeated on the right side if necessary.

IV.—As a result of the operation, you perceive a sensible diminution in the size of the parts. The animal is afforded, in severe cases, often instantaneous and permanent relief, frequently evidenced by an expressive sigh and favorable symptoms. In those other cases not of an extreme nature the liberation of gas assists in promoting a favorable issue.

In all cases I am of opinion that the removal of gas, when distending the intestines to any great extent, is productive of good, stimulating the return of their peristaltic action, often preventing lesions and death. In volvulus, under certain conditions, I am also inclined to think it may possibly be of service, but at the present time have no decided data. There need be no hesitation in operating, nothing more serious having arisen with me than inflammatory action and small abscesses of the external parts operated upon, subsiding without further trouble with mild treatment. The parts operated upon, as a rule, need no after treatment, usually healing without requiring any attention. Horses killed immediately after the operation, the part punctured in the bowel bears little trace, having become contracted and closed after removal of the canula. Others, killed some days afterwards, showed no signs of inflammatory action.

If your patience is not already over-taxed, or your interest wearied, I should like to refer to several cases bearing on this subject

Case 1.—Black draught mare, five years old; called to her about 6 a.m.; suffering from abdominal pain with flatulency, which has existed several hours. Pulse small and 56. Treatment usual in such cases was adopted, and successfully for a time. Some three hours elapsed, when she again became restless, and rapidly tympanitic, perspiring freely; in continual pain and distress. Respiration short and catching; pulse barely perceptible.

It was quite evident nature could not bear it much longer. In my absence elsewhere my partner (Mr. Greaves) was attending, and, under the urgency of the symptoms, introduced the trocar and canula, liberating a considerable quantity of gas, the exit of which afforded immediate relief, the mare progressing favorably without further treatment.

Case 2.—Grey draught mare, eight years old. In April, 1879, I attended this mare; she had been in abdominal pain for several hours previous to my being called late at night.

She had, however, had suitable medicine administered with relief. When seen she was in pain. Pulse small and feeble, 72. Slightly tympanitic, lying down with great care, leaning to the wall, &c. External and internal remedies were adopted, and when again seen, in two hours, all the symptoms were aggravated, more swollen and distended, cold clammy sweats, &c. Pulse barely perceptible, pain continuous, countenance haggard, mouth dirty. I at once introduced the trocar and canula, after which she stood as if stupefied for a length of time, the pain subsided, and the mare did well without further treatment. I again attended this mare a fortnight ago; she had been seized with abdominal pain about 4 a.m., and although she had every attention and all that treatment could do, she did not get permanent relief from pain under twenty-four hours. The tympany here was not excessive, but consider-

able. She was punctured on the right and left sides, each time with considerable benefit, assisting, I am fully persuaded, in effecting her entire recovery, which at one time appeared exceedingly doubtful, her pulse being 120, and barely perceptible, although she was then standing tranquil.

Case 3.—An aged brown lorry horse. This horse I attended late at night. He had been in pain several hours, and the usual remedies applied. He was in much pain of a dull character, sweating, and much swollen, breathing short, catching, and difficult, with a grunt. I had a poor opinion of his vital powers. I at once punctured on the right side, after which, in consequence of there being considerable distension on the left, I operated there also. Each time gas escaped freely, after which the pain subsided—he stood as if dazed—the severe symptoms gradually subsiding. Further treatment not required. He entirely recovered.

Case 4.—A valuable grey lorry mare. This mare was seized with pain in the bowels in the early morning. A colic draught was administered, and the pain subsided; afterwards it recurred. The pulse became accelerated, small, and feeble, with every appearance of a serious case. The pain was almost continuous for five hours; her countenance haggard. As there was now considerable tympany, the case evidently getting desperate, my partner (Mr. Greaves) punctured her on the right side, liberating a considerable quantity of gas, after which the pain at once subsided. For several days afterwards her pulse stood at 72, with elevated temperature. Although she was lively, free from abdominal pain, and eating well, ultimately it was found that there was considerable inflammation about the punctured parts (external), which were much swollen. This was lanced, a little pus liberated, the muscles having a cartilaginous character in their internal parts. This inflammatory action rapidly subsided. The mare now bears no trace of it, is working, and doing well.

Having, I think, exhausted, so far as I am able, this subject, I trust my remarks may be taken in the spirit they are offered—that is, to the benefit of the suffering animals placed under our care, ourselves, and clients.

Thanking you for your kind attention, I, in conclusion, would state that what I claim for the operation of puncturing the intestines is its power of removing flatulency when every other means have failed, and, in virtue of this power, preventing those lesions and other unfavorable issues arising from excessive distension of the stomach and bowels with gas. Do not imagine for one moment my contention is that this operation will prevent lesions of the diaphragm, stomach, and bowels, under every circumstance, for these do and will arise without tympany; but what I say is, that by its judicious use you can save many horses which you would otherwise lose.

I now close, desirous of eliciting your opinions, and of affording any further information that you may wish.

An animated and very interesting discussion followed the reading of the paper, in which Messrs. Greaves, Dacre, Gibson, P. Taylor, Hopkin, Welsby, Whittle, Dr. Greenway, and Russell, took part.

A cordial vote of thanks was accorded to Mr. Faulkner, and a similar compliment being paid to the Chairman, the meeting terminated.

William Leather, *Hon. Sec.*

MONTREAL VETERINARY MEDICAL COLLEGE.

ANNUAL EXAMINATION.

The prizes and diplomas gained by the students at the Veterinary Medical College were presented, in the Lecture Hall of the College, on March 30th. Among those present we noticed Hon. Louis H. Beaubien, M.P.P.; Prof. McEachran; Principal Dawson; Messrs. A. W. Ogilvie, D. Morrice, J. M. Browning, Hon. Gaudet, Vice-President Council of Agriculture; S. W. Blackwood, John L. Gibb, A. Somerville, Dr. Osler, Dr. Leclere, Dr. Bell, Dr. Alloway, F. S. Billings and W. Brydon, of Boston, and G. H. Barnatt.

The *Hon. Mr. Beaubien* acted as chairman, and in brief terms addressed the students, congratulating them on the success which they had attained in their studies. He called their attention to the fact that those who passed a successful course in the Montreal Veterinary College and received their diplomas were looked upon all over the world, and more especially in Canada and the United States, as V.S. who understood and were well grounded in the work of their profession. The College had become so useful that not only private individuals, but he was glad to say the Governments of the country were recognising the good, faithful, and hard work which Dr. McEachran was performing (cheers). He wished the College greater prosperity in the future, and trusted next year the students would be double the number (cheers). He had now much pleasure in presenting the prizes to the several successful competitors.

The following is the names of the winners and also the graduating class of 1880:

Third Session.

Best General Examination.—1st prize, silver medal, Mr. William McEachran, Montreal; 2nd prize, A. P. Hinkley, Buffalo, N.Y.

Anatomy.—1st prize, Mr. Wm. McEachran, Montreal.

Materia Medica.—1st prize, Mr. Peter Cummins, Quebec.

Second Session.

General Pathology.—1st prize, Charles H. Ormond, Milwaukee.

Anatomy.—1st prize, Mr. Charles H. Ormond, Milwaukee.

Materia Medica.—1st prize, Mr. Fred. Torrance.

First Session.

Anatomy.—1st prize, Mr. Walter Wardel.

Best Practical Examination (medalist excluded).—1st prize, a complete case of instruments, presented by Mr. David Morrice.

Senior Class.

French.—1st prize, Joseph Page, Lotbiniere.

Graduates.

Wm. McEachran, Montreal; Wm. I. Akerman, Boston; N. P. Hinkley, Buffalo; A. W. Harris, Ottawa; Mathias S. Brown, Montreal; Peter Cummins, Quebec; Joseph Page, Lotbiniere.

The following gentlemen enregistered during the past Session, viz.:

M. S. Brown, Montreal, P.Q.; William Jakeman, Boston, Mass., U.S.; William McEachran, Montreal, P.Q.; John S. Thomas, Roxburg, Mass., U.S.; Joseph M. Skally, Boston, Mass., U.S.; Alex. Glass, Philadelphia Pa., U.S.; Paul Paquin, St. Andrew's, P.Q.; Richard

Price, Montreal, P.Q.; Chas. H. Ormond, Milwaukee, Winsconsin, U.S.; Hilaire Bisaillon, St. Valentine, P.Q.; John Chandler, Coaticoots, P.Q.; William Dundon, Salem, N.Y., U.S.; Fred. Torrance, Montreal, P.Q.; N. P. Hinkley, Buffalo, N.Y., U.S.; N. A. Trudel, St. Genevieve de Batiscan, P.Q.; P. F. Labelle, St. Dorothée, P.Q.; Walter Wardle, Montreal, P.Q.; H. Jolicœur, Montreal, P.Q.; A. W. Harris, Ottawa, Ontario; Ed. J. Carter, Montreal, P.Q.; Peter Cummins, Quebec; Jno. B. Green, Yellow Springs, Ohio, U.S.; Pierre Gadbois, Terrebonne, P.Q.; B. D. Pierce, Springfield, Mass, U.S.; T. H. Bergeron, Bord a Plouffe, P.Q.; Donald E. P. Campbell, St. Hilaire, P.Q.; Joseph Page, Lotbiniere, P.Q.; Olivier Maisoneuve, St. Francois de la Salle, P.Q.; Andrew Metcalfe, Hudson; J. B. Caverhill, Montreal, P.Q.; and D. A. P. Watt, Montreal, P.Q.

The following passed in the *English Classes* in

Botany (Prof. J. W. Dawson, LL.D., F.R.S., &c., McGill University).—John Chandler, Walter Wardle, John M. Skally, A. Glass, C. E. P. Campbell.

Physiology (Prof. Wm. Osler, M.D., M.R.C.P., Lond., McGill University).—E. J. Carter, B. D. Pierce, Jno. B. Green, R. Price, C. H. Ormond.

Chemistry (Prof. G. P. Girwood, M.D., McGill University).—B. D. Pierce, Jno. B. Green, E. J. Carter, R. Price, C. H. Ormond.

Materia Medica (James Bell, M.D., Lecturer).—Fred. Torrance, E. J. Carter, Jno. B. Green, R. Price, B. D. Pierce.

In the *French Classes*—

Botany (Prof. A. B. Craig, M.D., Victoria College).—Paul Paquin, P. F. Labelle, Pière Gadbois.

Physiology (Prof. G. O. Beaudry, M.D., Victoria College).—Hilaire Bisaillon, N. A. Trudell, T. H. Bergeron.

Chemistry (Prof. T. E. D. D'Orsennens, Victoria College).—Hilaire Bisaillon, N. A. Trudell, T. H. Bergeron.

As each of the prizemen came up for his well-won honours his fellow-students gave vent to their pleasure in loud applause.

Veterinary Jurisprudence.

HORSE WARRANTY CASE.

In the Dumfries Sheriff Court, Simon Beattie, Preston Hall, Annan, sued William Craig, bank agent, Dumfries, in the sum of £65, being the value of a horse sold by the pursuer to defender, but which proved unsound, was rejected by defender, placed at livery, and sold by public roup, at 40 guineas. After a lengthened proof and debate, the Sheriff-substitute has pronounced the following interlocutor, in which he finds for defender:

Dumfries, 9th June, 1880.—The Sheriff-substitute having considered the proofs for both parties, and the whole process, after a debate thereon: Finds in fact—1. That on 20th January last the defender bought from the pursuer the horse in dispute for £65, and received delivery thereof on the 30th of said month. 2. That the horse had then a slight swelling on the front of his off hind fetlock, which was the result of an injury received about two months before when he was jumping a wall. 3. That the pursuer represented to the defender that this was of no im-

portance, and before the bargin was concluded, warranted the horse to be sound in every way. 4. That upon the day after its arrival the horse was tried by being driven about fourteen miles. 5. That the effect of this was that on the second morning after the trial, when the horse was examined by a veterinary surgeon, the swelling was found to be considerably increased and the horse slightly lame. 6. That on the same day the defender intimated to the pursuer by letter, No. 10/1 of process, that he would not take the horse as it had been pronounced unsound by a veterinary surgeon. 7. That the pursuer having been from home did not write a reply, but called on defender on 11th February, when he refused to take back the horse, which was then put up at livery, and subsequently sold by public roup by mutual arrangement of the parties. 8. That the defender has not paid the price of the horse. Finds in law, 1. That the condition of the horse's off hind fetlock at the time of sale constitutes unsoundness. 2. That the horse being disconform to warranty the defender was entitled to refuse to keep him or to pay the price. Therefore sustains the first plea in law for the defender. Refuses the prayer of the petition, and decerns. Finds the pursuer liable in expenses; allows an accoufit thereof to be given in, and remits the same when lodged to the auditor to tax and report.

(Signed) DAVID BOYLE HOPE.

Note.—Three persons were present when the horse was brought, viz. the pursuer and defender and Mr. John Berwick. Two grooms who were present when the horse was looked at were examined for the pursuer, but their evidence on the question of warranty is of no moment, because the sale took place in the house when they were not present, and it is there the defender says the warranty was given upon the faith of which he bought the horse. Both he and Mr. Berwick distinctly affirm that the pursuer warranted the horse sound in every respect, and against their word there is only that of the pursuer, who avers that he only said the horse was sound so far as he knew; and that even from that statement he excepted the fetlock in question. Even if this were all the evidence the Sheriff-substitute could not help finding it proved that a warranty of soundness was given. But there are one or two circumstances which give a coroboration derived from inference. The defender and his clerk, John Clark, aver that when the pursuer called on the defender on 11th February, the latter said that he had bought the horse as sound, and that the pursuer did not deny this, but maintained that the horse was sound. Further, John Craven, the defender's servant, says that when pursuer brought the horse to his master's stable, he asked if he (Craven) could get a veterinary surgeon, as he wished him examined before he left Dumfries. He says he was about to go when the pursuer said he would go himself, and that when he came back he said that Mr. M'Intosh was from home, and that the horse would be examined next day. The pursuer denies that he said anything about getting a veterinary surgeon, but admits that "something may have been said" by Craven about that. He does not, however, state what was said. Mr. M'Intosh says that a message was left at his house that day for him to come and examine the horse, but that he was from home. He does not know who sent or brought the message. The Sheriff-substitute does not think that the inference necessarily is that the pursuer gave the message. He rather thinks it must have been the defender (who was not asked if he did so), because he says that when the pursuer called on him that day along with Mr. Mather he told him that Mr. M'Intosh was from home. Mather says that the defender told the pursuer that he was going to

have the horse examined by Mr. M'Intosh, and sent him a cheque the next day. He also says that before the horse came to Dumfries the defender had told him that Mr. M'Intosh was to examine the horse, and that he "may have told that to the pursuer."

From all this it appears that the pursuer was quite aware that before he got the price of the horse it was to be examined, and the irresistible inference is that it was because there was a warranty. Further, whenever the pursuer knew that the defender rejected the horse as unsound, he got veterinary surgeons to examine it, a thing which there was no occasion for him to do if he sold the horse without warranty.

It was urged for the pursuer that the warranty is not proved, because the two witnesses do not state it in precisely the same words. Reference was made to the Mercantile Law Amendment Act, and to the cases of Robeson *v.* Waugh (2 Rette, page 68) and Mackie *v.* Riddell (2 Rette, p. 115). The defender's is as follows: "I then asked the pursuer if he would warrant the horse sound in every way, and he said that he would warrant him sound in every way, and that if he did not know him to be so he would not sell him to me."

Mr. Berwick says: "In the course of conversation in the house, defender asked pursuer if he would warrant the horse sound and right in every respect, and he said that certainly he would, and that if he was not all correct he would not put him in his hands." The Sheriff-substitute is of opinion that these versions agree so substantially as to meet all the requirements of law in reference to a verbal warranty.

It was also urged that even if a general warranty of soundness was given the injured fetlock was necessarily excepted, because it was seen and even pointed out to the defender; and there is a plea on record to the following effect: "The defender having been made aware of the thickening of the skin of the fetlock by the pursuer prior to the sale, is barred from objecting thereto after having taken delivery of the horse." The answer to this is that the defender did not reject the horse for the mere external blemish here referred to, but because the injury was deeper than the skin, and such as he could not discover himself either by eye or touch. And this leads to the second and most difficult branch of the case, viz. the question of soundness. The conflict of evidence is truly puzzling. The defender has produced eight veterinary surgeons, including two principals of colleges, and a lecturer, and other practitioners of eminence, who declare that the horse is unsound. The pursuer has produced eight also, including a principal of a college, and other men of eminence, who declare that the horse is perfectly sound. It is alleged by defender's witnesses that there is spavin in one hock and some of them say in both hocks. In the face of the evidence brought for the pursuer, the Sheriff-substitute is unable to find out whether the horse has spavin or not, and as the burden of proof lies upon the defender he has failed to establish this cause of unsoundness.

But in regard to the injured fetlock, the Sheriff-substitute has had less difficulty in coming to a decision, although, on this point also, the evidence is most conflicting. He does not think it necessary to analyse the evidence at any length, because he has not based his decision upon anything except certain facts which he considers proved, and which theoretic evidence, or evidence of facts applicable to a latter date, cannot disprove.

The defender says: "Mr. M'Intosh came on the morning of 2nd February, and found the thickness of the hind leg much increased. I had noticed this myself." John Craven says: "I was again present on Monday morning when Mr. M'Intosh again examined the horse. The

fetlock was more swollen than it had been on the Saturday. The horse had reeeived no injury to cause this in the interval."

Mr. M'Intosh says: "I found the fetloek-joint mueh enlarged, considerably more so than on Saturday, and the horse showed slight lameness in that leg. The lameness passed off after the horse had been run for a short time." And then he proceeds very minutely to describe the symptoms of unsoundness whieh he found on examination. Now, here are three witnesses who speak to a fact which requires no professional skill to diseover. If there had been no swelling produced by the exereise, the Sheriff-substitute would have had to balance the professional evidenee alone, and the task would have been more difficult. It is to be kept in view that the defender was pleased with the horse and meant to keep it, provided it was passed as sound by Mr. M'Intosh. There was therefore no reason for either of them trying to make out a ground for returning the horse. Defender was even willing to keep the horse if afterwards Professor M'Call had pronouneed it sound. How does the pursuer get over this evidence? In the first plaee, he has ealled veterinary surgeons, Mr. Paterson and Mr. Tait, who examined the horse on the 3rd February, one day later than Mr. M'Intosh. Mr. Paterson's evidenee to some extent confirms that of Mr. M'Intosh. He says: "There was a slight enlargement of the hind fetloek, whieh was prineipally eaused by a thckening of skin. I could not deteet any injury to the tendon, but there was a slight fluctuation under the skin indicating the presenee of synovial fluid."

This is spoken of by all the witnesses as an indication of inflammation. Mr. Tait says that he saw no indication of this, and that the horse was sound. Mr. Paterson at first said, "I considered the horse sound for all praetical work, and would neither have rejected him myself nor recommended a client to do so," and afterwards that he was perfectly sound. It must be remembered that neither of these gentlemen had seen the horse before that day, at least after it came into defender's possession, and therefore had no means of telling whether exereise had had any bad effeet, and neither of them saw the horse ridden or driven. The next person who examined the horse on behalf of the defender was Professor M'Call, and he subjected it to a similar test as did Mr. M'Intosh. After examining him he declined to give a decided opinion until he "had the horse galloped, and seen what the result would be the next morning." This was done, and the next morning he "found the fetloek-joint more enlarged than on the previous day, and the horse decidedly lame."

None of the pursuer's witnesses put the horse to any such test, at least till long after this, and many of them examined it so long after that their evidenee is useless to contradiet the evidence above referred to. The dogmatic, eoneeited way in which some of them delivered their opinions, and the testy manner in whieh they resented eross-examination gave them more the appearanee of partisans than skilled witnesses. The question then, as the Sheriff-substitute views it, is this, was the defender, having received a warrant of soundness, obliged to keep a horse whose injured leg beeame swollen whenever it was used, and who as a consequenee was stiff or lame the next day? He thinks not. The defender was entitled to have a horse of which he eould get the full use, and he was not bound to wait until he got better, which might very likely be the case after rest and the use of remedies. It is mentioned that the horse is all right now. That may be so, and the Sheriff-substitute has given no decision upon that point. But the defender was not bound to keep the horse to see if it got better. This principle was

affirmed in the case of Begbie *v.* Robertson (6, Shaw p. 1014), the rubric of which is as follows: "A mare being sold, warranted quiet in harness, but proving liable to shy greatly at meeting stage coaches. Held though she was completely cured in a short time after being returned, that the purchaser was entitled to refuse her, and was not bound to break her in for the use of which she was warranted fit at the time." The Lord Justice Clerk said: "The horse must be fit at the time he is bought for the work he is warranted to perform, and it is not the duty of the purchaser to break him in, and though at the distance of some months it is shown that the mare is quiet, yet that does not weaken the prior evidence as to her unfitness at the time of sale."

It is averred on record that the pursuer knew the horse was unsound when he sold it. The Sheriff-substitute does not see that that is proved. He very likely, as he said, believed it to be sound, and that was why he gave the warranty. The horse had been under no professional treatment after its accident, and he probably did not know how much it had been injured. It had been at rest, and probably was only exercised upon grass land, or at all events but gently.

It is much to be regretted that so great expense should have been incurred when the pecuniary interest at stake was so small, there not having been a very heavy loss when the horse was sold by auction. The pursuer's claim in any event would have had to be restricted to one for the difference between the prices. (Intd.) D. B. H.

Agent for pursuer, Mr. J. M. Gun; for defender, Mr. J. Geddes.

COWS, SWINE, AND SMALLPOX PATIENT, IN A COWSHED.

EDGEWARE PETTY SESSIONS, *June 2nd.*

Present, J. E. B. COX, Esq. (in the chair), A. R. JOHNSON, Esq., and E. NOEL, Esq.

Samuel Clark, of Church Lane, Hendon, was charged with unlawfully keeping swine in a registered cowshed at Prince of Wales' Road, Hendon, in contravention of the Dairies Order of the Privy Council.

Mr. Offer, County Inspector, said, in consequence of information he received from the police, he was directed to prosecute.

Dr. Cameron, Medical Officer of Health for Hendon, said he visited the cowshed in question on the 22nd of May, and found there a man suffering from the smallpox; two cows and two pigs were in the same shed. The man was removed the next morning.

Defendant, who appeared ignorant of the serious nature of the case, said he gave the man leave to sleep in the shed, but he did not know he was suffering from smallpox. He turned the cows out as soon as he knew the nature of the case.

The Bench inflicted the very moderate fine of 30s., the cost bringing the sum up to £4 5s. 6d.

Allowed a month for payment.

EAR-MARKING CATTLE.

AT a recent Court of Petty Session, held at Bedale, Mr. Whylie, steward to the Duke of Leeds, five of his assistants, and seven farmers, were charged by the Royal Society for the Prevention of Cruelty to

Animals with an offence under 12 and 13 Vict. ch. 92, for cutting and punching the ears of 50 cattle about to be turned into Hornby Park, for the alleged purpose of identifying them, the animals being the property of several owners.

The evidence showed that this practice of marking cattle at Hornby Park had prevailed beyond the memory of man, nevertheless it is a cruel custom, because the blood-vessels and nerves of the ear are severed and torn, and festering wounds are caused thereby.

On the occasion of this offence an officer of the society was present, by direction, to protest against the usage; but his remonstrances were unheeded by the steward, who ordered his assistants to continue the proceedings, declining to take the cattle into the park until the operations were fully carried out. The prosecution contended that this mutilation was unnecessary, as other measures of a humane character are employed generally for a similar purpose.

The Bench took the same view of the matter and fined the defendants £9, including costs.

THE FITZWYGRAM VETERINARY PRIZES.

These prizes were open to all Students who graduated at the Royal College of Veterinary Surgeons and to the Students who had obtained their diplomas during 1879-80.

The Examiners were Mr. H. J. Cartwright, of Wolverhampton, Mr. Thos. Greaves, Manchester, and Mr. Falconer King, of the School of Medicine, Edinburgh.

The names of three candidates only were entered on the list, one from the Royal Veterinary College, one from the Edinburgh Veterinary College, and one from the Edinburgh New Veterinary College.

The written examination took place in London and Edinburgh on Tuesday 4th May, and Wednesday, 26th May.

The following is the result:

	Anatomy. 300	Physiology. 300	Pathology. 300	Chemistry. 100	Materia Medica. 125	Botany. 75	Total.
No. 35	235	215	200	46	84	44	824
„ 37	250	245	275	78	120	52	1020
„ 38	165	250	215	36	91	46	803

Mr. James Wood Ingram (No. 37), of the New Veterinary College, Edinburgh, was the only one who obtained qualifying marks in each subject, the other two (Nos. 35 and 38) failed.

The first prize £50, therefore, is awarded to Mr. Ingram, there being no other qualified competitor he was not required to go through the examination in Part 2 (practical).

To No. 35 the Donor kindly presented £15.
„ 38 „ „ „ 10.

The terms of the competition were that each competitor should obtain two thirds of the marks allotted to each subject.

Mr. W. H. Coates officiated as superintendent.

Arthur W. Hill,
Sec., R.C.V.S.

FITZWYGRAM PRIZE.

Questions on Anatomy.

1. Describe the naked-eye appearances of the Dorsum of the Tongue of the Horse, Ox, and Dog; also the varieties and microscopic characters of the Papillæ.
2. Describe the mode of the formation of the "Circle of Willis" in the Horse and Ox.
3. Describe the Anatomy of the Horse's Foot.
4. Give the origin, insertion, action, and nervous supply of all the Muscles attached to the Humerus of the Horse.
5. Describe the structure of the "Hip-joint" in the Horse and Ox under the following heads:
   (*a*) Articular surfaces;
   (*b*) Ligaments;
   (*c*) Synovial membrane;
   (*d*) Movements.
6. Trace the Vagus Nerve and its branches of both sides, from their origin to their termination.

Questions on Physiology.

1. Describe the naked-eye and microscopic appearances of the Mucous Membrane of the Stomach of the Horse, Ox, and Pig.
2. Describe the structure of the Mammalian Ovary and the manner in which the Ova are developed and discharged.
3. Explain the nature of "Reflex Action;" giving examples of the different varieties.
4. Give an account of—
   (*a*) The minute structure of Blood-vessels;
   (*b*) The functions of their elastic and muscular elements;
   (*c*) The influence of the nervous system on their calibre.
5. Give the Chemical Composition of the Urine in the Horse, Ox, and Dog.
6. What are the Sounds of the Heart, and how are they produced? State the influences of the Nervous System upon its action.

Questions on Pathology.

1. What are the characters by which you distinguish a malignant from a simple or benign tumour? and give the Microscopic Structure of the varieties of the Cancerous and Sarcomatous tumours.
2. Describe the symptoms produced by a Stone in the Bladder; the chemical composition of the Calculi found in the horse, ox, sheep, and dog; and the operation of Lithotomy, what to cut and what to avoid.
3. Give the (*a*) Causes;
   (*b*) Symptoms;
   (*c*) Pathological Anatomy; and
   (*d*) Treatment of the disease known as "Swine Plague" and "Pig typhoid."
4. Give the varieties of Anthrax; its causes and the organs in which its lesions are more commonly met with in the horse, ox, sheep, and pig.
5. Give the causes and treatment of *hæmorrhage* during and after parturition, and by what characters do you determine whether the blood be arterial or venous.
6. Give a brief history of the parasites which attack the skin of the

horse, sheep, and swine, and describe the best method for their destruction.

Questions on Chemistry.

1. State approximately the composition of the Atmosphere. Say whether it is a mechanical mixture or a chemical compound, and give the reasons for your answer.

2. Enumerate the compounds of Hydrogen and Oxygen, give their composition by means of symbols, and state how they may be prepared.

3. Describe shortly the process at present employed in England for the preparation of Carbonate of Soda.

4. Describe the effect of a red heat upon (*a*) Manganese Dioxide, (*b*) Sodium Chloride, (*c*) Calcium Carbonate, and (*d*) Potassium Carbonate.

5. You are given Ammonium Carbonate, Potassium Nitrate, Sulphuric Acid, and Water, how would you prepare Laughing Gas therefrom?

6. How would you detect Zinc in presence of Lead and Aluminium?

7. Describe Dumas' method for the estimation of Nitrogen in organic compounds.

8. Describe a process for the preparation of Alcohol from inorganic substances.

Questions on Materia Medica.

1. Enumerate the preparations of Mercury contained in the 'British Pharmacopœia.' Describe the preparation of the Perchloride or Corrosive Sublimate and the Subchloride or Calomel. State the physical properties of these two substances and their reactions with lime water.

2. Name the preparations of Arsenic of the 'Pharmacopœia' and and state the doses.

3. Describe Iodine and Iodide of Potassium. How is the latter substance prepared? What are its occasional impurities and the mode of detecting them? What are its therapeutic uses, and in what diseases and doses would you give it?

4. Mention the chief preparations of Opium in the 'Pharmacopœia,' and what is the dose of the Tincture for the Horse, Ox, and Sheep.

5. Name the plant and order from which Castor Oil is obtained, and state the diseases and doses in which you would give it. What other plants belong to the order? State their properties.

6. Enumerate the plants contained in the natural orders Leguminosæ and Umbelliferæ. State the doses and actions of the most important drugs obtained from these two orders.

7. What are the most important vermifuges, and mention the doses which you would give?

8. Name the chief purgatives, and state the doses in which they shoud be administered. Mention those of mineral and vegetable origin, and give a short history of three of the latter, mentioning the name of the plant and natural order from which each is obtained.

Questions in Botany.

1. Give the leading characters of any two of the following natural orders:—Rosaceæ, Leguminosæ, Cruciferæ, Liliaceæ.

2. Refer the following plants to their natural orders:—buttercup, daisy, horsetail, dandelion, turnip, oak, ash, fox-glove, bramble, forget-me-not, banana, Irish moss.

3. State briefly what you know of Insectivorous Plants.

4. Describe the minute structure of a green leaf.

5. What are the leading differences between Monocotyledons and Dicotyledons?

6. What are Gymnosperms?
7. How does a Fern arise from the spore?
8. What do you know about Bacteria and their relation to disease?

PARLIAMENTARY INTELLIGENCE.

CATTLE PLAGUE IN CYPRUS.

HOUSE OF LORDS, *Tuesday, June 8th.*

LORD LILFORD asked the Secretary of State for Foreign Affairs for some information as to the reported outbreak of cattle disease in the Island of Cyprus, and what measures had been taken for its suppression The noble lord said that the question was an important one, mainly on account of the great increase of the importation of cattle into the island for the use of the European population, and pointed out that, whereas in 1878 there was scarcely any importation at all, in 1879 there had been a large number of cattle imported. The Cypriotes themselves had an objection to cows' milk, but the cattle imported were frequently used for draught purposes; consequently, if diseased cattle were imported, it would speedily spread throughout the country. He no had doubt that the subject had attracted the attention of the administrators of the island, who, he quite agreed with the noble lord who spoke on the subject of Cyprus last night, had administered it most ably.

EARL GRANVILLE, in reply, said that at the close of last year an outbreak of cattle plague or rinderpest in the island was reported to the Government, and orders were given by the Privy Council to the Government of Cyprus to take all necessary measures to prevent the spread of the infection. Those orders were carried out in February. Subsequently the Government discovered that the cattle plague existed on the shores of Syria, and they immediately took measures to prevent the importation of cattle from there into Cyprus, and he was glad to say that they had since received a report that the disease had not extended. (Hear.)

GLANDERS.

HOUSE OF COMMONS, *Jan. 10th.*

MR. MUNDELLA, in reply to COLONEL KINGSCOTE, said the Veterinary Department of the Privy Council were of opinion that glanders and farcy had not increased in the metropolis of late years, but that the cases were less prevalent. An increase in the number of cases reported was due to the greater energy displayed by the local authorities since 1868.

ANIMAL VACCINATION.

June 11th.

We extract the following condensed report on this important subject from the *Globe* newspaper.

At the evening sitting, on the order for going into Committee of Supply, Dr. Cameron called attention to the practice of animal vaccination, and moved a resolution declaring that as cow-pock lymph direct from the calf, or "animal vaccine," is of at least equal value as a prophylactic against smallpox with the ordinary humanised lymph, and as its use affords an absolute guarantee against the propagation of those human diseases which are occasionally invaccinated with humanised lymph, a supply of animal vaccine should be provided by the National Vaccine Establishment for the use of those who prefer it to the ordinary lymph.

Mr. P. A. Taylor, in a speech of considerable humour, protested against "grandmotherly legislation" of this description, and pointed to the present unsettled condition of medical opinion in regard to the safety of using the ordinary humanised lymph, urging that it is inexpedient and unjust to enforce vaccination under penalties upon those who regard it as undesirable or dangerous. He complained of the "conspiracy of silence" on the part of the medical profession and the press, which kept the real facts of the case from being known, and ridiculed Dr. Cameron's proposal as an attempt, parodying a well-known street-cry, to get "new lymph from the cow." He pointed out that the original cow-pox came not from a cow at all, but from a diseased horse, and asked why Dr. Cameron did not find out that horse, and thus get his matter from the fountain head.

Considerable discussion followed, and in the course of it Mr. Dodson, on behalf of the Government, expressed his readiness to see the question sifted and put upon its trial from time to time, and admitted that if it had to be done over again a good case would have to be made out before vaccination was made compulsory. But that had been already done, and under the circumstances he thought it would require stronger arguments than the opponents of the system had been able to adduce before Parliament would permit the system to be overturned. As to the proposal of Dr. Cameron, however, he showed that recent experience had removed most, if not all, of the objections which used to be urged against the use of animal vaccine, and that being so, there was no wish on the part of the department to be a bar to any experiment which might be desired. Arrangements would, therefore, be made by which animal lymph, as well as humanished lymph, might be supplied as stock to those medical practitioners who might desire it, but care would have to be taken that the start was made from one well-established case of cow-pox. He was also willing to lay down the rule in regard to prosecutions for the non-vaccination of children, that after the full penalty had been obtained in any such cases, no further prosecution should be allowed to be undertaken. Finally, he assured the House that there was no disposition in the department to view with prejudice any fresh suggestion or information in connection with the subject which could be obtained either in our own country or from abroad.

Mr. Sclater-Booth confessed the satisfaction with which he had heard Mr. Dodson's statement, and hoped Dr. Cameron would be content with it, and Mr. Hibbert stated in reply, to a question, that a bill would be introduced to carry out the changes proposed by Mr. Dodson.

Dr. Cameron's motion was then negatived.

ARMY APPOINTMENTS.

War Office, 25*th May*, 1880.

12th Lancers.—Veterinary-Surgeon F. Smith, from the Royal Artillery, to be Veterinary Surgeon *vice* Wilson, transferred to the Veterinary Department.

8*th June*, 1880.

Veterinary Department.—Veterinary-Surgeon J. E. Elphick has retired on temporary half pay (*May* 2). The undermentioned gentlemen to be Veterinary Surgeons on probation:—Henry Thomas William Mann and George Richard Griffith.

June 3*rd*.

T. Caldecott, gent., to be Veterinary Surgeon on probation.

June 22*nd*.

Veterinary-Surgeon J. Hammond, R.A., to be Veterinary Surgeon First Class.

THE

VETERINARIAN.

VOL. LIII. No. 632. AUGUST, 1880. Fourth Series, No. 308.

Communications and Cases.

SYNOPSIS OF CONTINENTAL VETERINARY JOURNALS.

By JOHN HENRY STEEL, M.R.C.V.S., F.Z.S., Demonstrator of Anatomy at the Royal Veterinary College.

(*Continued from p.* 467.)

Summary.—From the *Journal de Médecine Vétérinaire*, June, 1880:—*M. Violet* on "Vitulary Fever." *M. Collin* on "Contagious Humid Eczema of Bovines." *Prof. Sanson* on "Evolution of Teeth of Cattle," from *Professor Cornevin's Review of Agriculture and Zootechny.* Notice of announcement of a new work on "Diseases of Birds." From the *Annales de Médecine Vétérinaire*, July, 1880:—*Professor Arloing's* accurate diagnosis of a cerebral lesion in a dog.

The *Journal de Médecine Vétérinaire et de Zootechnie* for June last contains several papers of considerable interest. *M. Violet*, Chef de Service of the Lyons School, has been treating at some length the subject of "VITULARY FEVER," and he now concludes with the following summary:

"(1) The disease termed vitulary fever, very rare in working cattle, as well as in those out at pasture, is, on the contrary, very frequent among cows permanently housed; it especially attacks good milkers more or less fat, and those in

which parturition has been rapid and free from complications.

"(2) These latter conditions not being met with exclusively in stabled animals, but also exerting their combined effects on others, we may conclude that permanent housing has more influence than the constitution of the animal—is the main factor in the development of vitulary fever.

"(3) To explain the predisposition which results from this, and the encephalic congestion, it is necessary also to associate plethora, the often sudden cooling of the skin, and especially, and most frequently, the too sudden cessation of the compression of the heart which results from the excessive development of the abdominal contents towards the latter stages of gestation. This is a direct consequence of prompt delivery. Under that new influence the cavities of the heart dilate and throw a stronger wave, whence results a general congestion, which affects the brain more markedly than other organs, because of the delicacy of its organisation and of its functions.

"(4) We consider as a rapid delivery not only the prompt expulsion of the calf, but the expulsion in a short time of all the products of the ovum; first the calf, then the various fluids, and finally the membranes forming the after-birth come away very soon. The expulsion in the inverse order of the calf and the fluids, the retention of the placenta for some hours, constitute conditions much more favorable; for the escape of liquids having taken place, the uterus must contract on itself before usefully exerting its action on the fœtus, and also after delivery the after-birth for some time supports the uterus. The diminution of intra-abdominal pressure thus occurs gradually, which allows all the organs, the heart in particular, to adapt themselves to the new state of affairs.

"(5) In those females with ordinarily simple gestation, mares and ewes, for instance, who are liable to no equivalent of vitulary fever, it may be as has just been described, but the predisposition is not present, for these animals are not kept unexercised as are cows. Besides enjoying this advantage, small females bear more than one fœtus, and this is favorable to them as leading to gradual parturition.

"(6) Vitulary fever may affect cows before parturition, as well as within a certain time afterwards. It then presents the ordinary symptoms.

"(7) Its sudden invasion, its rapid progress, its prompt terminations, the lesions which it leaves, the circumstances under which it develops, the prophylactic means successfully

opposing it, and, finally, the treatment which hitherto, and in the hands of various practitioners who have tried it, has proved the most successful, all lead us to determine that this disease is congestive in its nature.

"(8) The *false paralysis* always present in this disease can be readily explained by the abolition of sensation and volition, and also by an idiosyncrasy of the cow, in consequence of which it keeps the recumbent position. In some severe but non-paralytic disorders, as enteritis, hæmorrhages, fractures, prolonged and laborious parturition; man himself, in such a position, finds not only the cessation of all fatigue, but also relief from suffering.

"(9) Nevertheless, in severe cases, there may be real paraplegia, and perhaps even general paralysis; hence we observe loss of the function of the great sympathetic, as shown by the almost total cessation of milk secretion and of intestinal movements.

"(10) The more or less marked coma, the diminution in the activity, or the more or less marked abolition of consciousness and feeling essentially characterise vitulary fever, or (to put it in other words) the encephalic congestion. If they are wanting, it is not a case of this disease. Even in cases accompanied by paraplegia or general paralysis, the cerebral symptoms always predominate.

"(11) The prognosis may be favorable if the stupor is not very marked, and if voluntary evacuations take place.

"(12) Even when coma is profound, the breathing being stertorous, we must not despair so long as the lacteal secretion, although diminished, continues, and as long as the bladder and the rectum again become filled after evacuation.

"(13) But there is little hope if the teats are flaccid, if the rectum and bladder remain very nearly empty, and if there is an intestinal rumbling not associated with a state of plenitude, in which case it ceases on evacuation, and if it does not depend on lying too long upon the same side.

"(14) Recovery is near when the respirations are not so deep nor sonorous, and when the evacuations commence to be again performed voluntarily.

"(15) Exercise, reduced diet, and sometimes bleeding, especially with cows which have not given milk for some time, are excellent prophylactic means.

"(16) The curative means must be antiphlogistic, and ought to aim especially at the removal of the congestion of the brain and the promotion of abdominal circulation. It ought never to include the employment of medicaments

liable to impregnate the flesh and render it unfit for use as food.

"(17) Thus we conclude that the disease with which we have been engaged has a great similarity, a most complete identity, with certain forms of *cerebral congestion* which attack animals of different species and of the two sexes, and even man himself.

"(18) It has nothing *vitulary* in its nature, still less anything *puerperal; it is only a simple* CONGESTION OF THE ENCEPHALON, *with or without hæmorrhage, and sometimes with complications, the meninges or the spinal marrow becoming involved.*

"(19) Thus, the term vitulary fever does not serve to distinguish a special disease, and, since it can only cause confusion of the ideas and studies of veterinarians, ought to be erased from nosological lists, or, at least, ought only to be considered as synonymous with cerebral congestion developed under those special circumstances we have endeavoured to indicate."

It will be seen that these opinions differ remarkably from the conclusions of other continental observers, but agree to an extent with those which have received the sanction of Barlow and Williams and some others in this country. They are essentially opposed to the theory of the anæmic condition of the brain in parturient apoplexy, and, as being the outcome of careful examination of the subject, are well worthy of the attention of our readers. The paper upon which they are based is by a practitioner well known to the profession in France. *M. Collin,* of Wassy, contributes a paper on *Contagious Humid Eczema of Bovines.* On 25th June, 1879, M. Matrion, veterinary surgeon at Doulevant-le-Château, was called by M. Balbézier of Brachay, to attend a heifer, fifteen months old, with appetite defective. Exploration of the mouth enabled him to determine that it was affected with *muguet* (aphtha) ? Gargles with water strongly impregnated with salines produced a marked improvement, and on the 2nd of July the cure was nearly complete. On the 10th of the same month the owner perceived that the heifer showed in four situations, especially on the neck, thighs, udder, and the base of the ears, a very profuse sweating. The affected parts were the seat of an intense pruritus, and the animal continually rubbed them. The state of the atmosphere seemed to exercise a marked influence on the progress of the disease; from 10th to 24th of July the weather was rainy and the temperature low, and the disease remained *in statu quo,* but on the 24th the thermometer suddenly rose several degrees, and the disease progressed rapidly,

the sweating became more marked and extended to healthy parts bordering on those already affected. The affected animal was dull, and with impaired appetite.

On the 27th the heifer communicated the infection to two other cows with which it was turned out. At the end of that day the profuse perspiration involved the whole surface of the body, so that when the hand was passed over the surface the fluid trickled down on the litter. M. Matrion estimated the amount of fluid daily secreted at a litre. Then the animal completely lost its appetite; she died on the 1st August, three days after the disease became generalised. It is a matter for regret that no autopsy was made, but probably the fatal result ought to be attributed to suppression of cutaneous respiration. A slow asphyxia was produced similar to that which M. Bouley obtained in horses whose skin, after having been shaved, was covered with varnish. It is probable also that there would have been found at the autopsy of that animal the lesions noted by the eminent inspector of veterinary schools on autopsy of the horses which he had asphyxiated by suppression of cutaneous exhalation, namely, a gorging of the gastro-intestinal mucous membrane with black blood, infiltration of the subcutaneous areolar tissue, extreme congestion of the lungs, &c.

On the 9th August the cow, which had rested side by side with the animal just mentioned on the same bed, presented on the neck, at the base of the ear, and on the udder, some small nodules, which became covered with a scab in two or three days. The malady progressed daily, and M. Matrion was called in on the 17th August. He found the skin of the affected parts red and covered with serosity. At the base of the ears the perspiration was slight, and ceased after a washing with a solution of sulphate of zinc. The appetite was already much affected.

Treatment.—Nux vomica and arsenic internally, and oil of cade (*Juniperus oxycedrus*) and carbolic acid on the affected parts. In spite of this treatment the disease progressed rapidly. The patient was dull and the appetite considerably diminished, and it was feared that on this beast, like the heifer, the disease would become generalised and prove fatal. A consultation was considered necessary, and I (M. Collin) was called in; we met on the 21st August and noted the following symptoms. At the commencement the skin became red, then very soon the epidermis rose, became soft, ulcerated, and ruptured, and gave exit to a clear serosity which agglutinated the hairs and matted them together into crusts, hard, and resembling dried rind. On the udder the liquid secreted was thicker and

purulent, and hardened more slowly, giving rise to soft and gelatinous crusts. This stage of the disease lasted three or four days. On elevation of the crusts the dermis was found to be of a violet-red colour and covered with an abundant serosity, especially where the hairs are erect and agglutinated; the subepidermic network is highly injected; softening of the neighbouring epidermis and the formation of fresh vesicles caused extension of the morbid state. In this cow, as in the heifer, the disease progressed rapidly and became generalised; the regions bordering on the parts previously affected became involved; thus, from the udder it extended to the belly, and then on the surfaces of the thighs. Also it was found in fresh situations, as the sides and back, especially towards the left, that is, on the side which came in contact with the heifer. Here spots occurred in which the hairs were erect and agglutinated by a secreted liquid; and if in these positions we detached with the finger the crusts commencing to form the hair separated with them, and denuded patches, of a circular form, varying in size from that of a one-franc to a two-franc piece, resulted, the exposed dermis being hyperæmic and secreting an abundant serosity. It is evidently the same disease which affected the heifer. As for the second cow placed to the right of the animal just described and separated by it from the heifer, it showed also on the left side, behind the shoulder, a patch of a circular form and of the size of a five-franc piece, with hairs erect and agglutinated. On raising the crust as it was forming we exposed the dermis, of a reddish-violet colour, and covered with a clear serosity. In these three beasts the disease presented exactly the same characters. At the commencement there are the circular patches formed by an agglomeration of vesicles, these soon running together, and the skin in the corresponding parts sweating in abundance. Softening of the neighbouring epidermis and the formation of fresh vesicles caused increased extension of the disease. Under the influence of heat the disease increased in activity and soon became generalised. The secreted liquid agglutinated the hairs, hardened, and produced crusts resembling dried meal. The dermis, when exposed, is found to be of a reddish violet colour, and to continue to secrete. A fairly acute itching is marked from the commencement. Some days afterwards the secreted liquid is more abundant, very fluid, and does not harden; it consequently moistens the hairs which are erect, and partly suppurates and rapidly undergoes ammoniacal and putrid fermentations. It is difficult to determine the exact nature of this disorder. The

nummular form which it affects at first may indicate its cause as a parasitic cryptogam, it being, then, a *humid parasitic eczema.*

(Eczema is commonly considered to be non-contagious; nevertheless, it seems to be sometimes associated with parasites. Zurn found the yeast fungus in eczematous lesions of cattle of distilleries. We can in such cases understand how transmission could take place, and it seems, indeed, that, as in M. Collin's cases, the disease was transmissible from one animal to another. M. Cornevin and I (M. Violet) believe we have found in the centre of the crusts forwarded by M. Collin a fungus of which we have been unable to determine the species. Always we failed in attempts to sow the fungus, with the necessary precautions, on cattle; but these experiments were unsuccessful, perhaps, because of the age of the parasite.)

We have examined the crusts with the micrograph of Wassy, but found nothing definite, probably since we are not accustomed to this form of research. The disease has some character in common with herpes tonsurans. Thus, it affects a circular form, and has a tendency to spread and propagate; but these are then only points of resemblance. Herpes tonsurans, which I had occasion to observe in September and October, 1879, on more than three hundred animals, differs from the disease of the cows of Brachay by its more marked benignity, the nature of the secretion of the dermis, &c. These maladies are very distinct, and confusion is hardly possible. The owner was able to give us no further information on the origin and nature of the disease. The animals were stall fed, and had been given green lucern and good-quality hay of natural pasture. The persons attending the cattle were not affected with any disease of the skin.

Treatment was necessarily such as best accorded with our opinion of the nature of the disease. Since this was parasitic and contagious, all such measures as would best serve to prevent its propagation to other animals and its spread over those already affected were adopted. The cow with only a patch on the side was removed from the infected stable and isolated; the patient more seriously affected was left in its usual place. We then disinfected the stable by destroying all the parasites and their germs on all the objects on which they had been deposited. After the dung had been removed the place was thoroughly washed down, also the walls and mangers dressed with alkaline lye-washes, and subsequently whitened with lime. These precautions were all the more necessary because the animal was left in the place, and thus

it was absolutely necessary to avoid all danger of reinfection. Equal parts of iodine and glycerine mixed were applied with friction to the udder. The other affected parts were cauterised with nitric acid ($\frac{2}{5}$). This treatment was preceded by a thorough washing of the whole surface with soap and water by means of a brush, with the intention of removing scales, crusts, and germs from the skin. The following day (22nd August) decided improvement was indicated by a return of the appetite and less profuse cutaneous secretion. The treatment was continued, and on the 27th the sweating entirely ceased, and the general state of the animal's health was entirely satisfactory. The other cow was rapidly cured. On the 4th September, when the cure seemed to be complete, over the whole surface of the body occurred a profuse epidermic exfoliation under the form of branny scales; these, in falling, carried the hair with them. This furfuraceous condition readily yielded to alkaline lotions and whisping. The use of nitric acid was rather a mistake, for on some spots it caused deeply-extending eschars, and these parts remained permanently denuded of hair.

In reviewing the statements of authors who have treated on the diseases of the skin of the ox we have found no description of the condition above mentioned. The "Nummular Herpes," described by Lafosse in his *Treatise of Veterinary Pathology*, ii, p. 167, somewhat resembles it, but especially differs in the nature of the secretion of the dermis; also its progress is not a gradual invasion. It is not very serious, for it becomes cured spontaneously, and, according to Lafosse, is non-contagious. "Humid tetter," described by Cruzel in his *Treatise on the Diseases of the Bovine Species*, is a disease which I have frequently observed in my neighbourhood, but is entirely different. In his *Treatise*, iii, p. 188, Lafosse says, indeed, that in the later stages of "*muguet*," exanthemata of various kinds may appear on the skin, but he says no more, and leaves us entirely in doubt as to their characters.

This account by M. Collin, which we have given almost *in extenso*, will be appreciated by many of us who have learned the complexities of study of cutaneous disorders.

M. Cornevin's Revue, as usual, is highly interesting. It this time treats of Agriculture and Zootechny. M. Déle's paper on the "Exportation of Cattle from, and the diseases prevalent among them, in America" is given and followed by the observations of M. Laverrière on fat beasts at the last cattle show, in which he urges that these exhibitions might be made still more profitable if, instead of losing sight of

the animals immediately they leave the show grounds, they were followed to the shambles of the butcher. "What good is it," says M. Laverrière, "to know that such an animal is of such a race, and that it came to the Palais d'Industrie with a certain weight acquired in a certain time if we ignore the practical bearing of all this—what it supplies to the consumer, how it is adapted to his taste, &c.? Do the breeder and feeder derive from this any indication for the future? Do they learn whether the animal they prepare with so much trouble fulfils the requirements of the consumer?" Here we find put into words the general thought suggested by the exhibition of fat cattle, and it is the most interesting outcome of the labours of the author of this paper that "the meat of the most highly fattened prize beasts is not liked by the consumer."

"*In a note on the Evolution of the Teeth of Bovidæ* M. Sanson announces some observations made on animals at Grignon, which confirm the uncontested fact that an abundant and regular diet promotes the rapidity of development of the teeth. In six animals of different breeds, with known date of birth and replacement of all the incisors, the development was completed in four years, the maximum time being forty-six months and five days, the minimum forty-one months and twenty-one days. From this M. Sanson concludes that it would be better at shows to classify the young animals according to the state of their dentition, rather than the declarations of age by the exhibitors. The control of these declarations is impossible; their correctness is very frequently doubtful, hence result inconveniences, which would be avoided by placing in one category all young bovines with permanent centrals; in another with also permanent primary intermediates, &c. To this might be reasonably objected that it would be inconvenient, as preventing recognition of that precocity which the show especially is designed to promote; but the professor of Grignon thus meets this objection: 'It has no value, since the notion of the time which has elapsed since birth, compared with the number of teeth cut, is not the only measure of this precocity. By examining the incisive teeth of any animal of any age it is easy to judge whether or no it has developed hastily. In precocious subjects the time elapsing between the eruption of the central and corner teeth is especially shortened. In ordinary cases the interval between the evolution of each pair of teeth is prolonged. During that period the pair which has been cut is used to a certain degree by friction with the dental pad. The enamel which ordinarily invests the tooth thus becomes

worn, and exposes to view a surface of dentine more or less extensive, according to the amount of time which has elapsed. Let us suppose the wear of enamel to amount to a demi-millimètre per month. After six months the table of the tooth would be three millimètres in extent. After a year six; when, in the latter case, the second pair of teeth commences its work and its wear, the first will thus show a table of six millimètres in extent; and when this pair, having in turn worked for a year, shows an equal amount of dentine exposed, the central will show double the amount, twelve millimétres instead of six millimètres, they having worked for two years instead of one; thus, to the end of the dental evolution, the difference between the pairs will remain constant.' This reasoning, though logical, presupposes a regularity in the shedding and appearance of the teeth liable to very many exceptions. M. Sanson, who has so well shown individual variations in his *Treatise on Zootechny* best knows, and all who carefully examine cattle on a farm are also well aware of, the marked results of individuality. When I see—to take an illustration from the cowhouse of the Veterinary School of Lyons, and this is not very rare—beasts retaining their milk teeth until they are twenty-five, and even twenty-six months old, and then suddenly and simultaneously losing four teeth, central and primary intermediates—when I see others, whose central temporary incisors have been shed at twenty-one months, and which remain to forty months with six milk teeth persistent, and then four teeth, primary and secondary intermediates, are shed together—when I see, and it is the rule rather than the exception, one tooth, the right, for example, shed and replaced two months before its left correspondent tooth—I fear that, with Sanson's system, the disputes would not be less numerous than they are now" (Cornevin).—From the *Bulletin des Séances de la Société Nationale d'Agriculture*, 11th December, 1878. The review terminates with an extract from the *Journal d'Agriculture Pratique* on the death of Mac Combie, of Tillyfour, "whose name will rest in the agricultural history of England beside those of Colling, Bakewel, and Jonas Webb (*sic*)."

In a previous synopsis we have drawn attention to certain works on the diseases of birds published by continental authors. We are pleased to see, by a notice which has been sent to us, that Professors Rivolta and Pietro Delprato are about to bring out a work on *Ornithiatria, or Medicine as affecting Domesticated or Semi-domesticated Birds*, which will be published by Uebelhart, of Pisa, and brought out in volumes at an extremely cheap rate. The scientific status

of the authors is a sufficient guarantee of the value of this promised work, which is another illustration of the wonderful strides which Italian veterinary literature is making in the present day. The importance of the study of parasitic disorders of birds in relation to those of mammals, the frequency of epizootics among our domestic fowls, and especially the questions of intense importance to pathology, human and comparative, now pending Pasteur's investigations on fowl cholera, will doubtless lead to great success of this work.

The *Annales de Médecine Vétérinaire* of July, 1880, extracts from the *Revue Mensuelle de Médecine et de Chirurgie* a most interesting case of "Accidental Injury of the Sigmoid Gyrus of a Dog," by Dr. Arloing. The accomplished professor at the Veterinary School of Lyons cites this as "the first observation showing, in a very evident manner, the happy practical application which may be made of the physiological information recently acquired of the effects of electrical excitation and removal of certain portions of the grey cortex of the brain to the diagnosis, prognosis, and treatment of certain contusions and contused wounds of the cranial region." The patient, a King Charles' spaniel, received a wound in the frontal region, and it was not possible by exploration to determine whether the brain was injured or not. But "the local symptoms were complicated with disturbances of motion and sensibility. When the animal was resting or walking straight no appreciable change could be observed in his attitude or gait, but if he was made to run diminution in power of the right limbs was rendered very evident. The fore right limb struck against the least roughness of the ground. Often the radio-carpal articulation became sharply flexed, and the anterior surface of the metacarpus and phalanges met the ground. When the dog seemed to run normally attentive observation showed that just when he lifted the right foot the metacarpo-phalangeal articulation was thrown sharply upwards and forwards, as if it oscillated at the extremity of the forearm. The hind limb (right) is slightly abducted when the animal is standing still or moving slowly, and the same limb yielded under the weight of the animal when he moved towards the corresponding side. In jumping up for a tit-bit the dog often fell over towards the right. Again, while he was occupied in drinking the right legs might be moved without him noticing it, but any attempt to move the left legs led to resumption of the original posture; also there was a certain loss of sensibility of the right half of the body, and an interference

with vision (as shown by the patient hitting himself against projecting points)." These observations sufficed to enable Arloing to diagnose injury of the left sigmoid gyrus of the cerebrum. This was confirmed on *post-mortem* examination. Spicules of the cranial wall penetrated the brain at the point indicated. This exact diagnosis leads the professor to conclude—

"(1) This case shows the complete resemblance between the results of experimental and accidental lesions of the cortex cerebri, when free from complications.

"(2) It proves that we can with profit apply physiological knowledge to the diagnosis of lesions having their seat in the cranial region.

"(3) It shows, as M. Lucas-Championnière has recently remarked, that surgical intervention, when considered advisable, should be practised, not at the seat of the external wound, but at that part of the surface of the cranium which corresponds to that region of the cortex lesion of which gives rise to the symptoms which are present in the case."

ON PLANTS IN RELATION TO ANIMALS.

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

(*Continued from p.* 471.)

We shall devote a paper to an examination of the Clovers, the generic description of which is expressed by Syme as follows:

"TRIFOLIUM, *Linn.*

"Calyx bell-shaped or tubular, 5-toothed; teeth elongate, generally unequal. Corolla persistent and withering, sometimes retaining its form, but becoming scarious after flowering; more rarely deciduous; petals usually united; standard scarcely spreading, equalling or exceeding the wings and keel; wings free at the apex, often diverging; keel obtuse. Stamens diadelphous, more or less adhering to the petals; filaments slightly thickened towards the apex. Style filiform, glabrous. Stigma terminal, capitate. Pod short, sessile, and included in the tube of the calyx, or stipulate and slightly exserted, ovoid, not compressed, 1- to 4-seeded, often indehiscent.

"Herbs with leaves digitately trifoliate (rarely pinnately bifoliate), the leaflets often toothed, and the stipules adnate.

"Flowers whitish, rose colour, purple, or yellow, in heads or compound spikes, which are axillary or terminal and generally many-flowered.

"The name of this genus at once expresses its peculiarity, coming from *tres*, the Latin word for three, and *folium*, a leaf, all the species having trifoliate or three-parted leaves. The Greeks call it τριφυλλον, the French *trèfle*, and the English trefoil or clover."*

Our remarks will now be confined to two species of what are commonly styled "red clovers," which may, for practical purposes, be distinguished as under:

Trifolium pratense.—Red Meadow Clover. Flowers all shades of purplish red. Leaflets more or less inclined to be obcordate or emarginate, with a semilinear white mark in the centre of each.

,, *medium.*—Zigzag Clover. Flowers in large bright pink heads. Leaflets ovato-lanceolate, most without the white spot, which is, however, sometimes feebly indicated.

The red or meadow clover is generally met with all over the country. It is common to all meadows and pastures, road-sides, and wild, open fields, only, however, in its wild state, favouring soils that have a fair proportion of lime, and hence occasional liming or marling of pastures is of importance, as favouring the growth and continuance of clover.

This species is so commonly cultivated by the farmer that it has spread all over the world, and hence in America it has been introduced more especially as a soiling plant, and some of the largest varieties are commonly used in the States much as we employ vetches in England.

The wild meadow clover is a much smaller plant than the cultivated forms, which latter are now so much used for shifting crops that much trouble has been exerted in getting such strains as will produce heavy crops.

As one of the very best popular accounts of the uses and value of red clover has found its way into the grand, new edition of 'English Botany,' as we expect, contributed by Mrs. Lankester and her late talented husband, we cannot resist quoting it:

* See 'English Botany,' vol. iii, pp. 35 and 36.

"MARL GRASS, HONEYSUCKLE TREFOIL, RED CLOVER, HONEYSTALKS.

"French, *Trèfle des Prés;* German, *Roth Klee.*

"The red clover is, perhaps, the best known and commonest of our field crops, and is most important to the farmer as a fodder plant in this country. In its wild state it is perennial, but when grown artificially it seldom lasts many years. It is usually sown with corn in the spring, and allowed to grow up after the crop is reaped, pastured by sheep and cattle, and either cut for hay the following year, or mowed several times like lucerne, and employed for soiling or feeding in the farm-yard.

"Rye-grass is commonly sown with clover, being considered to correct the heating properties of hay made from clover alone. Clover succeeds best on a deep sandy but rich soil, which is favorable to its long roots; but it will grow on any soil, provided it be dry. Marl, lime, or chalk, is very congenial to clover, containing much alkaline matter and lime; it will not flourish on land that has been exhausted of these substances, and which consequently becomes, in agricultural phrase, 'clover-sick.' Hence, it ought not to be grown without allowing some years to elapse between each crop.

"On good soils fitted for its production red clover will yield upwards of three tons of hay per acre. Like most plants of the kind, it is very succulent, and requires careful drying before it is stacked. In some parts of Russia it is allowed to ferment in heaps before drying, and cattle are said to relish it in this condition. To obtain clover hay in its most nutritive state it is desirable to cut it before it is in full flower—a rule which applies to all similar crops. The nutritive qualities of red clover, according to Sir Humphry Davy, are as follows:—In 1000 parts he found thirty-nine of soluble or nutritive matter, thirty-one of starch or mucilage, three of sugar, two of gluten, and three of insoluble matter or refuse. As a fodder plant the clover is very much esteemed by all farmers, and, according to Loudon, one acre is equal to three of ordinary pasture for feeding horses or black cattle, and the hay is reckoned more valuable by from 15 to 20 per cent. than the same weight yielded by the best meadow land.

"In feeding cattle with green clover great care must be observed to prevent the swelling or hoving, which is very apt to take place when they are first put upon this food, especially if it be wet with rain or dew, and the more luxu-

riant the clover the greater is this danger. After being accustomed to this rich food for a few days, during which it should be given sparingly, the danger is less; but it is never safe to allow milch-cows to eat large quantities of wet clover. The red clover appears to have been introduced into English agriculture first in the year 1645 by Sir Richard Weston, who had observed its large and successful cultivation in Belgium. It appears to have been grown on the Continent long before this time, the absence of the fine natural pastures which we possess having led the French and German agriculturists to encourage the growth of those plants which would form their best substitute. Owing to the moisture of our climate it is somewhat difficult to obtain a supply of clover seed, and much that we use is imported from Belgium and Holland. The seeds and dry flowers of the red clover, like those of the white species, have been occasionally used as a substitute for flour in bread-making, and those of all the native species might possibly be so employed."

The growth of clover seed is a very important business. Home-grown seed usually fetches a very good price; but sometimes our winters begin so early that it is difficult to save the seed properly, and our home growth has to be supplemented from abroad; yet the foreign, as a rule, is not so clean as home-grown. Clover, especially in its green state, is sometimes found to possess some rather strong medicinal qualities, so that cattle and sheep put incautiously on green clover are apt to become what is called blasted, by an accumulation of carbonic-acid gas, as the result of the fermentation of the green leaves, or else purgation proceeds to such an extent as to often produce very serious diarrhœa or scours. When this is the case it is as well to change the pasture as soon as possible, and perhaps to administer doses of hyposulphite of soda. The popular remedy, however, is a strong solution of salt, which no doubt acts by checkingthe fermentation.

There is not the danger where clovers are mixed with grasses. Hence we prefer to sow ray grasses with clovers of all kinds.

The red clover is particularly liable to the attacks of two distinct forms of parasites belonging to the genera:

Orobanche—Broomrape.

Cuscuta—Dodder.

Both these, though very distinct, would appear to start into life much in the same manner.

The seeds of broomrape attach themselves to the young rootlets of clover, and when the second shear of the plant is

grown they send up their fuscous spikes of labiate flowers of such great size that there is no wonder that the more delicate clover should be killed by it; but what is worst seems to be that a somewhat delicate and mild-flavoured plant should have its juices converted into a bitter and, perhaps, narcotic plant. At any rate, the Orobanche is an ally of the *Scrophulariaceæ*, a somewhat powerful natural order, and, therefore, we are not surprised that cattle do not touch the parasite, and so the parasite kills the crop plant.

The *Dodder* belongs to a different set altogether. It is a near relative of the Convolvulaceæ, and therefore allied to scammony and jalap—highly purgative tribes of plants. This, then, is not eaten by cattle, but it kills the crop.

The dodder we have in clover is clearly a foreign species, and it is only after a fine summer and a mild winter that we get its full development. Last year's clover leas were full of it, and it left its mark in the rounded patches of dead clover plant; but this year it makes little sign of reappearance, and our wet spring has been much against it.

2. The zigzag clover is a plant which belongs more particularly to the thicket and the hedge-row. It grows in stiff and sandy soils, and is not so partial to lime as the meadow clover. It is on this account that it has been recommended for growth on sandy soils, and where the last is what has been called clover-sick; but, somehow, it has got so hybridised with the meadow clover that the pure seed of *T. medium* is not to be obtained, but a sort can readily be got from the seedsman under the name of *T. pratense-perenne*, which is highly esteemed in some districts.

These two clovers will well repay any attention to their cultivation. New strains are easily produced, and we recommend work in this direction, as being capable of doing good service.

Clover hay fetches the highest price in the market, and, with the present low price of corn, a good and certain perennial strain of clover would much diminish expenses in cultivation, and furnish a good and useful food for our stock, both in the shape of green soiling food, and preserved in the shape of hay.

VETERINARY SCIENCE IN AMERICA.

Letter from R. Jennings, Jun., V.S.

Gentlemen,—In the June number of your very valuable Journal, I read with much interest the reply of J. H. Steel to my paper in the May number. He is evidently happy in the assertion that "I am able to treat with contempt Mr. Jenning's observation, that my paper contains calumnies," "infamous charges," and "slanderous statements."

I duly appreciate his happy feelings, and would advise that he keep cool, as the weather is too hot to get excited. If he will read my remarks carefully, I think he will see that they were not intended to reflect upon him in any manner whatever, but upon those who furnished him the information, which is untrue in almost every particular.

I feel perfectly assured that in the end we will come to a fair square understanding, and neither be ashamed of his record.

Some of our ambitious American Vets. may bluster over the matter, but they cannot suppress the truths I have asserted. You say, "What I marvel at is that we have no more evidence of these efforts than those enumerated by your correspondent." That is no fault of mine. The benefits of a veterinary journal in the United States we did not then enjoy, but the doings of the Veterinary College was regularly noticed in the daily and weekly papers of Philadelphia from its commencement to its end. The files of the *New York Spirit of the Times*, *Porter's Spirit of the Times*, and *Wilke's Spirit of the Times*, will show many recorded facts which appear in my communication.

In 1855 the *American Veterinary Journal* was published in the City of Boston. My father was a regular contributor to its columns, to which reference is made by C. M. Wood. Its life was short, only three short years. Its most bitter opponents was the New York and Massachusetts veterinary surgeons, as letters in my possession will prove.

Every effort to advance Veterinary science in this country previous to 1860 was met at every turn with determined opposition by those who should have given it a helping hand. The regular courses of lectures were delivered daily by the Faculty, from the first Monday in November, continuing sixteen weeks. The free course, delivered once a week, was a special course for the benefit of friends and

patrons of the school, not, however, with a view of making veterinary surgeons. These lectures were upon general subjects, such as would be interesting to horse and cattle owners. The number of graduates of the Philadelphia College, all told, were twenty-four, few of whom used their pen, except to report some peculiar case of disease or operation occurring in their practice, for which the local press was usually selected.

Regarding the Agricultural Society, my subject was not clearly stated, as I since discovered. The expenses of maintaining the building at Sixth and Master Streets, had been borne for two years by the Faculty, to lessen which the appeal to the Society was made, the result of which has already been stated. The Infirmary, however, was retained, the balance of the building vacated. The Museum, being private property, was removed to a private room, with the exception of the skeleton of Ned. Forrest, the king of the turf in his day, was articulated and presented to the College by his owner, Gen. Geo. Cadwallader, one of the corporators of the College, which, by his request, was deposited in the Academy of Natural Sciences, until such time as the College could provide a suitable place for it. The lectures, from this time to the closing of the institution, were delivered in the rooms of the Agricultural Society, with the exception of those on anatomy, which were delivered in the dissecting-room, built several years previous for the American Veterinary Association, and those of chemistry, which through the kindness of the Faculty of the Pennsylvania Medical College (one of the honoured institutions of Philadelphia), gave free admission to these lectures to the students of the Veterinary School.

The persistent efforts of the Faculty in consequence of these difficulties has been misrepresented.

Though the courses of instruction were as perfect as the circumstances under which they laboured could make them, these "irregularities," as some of our good friends chose to call them, were approved by the Board of Directors, with such men connected as Prof. James Bryan, of the then Philadelphia Medical College, and A. L. Elwyn, M.D., the honoured President of the Philadelphia Society for the Prevention of Cruelty to Animals. Few men would have laboured with the same zeal as Drs. Bowler and Jennings did, without pecuniary reward, besides bearing the taunts of the graduates of Europe, who refused to lend a helping hand in the hour of need. To the founders, St. Bell, Prof. Coleman, and other early workers in England, due credit

has been given, who laboured under difficulties scarcely less favorable.

I now believe I have made this subject clear, if not, I must admit my inability to do so. "If the statements of American veterinary history made by this author were 'unjust' and 'unfair,' where was Mr. Jennings, the planner of the United States Veterinary Medical Association, at the opening meeting of which the paper was read?"

Not knowing at what meeting the paper was produced, I cannot answer the question. But I do know that the graduates of the English and French schools were not in sympathy with American veterinary practitioners, nor have they ever been; as proof No. 1, J. Horsburgh, M.R.C.V.S., visited the United States in 1853; he says, "I visited the cities of Philadelphia, New York, Newark, Dunkirk, Cleveland, Columbus, Covington, and Cincinnatti, and, unless it be in New York, in all these places, and the surrounding countries, for a distance of 1200 miles there is not one qualified veterinary surgeon."—*Veterinarian*, 1854, p. 252.

Having said thus much, I will attempt an answer, providing you, gentlemen, will bear with me a few moments, by showing the one-sided turn taken by the U.S.V.M.A. after the Convention of Veterinary Surgeons assembled in the City of New York, in June, 1863. When the call for an election of officers to serve one year was made, the following names for President were presented:—Robert Jennings, of New Jersey; and J. H. Stickney, a graduate of the English and French Veterinary schools, the youngest man, with one or two exceptions, in the Convention. The graduates of Europe urged my father to waive his right to the Chair for the sake of harmony, which he willingly did (though A. S. Copeman was his choice), at the same time receiving pledges to sustain him at the next election.

One year passes round and another annual meeting is held in the City of New York. Again he is asked to waive his right in favour of A. S. Copeman, which he did under the second solemn pledge of support at the next annual meeting. In neither of these elections were there any opposition to the candidate named. The third annual meeting was held in the City of Boston; a call for nomination of officers was in order. The names of Robert Jennings, of New Jersey, and Charles M. Wood, of Massachusetts, were presented. New York and Massachusetts being fully represented, which was not the case with Pennsylvania and New Jersey. Again my father is urged to yield his right to the

Chair for the last time upon pledges already twice broken. His friends for the first time objected, and Wood and Jennings were the candidates. The ballot was decided a tie vote, the President, A. S. Copeman, was called upon to give the casting vote, which is rulable in all such assemblages. He said he had already voted, and for Wood; this acknowledgment gave the election to my father by one majority. Quick upon the floor a Boston member moves for another ballot, seconded by half-a-dozen. Pennsylvania and New Jersey members protest, but no new ballot was taken, and C. M. Wood, who had twice pledged himself to support my father, was counted in by one majority.

These facts I can prove by members who were present. If these facts are disputed I challenge the production of the minute book.

Permit me to go back to that Convention once more. A very worthy member of the Veterinary College of Philadelphia, whose name was upon the roll with those who first assembled together in the interest of this Association, was not present on the first day of the Convention, but was there on the second, was refused admission to the Convention unless he made a regular application as a new member; feeling aggrieved at such treatment, he returned home with unpleasant feelings towards the new organisation.

Another party, whose name appeared upon the roll of the Convention, but was not present, was admitted as a member at the semi-annual meeting following, without the formality of new membership.

These facts, I think, are sufficient to account for the absence of the originator of the U.S.V.M.A. as well as his friends. We now come to the "bogus diploma" question, on which we are taxed with having lapsed into gossip or malice because we said "Philadelphia has an unenviable notoriety in veterinary history in connection with the bogus degrees," "the fame of which extending to this side of the Atlantic, has rendered us suspicious of qualifications, even sometimes more searching than those to which we subject our own graduates." The fact is, the "unenviable notoriety in veterinary history," is unknown in the City of Philadelphia in connection with her Veterinary colleges, where it is claimed by perverted minds outside of that city to have originated. The bogus diploma reputation was made by parties representing human medical schools, five of which are now in the Courts, and will be for ever wiped out.

This reputation, by the acts of a single individual, years after the colleges had ceased to exist, is imputed to the

Veterinary College by the enemies of early veterinary advancement in the city of medical colleges. Investigation will prove all I have asserted to be true.

Please do not in the future charge corruption to the Veterinary colleges of Philadelphia, which closed their doors in honesty and good faith, and which are not responsible for the acts of private individuals.

If I have done you, Brother Steel, any injustice, I beg pardon, and assure you it was unintentional. There was no M.D connected with the name of Robert McClure when he was connected with the Veterinary College of Philadelphia. The *American Veterinary Review*, I am convinced, has a larger circulation abroad than at home.

Yours, very respectfully.

Pittsburgh, Pa., U.S.A.

To the Editors of the 'Veterinarian.'

Pathological Contributions.

CATTLE PLAGUE.

It appears that cattle plague still exists in the Governmental departments bordering on Austria and Germany, and those adjoining the Black and Baltic seas.

The *Mark Lane Express* says, "that according to a telegram, recently received, it has been officially announced that the cattle plague has broken out in St. Petersburg and on the shores of the Black Sea. In Bessarabia, Volhynia, and Podolia, as well as on the Baltic shores. The disease, so far as at present ascertained, is raging in forty-three separate districts, and has even made its appearance in the St. Petersburg Zoological Gardens, where it has already carried off some rare and valuable animals, including stags, wild goats, and a llama."

Cattle plague is also reported to exist at the present time in Roumania. The regulations of 1874 have been adopted, and the frontier is strictly guarded.

An outbreak of cattle plague has lately been reported in the neighbourhood of Galatz.

This disease still continues in some provinces of Lower Egypt, and has reappeared in two districts of Upper Egypt.

The Kingdom of Hungary remains free.

PLEURO-PNEUMONIA.

During the four weeks ending June 12th, eight cases of this disease were reported in the Netherlands. Three of these occurred in the province of North Brabant, and the other five in South Holland.

In Great Britain the disease still continues to decline. During the four weeks ending June 26th this year, eighty-six fresh outbreaks occurred and 215 animals were attacked. In the corresponding period of last year the outbreaks were 143, and the number of animals attacked 353.

In Ireland for the week ending June 26th, forty-one cases of pleuro-pneumonia were reported, while in the corresponding week of last year sixty-four animals were returned as affected. Fresh cases in the North Island have been much less numerous of late, and hopes are entertained that the vigorous measures adopted have brought the disease well under control.

In New Zealand, great efforts have been made to check the spread of pleuro-pneumonia, and with some success; but much alarm exists amongst stockowners, and especially those settled in the Auckland district.

SWINE FEVER.

This disease was reported to exist in twenty-eight counties in Great Britain during the four weeks ending June 26th, and 1280 animals were attacked. During the corresponding period of 1879 the number of swine attacked by this disease was 2041.

FOOT-AND-MOUTH DISEASE.

In Great Britain no cases of this disease have been reported since the week ending May 24th, when one outbreak in which two animals were affected was returned.

During the month of June, 1879, there were twelve fresh outbreaks of foot-and-mouth disease reported, and 603 animals were attacked.

Facts and Observations.

ANTHRACOID DISEASE.—The *British Medical Journal* says that M. Cohn, of Alfort, communicated to the Academy of Medicine, at their last Meeting, some fresh experimental researches on malignant pustule and anthracoid œdema. Also that the French Government has allotted to M. Pasteur the sum of 50,000 *francs* for the purpose of enabling him to carry out his researches on the contagious diseases of animals.

DEATH FROM GLANDERS.—A report of the case of a German officer who died of glanders, contracted through using an infected handkerchief, has been published in the *Militär Wochenblatt.*

VARIATION IN PRICE OF MEAT.—An increase of a penny a pound in the price of meat costs the country, it is said, about £5,000,000 a year; and a fall of a penny or a half-penny a pound is tantamount to much increased health and comfort to millions.—*Times.*

TO DETECT ALOES.—Aloes used in elixirs, liqueurs, beer, and other liquids, may be recognised (says Hugo Borntrüger in the *Zeitschrift für Analyt. Chem.*) by shaking a little of the liquid smartly in a test-tube, with twice its volume of benzine, and adding to the layer of clear benzine a few drops of strong ammonia, warming, and gently agitating. Aloes causes a beautiful violet red; fixed alkalies give the same colour, but less intense; other bitters and hæmatoxylin do not yield a colour. One part of aloes in 5000 can be recognised by this test.

SOLIDIFIED BROMINE.—The utility of bromine as a disinfectant agent is now well recognised; but, owing to its liquid condition and difficulty of transportation, it has hitherto been but little used for such purposes. Chlorine, which is a gas, is always available by means of the solid commercial chloride of lime; but a similar method of binding bromine in a compound, which would readily yield it up, has heretofore been a desideratum. A manufacturer of Charlottenburg (Prussia), Mr. Frank, has conceived the idea to cause bromine to be absorbed by so-called "kiesel-guhr," that is, the siliceous marl which Ehrenberg has shown to consist of the microscopic shells of infusoria, and which is also used to absorb nitro-glycerine, thus forming the well-known dynamite. The inventor has given to the mixture the inappropriate name "solidified, or solid bromine." In this condition it is easily applied for disinfecting purposes.

THE VETERINARIAN, AUGUST 2, 1880.

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

THE NEXT OUTBREAK OF "ROT."

ALL that has been said and written respecting the causes of liver rot or, as it has become fashionable to call it, the fluke disease, has need to be repeated under the present circumstances. Farmers are naturally a hopeful race, or the last six seasons must have crushed them out of all agricultural life, and notwithstanding the experience of years, many of them are preparing to keep ewes which have suffered from flukes through another lambing season, simply because the treatment which we recommended through the Royal Agricultural Society has been so far successful, that the diseased sheep have passed safely through the lambing time, and have brought up the lambs without suffering in condition.

In our last report to the Society we referred to this proposition, and gave reasons against its adoption, pointing out that the flukes have in most cases done irreparable mischief, which will become more apparent as the autumn approaches, and the pastures become less nutritive. The fact is that the disease is not capable of being radically cured when it is once fairly established, and the partial recovery of an animal must not be taken as evidence that it is in a position to support itself under the influence of further debilitating causes. If the flock master has succeeded in carrying a diseased flock well over the lambing season, and can get the ewes in moderate condition, he ought to be content with the achievement, and at once proceed to realise what he can by converting his sheep into mutton.

Besides the question of the proper treatment, of a flock which have to some extent recovered from the ravages of the flukes, there is now the more pressing inquiry what is to be done to avert the infection of animals which have hitherto escaped, and those which have not yet been exposed to the causes of the disease.

According to official announcement, the bad weather of last season is being repeated, with the difference that it began some seven weeks later. A cold, dry spring was certainly unfavorable to the development of the fluke in any of its stages, and had the promise of a warm, sunny summer been realised, we might have had our pastures freed from the germs of the parasites for some time to come, but, on the contrary, all the climatic conditions during June and July have been eminently favorable to the development of parasites, and, unless the greatest care is taken, we shall see another outburst of the disease in a few months, as the results of the return of the parasites which are now being swallowed by animals which are feeding on pasture, especially in the low-lying and undrained districts.

No new means of combating the adverse influences to which sheep and cattle are now being exposed present themselves for consideration. The discovery of a specific for "rot" has yet to be made, but there is a rational plan of treatment which has been found to act so beneficially as to deserve a trial until something better is found out.

In the first place, the more the sheep are kept off the wet lands the better for their health and comfort; but, as they must feed on grass more or less, and in the act of feeding infest themselves with flukes, it is desirable to supply them at the same time with an antiparasitic in the form of salt, with the object of killing as many of the germs as possible. Manger food should be given as liberally as a due regard to economy will permit, and salt should always be added to whatever food is given in this way. The weakest animals naturally go to the wall first and they should receive special attention. To save time some such combination as we recommended a short time ago for general use should be kept at hand and given day by day.

Careful management of the flock and of the pastures on which they feed will materially moderate the losses from liver rot in the course of the next autumn and winter, but it is to be feared that no care will entirely avert the calamity if the heavy rainfall should continue.

APPOINTMENT OF MR. WIILLIAM ROBERTSON, F.R.C.V.S., AS PROFESSOR OF HIPPO-PATHOLOGY, AT THE ROYAL VETERINARY COLLEGE.

We have authority to state, and it affords us much pleasure to inform our readers that Mr. Wm. Robertson, F.R.C.V.S., Kelso, a gentleman who very deservedly ranks high in the estimation of his professional brethren, both in England and Scotland, for the extent of his scientific and practical acquirements, has been appointed to the vacant Chair at the Royal Veterinary College.

Mr. Robertson, who has received the title of Professor of Hippo-pathology from the Governors of the College, will enter upon his duties as a teacher at the commencement of the Winter Session in October. In congratulating our friend on his appointment, we are at a loss to decide whether our highest congratulations should be offered to our new and respected colleague or to the students, who will have the benefit of his matured experience as a scientist and practical Veterinary Surgeon.

Extracts from British and Foreign Journals.

SHEEP ROT.

The following letter has been sent out to flockowners:

2, Portland Place, London, W., July 5th.

Dear Sir,—The Royal Agricultural Society of England have commissioned me to prepare a report on liver rot in sheep. I understand that you have had considerable opportunity of observing those cases, and you will greatly assist in clearing up some of the difficulties of the subject if you will be so good as to answer the subjoined questions, and furnish any other information bearing on this serious disease.

1. How many cases of rot had you during the past and present year? How many in former years?

2. What is the number of your flock? How are your

sheep managed at different seasons of the year as to feeding, grazing over old pastures, or penning on the arable land?

3. What is the extent of your holding, the description of your land, the amount of pasture and arable, the proportion of wet and woodland?

4. What class of sheep chiefly suffer? If lambs were affected, when did they first become affected?

5. Can you explain why some of your flock suffered and some escaped? Can you explain why some flocks have been extensively and seriously diseased, while those adjacent were unharmed, or nearly so?

6. Can you describe the meadows or other lands which notoriously produce rot? Are there on them any open ditches, stagnant pools, spouts, or boggy places?

7. Have you observed any particular plants or weeds on the lands where rot is contracted? Is there any greater prevalence of the disease where the grass is allowed to get rampant, or where it is close grazed?

8. Have any cattle or horses in your farm or in your neighbourhood been affected with flukes? Amongst these animals has there been any difference in progress or symptoms of the disease, as compared with what is observed in sheep?

9. Have hares, rabbits, or other animals suffered from flukes?

10. Do you know of any calves or lambs reared on their mother's milk in houses or sheds being affected by flukes? In such cases has no grass or other food been furnished from possibly infected land?

11. In what months of the year do you consider liver rot most likely to be contracted?

12. What period elapses between the taking up of the embyro of fluke—the cause of the disease—and the manifestation of the first symptoms of rot?

13. Can you state what snails or molluscs are common on the lands liable to rot? Have they increased of late years? Are the birds which might prey upon them as numerous as formerly?

14. What proportion of your sheep, having shown symptoms of rot, eventually recover?

15. Have you found dry food, regular supplies of salt doses, of iron salts, or other remedies, effectual in preventing, checking, or curing liver-rot?

Believe me, dear Sir, yours faithfully,

FINLAY DUN.

THE FOREIGN CATTLE TRADE.

A VERY large and influential deputation, consisting of cattle trade associations of the Midland Counties and North of England, had an interview with Earl Spencer and Mr. Mundella, at the Privy Council office, on Monday afternoon, to urge upon the Government the desirability of taking off the restrictions imposed by the late Government upon cattle imported from abroad, and America particularly.

Mr. Jacob Bright, M.P., in introducing the deputation, said that they came to state the strong objections they entertained to the restrictions which now existed on the importation of meat. They believed that those restrictions limited the quantity, and, at the same time, deteriorated the quality of this important class of food. There was a wide feeling as to these restrictions, and particularly as to American cattle. It was held that they came into this country in a condition more healthy on the average than the cattle of this kingdom. The disease of pleuro-pneumonia, which was the reason why American cattle were not allowed to come in, did not exist in America at all. The members of the deputation would speak upon these points. Mr. John Whitehead, of Leeds, president of the Foreign Cattle Trade Association, said he represented the butchers of more than forty towns in the Midland Counties, and gave statistics to show why the restrictions complained of should be removed. In 1879 there had been a decrease in the number of English sheep and cattle of 1,322,865, and seeing that the British farmer could not produce meat enough for the consumption of the people, there was an absolute necessity that the Privy Council should, if possible, remove undue restrictions upon foreign supplies. Out of 76,117 cattle imported last year from the United States, there were only 137 affected by pleuro-pneumonia, and in those cases the disease was not found till the animals had been slaughtered. It was a great hardship that all foreign meat had to be slaughtered at the port of its arrival. Tons upon tons of waste was the result, and the offal was utterly sacrificed, which was a grevious loss to the poorer and to a large proportion of the middle classes.

Mr. Mark Price (Manchester) drew attention to the fact that out of 76,000 cattle imported from America in 1879, there were only 137 which were said, after a microscopical inspection, to be affected by pleuro-pneumonia. The Americans denied that the disease existed in their country, and our own Professor Williams distinctly stated that the disease

in those 137 animals was real pleuro-pneumonia. But the great point was this—that 63,000 of the whole number came over in steamers where no disease at all was found. What they asked the Privy Council to do was to allow the cattle brought over in steamers in which it was admitted that there was no disease to be permitted to be sent alive to the inland markets. With regard to sheep, there were thirty-three found to be suffering from foot-and-mouth disease, but there were 535 steamers carrying 111,000 sheep in which no trace of that disease could be found. The gross amount of the loss occasioned by the ravages of pleuro-pneumonia a few years ago was calculated at £8,000,000; but the cost of these restrictions to the consumer was one penny per pound, and that meant £16,000,000 per annum. They might well run a little risk to save such a sum to the people of this country.

Other gentlemen having addressed his Lordship,

Earl Spencer, in reply, assured the deputation that he felt the deepest interest in the questions brought before him. He also appreciated the questions so far as they related to the food of large centres of industry. He warmly sympathised with the feelings which prompted them to wait upon him. He had frequently had to deal with the subject of the importation of foreign live cattle, and had always endeavoured to keep in mind the great and noble principles of free trade, which had always guided the wisest statesmen, whether with regard to meat or bread supply to this country. (Hear, hear.) He also knew the requirements of farmers, whose interests had to be considered as well as other people's, and that their prosperity tended to the prosperity of the interests which they specially represented. He had tried to do what was right between all classes, and he had always urged moderation on the farmers when they sought to introduce protection for their industry. With regard to the matter of dealing with the diseases of animals, he took on himself the sole responsibility for that important branch of the Government which the Privy Council represented, and he shielded Mr. Mundella from any participation in that responsibility. Having reviewed the history of the law bearing on the subject of the importation of foreign cattle, his Lordship proceeded to enumerate the list of countries which the latest reports to his department made it necessary for the Government to schedule, and said that his office had no power of admitting any cattle from any country unless satisfied that that country was free from disease. With respect to the admission of cattle from America, it had been found that diseased animals were among those that were landed from that country, and

the consequence was that that country had to be scheduled. His Lordship read an extract from the report of the highest veterinary scientist of America, who declared that pleuro-pneumonia did exist, and had done so for some time, throughout the States; and he declared, moreover, that the disease would be in the cattle for six weeks or two months without making its appearance, and that the disease was was of the most insidious kind, and although it might escape attention at first, would at last do the greatest destruction. His Lordship reminded them of how difficult it was in a country situated as America was to secure proper protection from the ravages of disease; and even if the west was perfectly free, there was no guarantee that the east would be. If he were convinced that there were not sufficient regulations in America to arrest the disease there, and they had shown that there was not proper legislation to prevent it, he really could not under the Act of Parliament modify the Orders in Council regulating the importation of cattle from abroad. He read an extract from a Chicago newspaper to show how careless the system for the prevention of the spread of the disease was in America. Generally speaking, therefore, he could not alter or reverse the restrictions which the late administration in its wisdom deemed it wise to impose, although he should have been glad if he could have done so. He could not help feeling, however, that they might develop the dead-meat trade more than was done. He urged that upon the attention of the trade. He should do all he could to make the administration of the laws as little onerous as possible to the meat consuming population of the country.

The deputation thanked his Lordship and withdrew.—*North British Agriculturist.*

SANITARY NOTES ON POTABLE WATER.*

By Gustav Bischof.

We have exhaustive treatises by such men as Albrecht von Haller, Panum, John Simon, Arnold Hiller, Burdon-Sanderson, J. Netten Radcliffe, and others, on the pathological effects of common putrid matter when introduced into the animal system by water or otherwise. Closely connected with this question is another, which, probably on account of the difficulty of direct investigation, has not, as far as I

* A paper read before the Society of Medical Officers of Health on May 16, 1879.

know, been the subject of separate inquiry, although numerous investigators have here and there commented upon it.

This is the question whether ordinary putrefaction or fermentative processes, without being their original cause, may yet have a bearing on the diseases which are commonly caused zymotic. I have devoted a great deal of time to study indiscrimately the views and opinions of a number of prominent scientific gentlemen on this subject, which is of course largely a matter of speculation. Considering that preventive sanitary measures must to some extent depend upon its issue, I think it may not be without interest to give a short summary of my notes.

There are three possibilites. Fermentation may either favour or it may counteract the virulence of the specific contagia; or lastly, there may be no connection at all between them. To state a case let us suppose we are dealing with typhoidal or choleraic discharges, which are in a state of gradual fermentation. The question then is, will the virulence of the the contagia be increased or diminished, or will it not be affected at all by being surrounded with putrid fæcal matter.

I have been able to discover only two statements to the effect that fermentation and contagia are antagonistic. One of them is made incidently in Dr. Maclagan's 'Germ Theory.' He says on page 22 :—"The fact that contagious fluids are most potent in the fresh state, and that their virulence diminishes in intensity as bacteria increase therein, is looked upon by Dr. Bastian as fatal to the germ theory." I have not succeeded in tracing this quotation in Dr. Bastian's publications, but think I shall presently be able to show that he can scarcely hold such views without qualification.

The other statement is by Davaine.* He found that whilst the disease, known by the name of "blood," can always be reproduced in a healthy animal by inoculation of fresh diseased blood, the latter loses its infective power whenever it become putrid. In very hot weather he found this to be the case, even after the blood had been kept for only thirty-five hours.

We must first bear in mind that it is possible or even probable that the specific contagion of different diseases may exhibit a different behaviour under the influence of fermenting matter. Secondly, as a matter of course, fermentation is capable of redissolving all organic matter without exception into its more elementary inorganic constituents. If we therefore suppose that the specific virus is of an organic, or

* Bastian, 'Beginnings of Life,' i, p. 362.

perhaps even of an organised nature, there cannot be the least doubt that it will also be subject to that general rule. But this does not in the least exclude the possibility that in the course of intermediate putrefactive stages, fermentation may not be even favourable to the development or multiplication of the contagion. Do we not see every day that plants feed and thrive on fermenting matter, and yet that the same plants ultimately become its prey? These considerations may explain apparently contradictory statements.

The probable absence of any connection between fermentation and contagia is suggested in my notes by only one single statement, which is the result of an experiment by Birch-Hirschfeld.* On injecting into the alimentary canal of rabbits fæcal matter infected with the virus of typhoid, both in the fresh state and after keeping it for several days, he was not able to discover any difference in the virulence of the symptoms. Considering the comparative immunity which rabbits enjoy from the effects of typhoidal discharges, this experiment would seem to require further confirmation before being accepted as a final proof that putrid matter has no influence on the contagion of typhoid.

By far the largest number of statements is opposed to the views to which I have hitherto referred, being more or less favourable to the supposition that the virulence of contagia, generally speaking, is increased under the influence of fermenting matter.

The views held by Professor Tyndall are well characterised by the manner in which he endorses in his treatise 'Fermentation and its Bearings on the Phenomena of Disease' certain experiments made by Dr. Sanderson.† The latter inoculated mice subcutaneously with the blood of an animal suffering from splenic fever. The experiment was then varied, the blood being dried, permitted to assume the form of dust, the dust wetted, allowed to dry again, and left "in the midst of putrefying matter." After thus keeping the blood for four years, its action was as fatal as that of blood fresh from the veins of an animal suffering from splenic fever. These observations are of special interest in view of Davaine's experiment, to which we referred before.

Dr. Bastian informs us‡ that epidemic diseases are frequently most fatal when they once break out amongst a people who are in the habit of feeding upon diet containing much putrid matter, as for example the Kalmuck Tar-

* Sander, 'Handbuch der Oeffentlichen Gesundheitspflege,' p. 56.
† *Fortnightly Review*, November 1, 1876, p. 568.
‡ 'Beginnings of Life,' ii, p. cxxiv.

tars, whose ordinary food, he states, to be raw putrid fish or the flesh of carrion. This must be taken as very strong evidence that putrid matter is favorable to the virulence of epidemic diseases.

When reporting on the severe outbreak of typhoid in Terling, Essex, in 1867, Dr. R. Thorne states* that at that place all the nuisances which are "generally" associated with outbreaks of typhoid exist in great and unusual abundance, the cottages being literally surrounded by every species of nuisance, manure heaps, cesspools, and masses of decaying vegetable matter.

From a report by Dr. Ballard† on the epidemic of typhoid at Armley, in the burgh of Leeds, we are led to conclude that the cause of the outbreak was milk, which had become tainted by some highly polluted well water. A deposit of mud and filth was discovered at the bottom of the well, which gave abundant bubbles of gas on being disturbed. The organic matter in the water was therefore in a state of putrefaction.

In one of Dr. Pettenkofer's pamphlets‡ we find the remarkable statement that from the very commencement "facts" led always to the qualification that fresh discharges of cholera patients were not infective, but only those which are in a state of decomposition.

Similarly Hallier remarks that§ the most favorable conditions for cholera consist, as a rule, in the accumulation of putrid matter, and he leaves it for the future to demonstrate whether all or at least most contagious diseases come under the same rule.

Dr. Van den Schrieck, in his pamphlet, 'Du virus typhoïde et de son rôle dans les épidémies,' expresses the opinion, which he considers confirmed by M. Pasteurs researches, that decomposition or putrid fermentation of fæcal dejections singularly favour the development of the contagion of typhoid.

A German sanitary authority of great experience, Dr. F. Sander, observes‖ that, as regards cholera and typhoid, he looks upon putrefaction not as the original cause, but as a necessary item in the chain of causes which co-operate to multiply the virus. He also shares the opinion of those who hold that cholera and typhoid find a favourable nidus

* Sixth Report of Rivers Pollution Commission, p. 167.

† Reports of the Medical Officer of the Privy Council, New Series, No. 11.

‡ 'Was man gegen die Cholera thun kann,' p. 10.

§ 'Gährungserchinungen,' p. 87.

‖ 'Handbuch der Offentlichen Gesundheitspflege,' p. 49—52.

solely, where soil, water, or air are contaminated by putrid organic filth, especially by putrid human excrements. I need scarcely remark that this is also the view held by Mr. John Simon.

Again, Dr. Blaxhall expresses a strong belief* that foul privy pits may, amongst other causes, be productive in rendering typhoid endemic; in other words that putrid fæcal matter may be conducive to the propagation of the disease by increasing the virulence of the contagion.

The opinion of Mr. J. Netten Radcliffe and Dr. Buchanan is indicated in one of their reports.† There we read:—"In the present imperfect state of our knowledge of the conditions under which fæcal diseases spread, we do not feel ourselves entitled to say at what time, after being passed, dejections are or may (under various external circumstances) become dangerous to health. We cannot say this either in regard of healthy excrement or of that passed from persons affected with disease, specific or other; but we think it may probably be taken as sufficiently true for practical purposes that there is little chance of mischief from the storage of excrement for a day, even though along with healthy excrement that of persons affected, for example, by enteric fever should, without proper disinfection, chance occasionally to be included." This, therefore, implies that discharges containing the specific virus of typhoid are not so dangerous in the fresh state as after fermentation has set in.

Dr. Duncan‡ remarks that if the discharges of persons suffering from typhoid are allowed to decompose on the bedclothes, or in the chamber utensils, there may be danger of infection. In his opinion, it has also been shown to be probable that if these discharges are allowed to decompose in the soil beneath and around human dwellings, the disease may be spread by the poisonous emanations being drawn up from the soil into the houses. Similarly, he thinks there may be danger of infection by tainted drinking water.

It is well worth mentioning that even those who are on principle opposed to the contagiousness of typhoid, as, for instance, Drs. Bastian and Murchison,§ have been led by their researches to seek for "some forms" of putrefying matter as the exciting cause. Sir Thomas Watson‖ suggests that Dr. Murchison's views may be so qualified without

* Reports of the Medical Officer of the Privy Council and Local Government Board, New Series, ii, p. 59.

† L. c. p. 142.

‡ 'Typhoid Fever, its Cause and Prevention.'

§ Bastian, 'Beginnings of Life,' ii, p. cxl.

‖ *Nineteenth Century*, May, 1877, p. 392.

departing from his intentions, that the poison of enteric fever is often generated during some part of the process of decomposition of fæcal matter.

Dr. Budd frequently connects in his reports the virulence of enteric fever with manure yards, pigsties, and sewers, all of which are more or less identical with putrefying matter. This is another instance of the conclusions to which extensive practical observation will lead.

Of peculiar interest, on account of a very large experience, extending over more than 1300 cases of enteric fever, are the observations of Prof. A. Biermer, of Zurich, on the conditions which are most favourable to the propagation of that disease. Typhoid, I may remark, is endemic in Zurich. Speaking of a certain house called "Pelikan," which came under Dr. Biermer's observation at Berne, and upon which he looks as a "focus of infection," he makes the following statements:* "This house is situated close to the river Aare, and adjoining a large storing reservoir, which received part of the fæcal matter of the town. Here the liquid sewage was concentrated. The solid parts were allowed to subside, and when the reservoir was full the concentrated sewage was scooped out and spread over the land in the neighbourhood, to be further concentrated before being sold and carried away. The subsoil of the Pelikan was by this means, as a matter of course, soaked with putrescent matter and the air frequently infected. The result was that the inhabitants of the Pelikan were from time to time visited by typhoid, and indeed between 1858 and 1862 there were every year a number of cases, making a total, within that time, of twenty-eight, twelve of which ended fatally. The proprietor of the Pelikan lost as many as three wives through typhoid,"

In Zurich Dr. Biermer observed in a similar manner that the accumulation of human excrements caused a local predisposition for typhoid and cholera, and that with the exception of certain cases, which in all probability had been imported, typhoid disappeared as soon as the fæcal matter was regularly removed. He thus arrives at the conclusion that there is strong evidence of the development and reproduction of the virus of typhoid outside the human body, mainly within decomposing matter in the soil, or in sewers or other localities used for the storage of decomposing matter. He believes that infection of drinking water with sewage containing the virus of typhoid may be instrumental in the spreading of the disease.

A striking practical corroboration of the preceding obser-

* 'Ueber Entstehung und Verbreitung der Abdominal-Typhus.' Sammlung, Klinischer Vorträge von A. Volkmann, No. 53, p. 424.

vations has been the recent epidemic of enteric fever at Caterham and Redhill. In this instance, an ordinarily very pure water was contaminated exceptionally, not by typhoidal discharges, mixed, as usual, with a very large proportion of ordinary sewage matter, but by typhoidal discharges only. The virus of typhoid was therefore surrounded by a comparatively unusually small proportion of fermentable matter. And what is the practical result? An "exceptionally mild character of the disease." As we read in Dr. Thorne's report (p. 10), only 21 deaths, or 6 per cent. amongst 352 cases.* This should be compared with the virulence of the preceding epidemic to which we referred. In the Pelikan there was an unusual accumulation of putrescent matter, and out of 28 cases of typhoid nearly 43 per cent. were fatal.

Without entering into more evidence I may, I think, draw the inference from the preceding quotations that experience has led, almost without exception, to the conclusion that the virulence of the contagion of cholera and typhoid, as also probably of other contagious diseases, is increased whenever surrounded with putrid matter. This would then also apply to specifically infected drinking water, which contains fermentable matter. Those who look upon fermentative processes as the original cause of the spreading are obviously led to assume a still closer connection. Should we accept the view that putrid matter increases the severity of the symptoms of contagia, we arrive, like Dr. Biermer, at a very important conclusion. Some suppose that the specific virus of typhoid and similar diseases multiplies only within the bowels of persons affected, lying dormant as soon as it left them.

If this were correct, any influence of fermenting matter on the specific virus outside the human or animal body could hardly be satisfactorily explained, and we are therefore, indeed, almost compelled to deny any such influence, or to accept that multiplication takes place, or may take place, as well without as within the animal body. The fact which, amongst a number of other instances, was proved by the well-known epidemic at Lausen, in Switzerland, that a comparatively trifling polution of water by typhoidal discharges may be instrumental in spreading the disease over a very large area, is certainly most readily understood if we accept that view.

* Dr. Duncan states in the pamphlet we quoted before (p. 6) that the average of deaths from typhoid in Great Britain is nearly 11 per cent. of those attacked, but in the Army Medical Report, vol. xix, p. 14, we read that it is 20·5 per cent.

Beyond the general interest of the question I had another object in view when I gave my attention to the bearing of putrid matter upon the virus of zymotic diseases.

In two consecutive papers, which were read before the Royal Society,* I have endeavoured to ascertain the comparative and absolute value of certain purifying media of water by what I may call a physiological test, that is to say, by the action of the filtered water upon certain organic matter. Supposing a water contains bacteria, or in fact any agencies which are capable of inducing fermentation. Supposing further that such filtered water, whilst all infecting atmospheric influences are excluded, be brought in contact with fresh meat, the smell of the latter must after a time indicate the presence or absence of such putrefactive agents.

As I then found in the course of these experiments that meat in contact with water which had been purified in a certain way remained fresh for weeks or months, the question naturally arose, what sanitary conclusions might be drawn from this phenomenon. We must first consider that the purity of drinking water is of by far the greatest importance when an outbreak of an epidemic takes place. Thus I see no reason to alter the opinion which I have frequently expressed, that even the water supplied to London from the Thames, polluted as we know it is by all kinds of filthy matter, is at ordinary times fairly wholesome. But as soon as an outbreak of an epidemic, say of cholera or typhoid, or perhaps, according to a resent notion, of diphtheria, takes place, the aspect is at once changed. That same shallow well or river water, which had been taken with apparent impunity for years, becomes the vehicle, and increases apparently in a ratio to the state of its purity the virulence of the contagion. If then, I repeat, by some means or other, the character of the water be so changed that it does no longer contain fermenting matter, what is the bearing of that result upon the specific virus by which it has been contaminated?

Assuming I had succeeded in showing the probability of an increase of the virulence of contagia by surrounding fermenting matter, the answer is obvious. But even should that connection not be thought sufficiently established, those who accept the germ theory of contagia will consider it not unlikely that the agent which is capable of destroying one form of the lowest organic life may be capable of destroying another. Such was the line of argument leading to the ex-

* 'Proceedings of the Royal Society, No. 180, 1877, and No. 186, 1878.

periments upon the separation of fermenting matter from water by filtration. I will now explain some further experiments which I made since reading those papers to the Royal Society, to which I have alluded above.

The purifying media experimented upon were, as formerly, animal charcoal and spongy iron. All former experiments were based on the supposition that the meat, when being exposed to the action of filtered water, must necessarily, in the first instance, be disinfected by boiling. I proved in this way that water, after passing through animal charcoal, does not prevent putrefaction of the meat. The same water, and even hay infusion, after filtration through spongy iron, under otherwise like conditions, is incapable of inducing, for many months at any rate, putrefaction of the meat, if brought in contact with it under conditions which I have specified.

However, on consideration of those results, it appeared probable that water, after passing through spongy iron, might have itself antiseptic properties sufficiently strong so as not only to be unable to support the existence of putrescent processes in the water itself, but even to prevent without preliminary boiling the putrefaction of meat.

To test this, similar vessels were employed to those described in the first paper before referred to. They were not, however, for reasons which will presently be seen provided with a perforated bottom, but some fresh meat which had not been boiled was placed on the bottom of the vessel and covered by a cup with perforated sides and a neck at the top. From the neck a tube was passed through and made tight in a neck at the base of the filtering vessel, being connected there with a stopcock for regulating the flow of water. The vessel was next filled five to six inches high with ordinary spongy iron, and continuously supplied with New River water, which at the time was in an unusually bad condition, owing to floods.

The meat was, therefore, not in contact with the spongy iron, but solely with the water which had passed through that material. In this manner the apparatus was as far as possible kept going constantly for three weeks, a volume of water equal to the bulk of spongy iron passing through it in about forty-five minutes. The meat was at the end of that time in a perfectly fresh condition. To about half an inch from the exterior it was white, but the interior was still red. A subsequent repetition gave a like result.

The experiment was at the same time modified in such a way that the filter, otherwise arranged as before, was merely kept full of water, any filtration through it being dispensed

with. In this instance the meat had become putrid after three weeks. The explanation of this difference of behaviour is that the water, until the vessel has been filled, passes very rapidly through the spongy iron, carrying with it putrefactive elements which had originally been contained in the water or abstracted from the spongy iron. That the latter in the dry state does not prevent putrefaction of meat was proved by a separate experiment. Dry spongy iron may, therefore, and probably does, contain bacteria of putrefaction, so that it was hardly to be expected that the meat could be disinfected when remaining in contact with the first water, which had passed through the filtering material, the more so as it filtered very rapidly without regulation.

Thus far the meat was brought in contact with water containing the small quantity of iron—about 10 milligrammes per litre—which is always dissolved as ferrous hydrate or carbonate, whenever ordinary water is passed through spongy iron. We know that some compounds of iron have antiseptic properties. It therefore appeared of interest to ascertain what the effect would be if the iron were first separated before the water reaches the meat. To this end two filter cases were arranged as before, so as to have a continuous flow of water, but underneath the spongy iron I placed layers of pyrolusite and sand. Pyrolusite has the property of oxydising the proto-compounds of iron, which are mentioned above, converting them into per-compounds. They are thus rendered insoluble, and retained mechanically by the sand underneath. After the filters had thus been in operation for three weeks, the meat in both was again found to be putrid. Nevertheless, it did not appear to me likely that this result should be due to the abstraction of the iron, which had been in solution.

The filtering vessels contained in the course of this experiment a comparatively large bulk of pyrolusite and sand, both of which cannot impart any antiseptic properties to the water; on the contrary, they contained unquestionably putrefactive matter, even to a larger extent, than the dry spongy iron in the previous experiment. Such putrefactive matter was carried down with the water for some time to the meat, causing it, in addition to the putrefactive matter originally adhering to the meat, to show incipient putrefaction before disinfection could take place by agency of the filtered water.

To prove the correctness of this argument I had to demonstrate that if the filtering apparatus were first kept in action for some time before adding the meat, so as not to bring the

latter in contact with the filtered water until all materials might be thoroughly disinfected, the meat would remain fresh. This led to the following modification.

Two vessels were charged with the three materials—spongy iron, pyrolusite, and sand—as before, and water was passed through them for ten days. Now it would have been impossible to introduce the meat at its former place without disturbing the filtering media or exposing them to reinfection. Each filter was, therefore, after the washing had been completed, connected with a glass flask, provided with an inlet tube passing to the bottom, and an exit tube from the top of the flasks. Otherwise the flasks were sealed air-tight after the meat had been placed in them. The inlet tues were connected by india-rubber tubing with the exit tubes from the filtering arrangement. None of the usual precautions as to disinfection of either flasks or tubing were employed, as I concluded that if these minutiæ were of consequence the putrefactive matter adhering to the meat would certainly do its work.

After passing water through the vessels and flasks between three and four weeks, the meat in one of the latter was found to be as fresh as the first day, but I feel hesitation in positively asserting whether or not the meat in the other flask exhibited a very faint putrid smell. If so, the explanation may perhaps be that some of the india-rubber tubing I used had certainly before been employed in connection with experiments on hay infusion. It might be argued that any preservation had been due to inactivity of the bacteria owing to the cold, the experiment being made in December and January last. I do not believe this, for the vessels stood in my laboratory only two yards from the fireplace; and in the course of the experiments immediately preceding these, to which I referred before, the meat became putrid, notwithstanding that the temperature was then about the same as during the succeeding experiments.

Nevertheless, another set of experiments was commenced towards the end of January last, certain precautions being taken to guard against any possible error.

One filtering vessel was, as before, filled with spongy iron, pyrolusite, and sand, and another, for the sake of comparison, under otherwise like conditions, with animal charcoal, as I know from my former experience that, unless the cold prevented it, the charcoal would cause the meat to become putrid. A third vessel was lastly charged with spongy iron in a modified manner, namely, so that the filtered water when leaving the vessel still contained some little oxygen in

solution. This was in all other experiments not the case. The object of this modification was to further confirm a result which I had obtained before, that the physiological action of spongy iron in preventing putrefaction is not dependent on the absence of oxygen.

After continuing the passage of New River water through through these filters at the ordinary rate for a fortnight, for the sake of thoroughly washing the materials, the filters were connected each with a glass flask containing some fresh uncooked meat, and generally arranged as before.

The filtration of water was then continued for three more weeks, at the ordinary regulated speed, when the several samples of meat were taken out of the flasks. After being placed on similar dishes, I had them successively handed to me, blindfolded, for examination of their smell, so as to prevent any preconception on my part. It must be borne in mind that fresh meat in itself has more smell than cooked meat, therefore any slight putrefaction cannot be as readily distinguished in the former as in the latter.

The following was the result of my examination :—The samples which had been in connection with the two spongy iron filters exhibited a peculiar slight smell, reminding me of cheese, which, however, was totally different from the smell of putrid meat. The sample which had been in contact with the water filtered through animal charcoal was offensive, having a decidedly putrid smell. At the same time, when the preceding experiments were commenced, I immersed two other glass flasks which contained some fresh meat for an hour and a half into boiling water. One of these flasks was then connected with the spongy iron filter which yielded water containing oxygen in solution, with a view of comparing the action of that filter with former experiments when there was no oxygen in the filtered water. Into the other flask, which contained boiled meat, I passed, without opening the stopper, a small quantity of unfiltered New River water, when at once the inlet and outlet tube were closed air-tight. The object of this latter experiment was further to test directly whether the comparatively low temperature then prevailing had any sensible influence on the result of the experiments in rendering bacteria inactive. This was again decidedly negatived, for that small quantity of unfiltered New River water sufficed to render the meat, after three weeks' standing, very offensive and putrid; whilst the corresponding sample, which also contained boiled meat, and had been connected with one of the spongy iron filters, exhibited only the smell of

ordinary boiled meat after standing for some time under a cover.

From all these experiments we may thus draw the following conclusions:

1. The results which I explained in this paper strongly corroborate those communicated in my former paper on similar subjects.

2. Ordinary water, after efficient filtration* through spongy iron, does not contain any putrescent matter, or matter capable of inducing putrefaction. On the contrary, such filtered water possesses in itself antiseptic properties strong enough even to prevent, to some extent at least, putrefaction of fresh meat which has not been boiled before being exposed to the action of the filtered water.

3. Contact between the meat and spongy iron is not necessary to obtain that result.

4. Neither is the absence of oxygen in the filtered water to all appearances an essential condition.

5. It thus follows that the action of spongy iron cannot be wholly mechanical, but must be, in part at least, chemical, or, as far as the action upon organised bodies is concerned, physiological.

The researches by Drs. De Chaumont† and J. Lane Notter,‡ of Netley, tend to corroborate my experiments bearing on the action of spongy iron on living organisms and its general purifying power as compared with animal charcoal. These reports are also a strong corroboration of the statements on the same subject in the Sixth Report of the Rivers Pollution Commission, p. 220 and 221.

Only one attempt has, as far as I am aware, been made to upset some of my conclusions. In vol. xiv, part iv, of the 'Zeitschrift für Biologie,' by Buhl, Pettenkofer, and Voit, p. 503, Dr. L. Lewin says:—"Now I can most positively assert that if only 10 c.c. of urine which contains moving bacteria be mixed with two litres of water, and passed through a spongy iron filter, numerous bacteria may be found in the filtered water." Seeing the obviously unscientific manner in which Lewin has treated the subject, I would probably have passed over his observations without a reply were I not

* By efficient filtration is to be understood filtration at such a speed, and generally under such conditions, as explained herein. The spongy iron which serves as filtering medium must be of proper chemical and physical quality.

† 'Army Medical Report,' vol. xix, 1879, p. 170, and *Sanitary Record*, vol. x, No, 248.

‡ Paper read before the section 'Public Medicine,' at the Meeting of the British Medical Association, August, 1878.

aware that his experiments have been made at the instance of the German Imperial Board of Health. That official connection with a central sanitary authority induces me to make a few comments on Lewin's report.

Some two years ago an inquiry was ordered by the Imperial Board into the merits of the spongy iron filter. The report was unfavorable; more I cannot say, as no details were given to me. Shortly afterwards, meeting one of the leading members of the Board, I complained that the report in question had been made after those charged with it could not possibly have been in possession of the filters for more than five days. This alone naturally suffices to deprive it of any possible merit. It generally takes a few days before the filtering materials have thoroughly settled, and until certain chemical reactions upon which the purification by spongy iron depends have been thoroughly initiated. Some time is required to determine the result of an experiment; and above all one of the most important questions in connection with any such inquiry is how long the filtering medium remains efficient. Can this be decided within five days? My representation led to the inquiry being transferred from Berlin to Munich into the hands of Lewin. I will now as briefly as possible explain the fate of this second attempt.

Lewin is a believer in Dr. Pettenkofer's theories. The extent to which some of the latter's followers go is shown by Dr. Flügge, who has actually propounded the view that the relative freedom of water from animal contamination appears in some way or other to be a predisposing cause of typhoid.* Those who hold that pure water is an essential preventive of certain zymotic diseases are, in his opinion, mere "theorists." Both Lewin and Flügge look indeed upon the purity of water as a desideratum chiefly if not solely from an æsthetic point of view. You will of course understand that any one holding such opinions cannot attach much importance to the examination of water, and thus we find Lewin giving a report on the comparative purification of drinking water by animal charcoal and spongy iron without making one single analysis or other estimation of any kind whatever of a water. This curious feat can only quite be understood if we recollect the general state of water analysis in Germany. I have not met there one single chemist, with the exception of Dr. Hoffmann, of Berlin, who had any experience of the method upon which, with all its drawbacks, I look as the most satisfactory known. I allude to Frankland and Armstrong's combustion process. Mr.

* 'Zeitschrift für Biologie,' xiii, iv, p. 502.

Wanklyn's ammonia method has also not met with much favour.

What is the result? One German chemist, Dr. Emmerich, relying on the oxygen process, does not consider it in any way extraordinary that the "organic matter" in some polluted water should amount to nearly four times the quantity of the total residue on evaporation,* whilst Dr. Flügge, in a paper "On the Hygienic Value of the Examination of Potable Water,"† admits that Frankland's method "seems" the only comparatively satisfactory one capable of determining the organic nitrogen probably completely and the organic carbon approachingly. Of course the reverse is the case, and we can judge from this how far he is conversant with the subject he lectured upon. "But this method," Flügge continues, "takes up much time, and has not, on this account, excited the interest which the relative accuracy of its results may deserve." Taking everything into consideration, he arrives at the conclusion that the determination of chlorine is the most satisfactory way of ascertaining sewage pollution of a water.‡ Although he bases very important conclusions

		Organic Carbon.	Organic Nitrogen.	Ammonia.	Chlorine.
Deep Well Water	Unpolluted	·067	·017	·0	9·30
	Polluted	·821	·131	·011	1·75

on the indications by chlorine, which he obtained in a number of cases, he finishes by saying that none of the methods hitherto in use can afford information on the hygienic value of a drinking water. Another chemist, Dr. Tiemann, of Berlin, in his book on water analysis,§ declares himself unable (ausser Stande) to say whether or not the results obtained by Frankland's method are in a ratio to the time and trouble it requires.

Such being the state of water analysis in Germany, can we be astonished at the backwardness of that country in all matters relating to water supply? This also renders it intelligible why Lewin hesitates to publish analyses which he might be certain would be criticised here in England.

Instead of this he confined himself to the filtration of urine through a spongy iron filter, determining the total nitrogen in the filtered and unfiltered liquid. Starting with

* 'Zeitschrift für Biologie,' viii, iv, p. 502.

† Ibid, xiii, iv.

‡ Dr. Flügge might advantageously study the Sixth Report of the Rivers Pollution Commission, where, amongst other instances, he would find the following:

§ 'Anleitung zur Untersuchung von Wasser,' by Dr. Ferd. Tiemann, ii Ed., p. 99.

what he calles "dilute" urine, and finding that, for reasons which he did not understand, but which I will presently explain, the result was unfavorable to the filter, he finishes by using "more concentrated" urine, with a view of improving the purification by the filter. It is as difficult to understand the logic of such reasoning as the analytical fact stated by him that the "dilute" urine which he used for his experiments contained before filtration as much as 8·1625 grm., and the "more concentrated" urine only 6·1775 grms. total nitrogen per litre. Equally unintelligible is the statement that ammonia could in no instance be discovered in the urine after filtration through spongy iron. I cannot find any remark whether or not he was able to discover ammonia in the urine before filtration.

The difficulty of determining ammonia in normal urine consists, according to Neubauer and Vogel,* in its liability to form carbonate of ammonia by decomposition of the nitrogenous compounds. They say that ammonia occurs always in a distillate of urine obtained at the lowest possible temperature. It would thus be interesting to learn how Lewin demonstrated the absence of ammonia.

Again, according to Gorup-Besanez,† urine contains on the average of numerous analyses 0·4 grms. of ammonia per litre. What can possibly have become of such an enormous quantity, the more as it is well known‡ that even ordinary water, after filtration through spongy iron, contains frequently considerable quantities of ammonia? I will, in concluding, refer to only one more fatal mistake which the reporter to the Imperial Sanitary Board made.

The purifying action of a filtering medium necessarily depends upon the time of contact with the water. The spongy iron filter is provided with a special arrangement for regulating the yield of water with great accurracy, but the regulation, at least of the passage of water through the spongy iron, does not commence until a filter, as is always the case in its practical use, is full of water. Until then the water rushes through the spongy iron almost as fast as it can be filled in. Now let us see how Lewin managed his experiments.

He drained the filter, allowing the water to run off as completely as possible, and then poured in between 50 c.c. and two litres of the several liquids at a time. These small quantities, therefore, passed through the spongy iron in an

* 'Analyse des Harns,' p. 61.
† 'Physiologische Chemie,' p. 530.
‡ *Chemical News*, January 4, 1878, and following numbers.

instant, excepting the portion which may have remained within its pores. Again, we must recollect he did not employ "water" for his experiments, but urine, and thus had, to use his own figures, a minimum of 15,000 and a maximum of 45,000 parts of nitrogen for every part of nitrogen in Thames water, excluding from the latter the nitrogen as nitrates and nitrites. Had I ever committed the absurdity of proposing that we should render ourselves independent of our water-supplies by allowing the water to circulate alternatively through our body and the filter, Lewin's experiments might have stood; but as it is everyone must form his own opinion of the merits of his report.

I will here contrast Lewin's report with another which reached me only yesterday. It is by the Royal Prussian Military Administration at Coblenz, dated May 11, 1879.

Towards the latter part of 1877 an outbreak of an epidemic of typhoid occurred in the Empress's own regiment, stationed in one of the fortresses at Coblenz. It was stated to me, the wife of a corporal had been visiting, and was laid up shortly after her return with enteric fever. Subsequently the disease spread so alarmingly that it was at one time contemplated to evacuate those barracks, as it was considered impossible to prevent excremental pollution of the water-supply. No doubt could therefore exist that, typhoid having once gained a footing, also specifically infected matter occasionally mixed with the water.

At this stage one of the medical officers suggested to the Empress that the spongy iron filter might perhaps be the means of improving the sanitary condition of the garrison. She at once ordered one, which was started in December, 1877, and another was ordered later on.

After referring, in the first instance, to the great difficulty of tracing a direct connection between purification of the water-supply and the disappearance of an epidemic, the report contains the following passage, which I have verbally translated:

"Nevertheless, I cannot but attribute the prevention and non-recurrence of new cases of typhoid in a great measure to the improved state of the drinking water by the spongy iron filter, the more so as a large number of chemical analyses has proved undoubtedly that the organic matter, nitric acid, and hardness, were considerably reduced after the filtration."

After an outbreak of typhoid in Fort George, in Scotland, in the early part of last year, a very large spongy iron filter was ordered. Later on the filtering area was doubled. Acci-

dentally I heard, through one of the medical officers stationed at Fort George, that the water, as we know also from the last Army Medical Report, had been in a very dangerous state. After starting the filter it was again analysed, when the condition was found to be "highly satisfactory." Now this is only chemical evidence, but we may perhaps assume that the result, as shown by chemical analysis, would scarcely have given such satisfaction had not some beneficial influence on health been at the same time observed.

Unfortunately it is, I am afraid, of no use applying for an official report. I did this once before, when the Secretary for War, "to prevent precedents, declined to lay a similar report on the table of the House of Commons. With all due deference, I submit that this is to be regretted. Just as well as the connection between pollution of a water-supply and disease can only be proved by a large number of cases can the influence of any system of water purification on health be solely definitively settled by oft-repeated experience. This, therefore, should not be withheld, but any such practical experience relating to purely sanitary matters should at once become the property of the nation.—*Sanitary Record.*

OBSERVATIONS ON THE DISEASE OF THE COW, COMMONLY KNOWN AS DROPPING AFTER CALVING.

By James Beart Simonds, Principal of the Royal Veterinary College.

Under various names, such as Drop, Dropping after calving, Milk fever, Puerperal fever, Adynamic fever, Parturient apoplexy, &c., a fatal disease attacking the cow shortly after or even occasionally before or at the time of parturition has long been recognised.

In days gone by the pathology of the malady was very imperfectly understood, and consequently the most conflicting opinions thereon were promulgated by writers on cattle pathology, as well as by practitioners of veterinary medicine. Even in the present day it cannot be said that a uniformity of opinion prevails, many persons still clinging to the views which were first advanced by the late Mr. Youatt, in his work on 'Cattle: their Breeds, Management, and Diseases' (1834), viz. that "this disease is primarily inflammation of the womb or of the peritoneum, but that it afterwards assumes an intensity of character truly specific." With more correct views, however, other authors and practitioners now regard

the disease as *non-inflammatory*, and as being dependent on functional derangement of the brain and nervous system.

The Name.—I abandon all other names to give preference to *parturient apoplexy*, notwithstanding that some of them may convey to the mind the existence of well-marked symptoms of the disease, such as *Dropping after calving*. The term *Milk fever* I also hold to be inappropriate, but by no means so much so as *Puerperal fever*, which strictly means "Child-bed fever," and consequently ought never to have been used in connection with parturition of the cow. Like dropping after calving, *Adynamic fever**—loss of power associated with fever—points to the inability of the animal to rise, but beyond this we learn nothing by the addition of the term either of the symptoms or nature of the malady.

It was not until 1836 that an effectual effort was made to get rid even of the name of Puerperal fever, then so generally applied, and also of the disease being of an inflammatory nature. In that year an animated discussion took place in the Veterinary Medical Association, when the late Mr. Youatt stated that his opinion of the nature of the disease had undergone a change, and that he took strong objections to the name of Puerperal fever. Many of the speakers nevertheless defended both the name and the inflammatory theory, while others considered the digestive organs as being chiefly implicated. Some spoke of the secretion of milk being arrested, but only one or two drew attention to the evident derangement of the nervous system. The most definite opinion, however, of the nervous system being chiefly involved, was at that time expressed by the late Mr. Friend, of Walsall, who, in a communication to the *Veterinarian*, wrote as follows: "I consider the disease to be one originating in the organic motor nerves." The dim light which was thus shed on the pathology of the malady was, however, only discerned by a few practitioners, and for three or four years longer the pages of the *Veterinarian* continued to be occupied with conflicting opinions, both on the propriety of the name and the pathology of the malady. Progress, however, was made; and in 1840 the writer of the present paper went beyond many members of the profession who even regarded the nervous system as principally involved, and expressly stated that such derangement depended entirely on an *apoplectic condition of the brain and spinal cord*.

Experience has shown the correctness of this view of the

* In another part of this Essay I shall speak of Adynamic fever, in connection with an animal's incapability to rise when pregnant.

pathology of the disease, and hence the appropriateness of the name, *Parturient apoplexy.*

SUSCEPTIBILITY.—No animal of the farm except the cow is the subject of the malady, although all are liable to be attacked with inflammatory and other diseases at the period of parturition. Even with cows, all are not equally predisposed to parturient apoplexy, young being less so than aged. Heifers producing their *first* calf when about two years and a half old may be regarded as altogether insusceptible, and the same may be said with reference to their second calving, as a rule. Succeeding labours, however, are attended with greater danger even up to the time that they may be rightly designated old animals.

Potent for evil as advanced age undoubtedly is, it cannot, nevertheless, be affirmed that the oldest animals will be attacked, for daily experience proves that many a middle-aged cow will fall a victim to the disease, although there are older animals in the same herd. The capability of a cow to yield a large quantity of milk exercises considerable predisposing influence, and bad milkers are, as a rule, found to be far less susceptible to the disease. As the mammary glands may be said to be at their fullest development, if not immediately at their greatest activity, at the *third* calving, so it would appear that adultism becomes more dangerous when combined with the power to produce a full lacteal secretion at the time of parturition.

Besides this combination, susceptibility is greatly increased by breed; well-bred Yorkshire cows and *English*-bred Jersey cows being most susceptible, thriving Suffolk and Ayrshire and Dutch cows following in the rear. Well-bred animals have, as is well known, an hereditary predisposition to early maturity, and even plethora. And although it cannot be said that "good milkers" are plethoric animals, still an innate tendency, depending on breed, to accumulate flesh, materially adds to their susceptibility to be attacked with the disease. Generous feeding, more especially if associated with this hereditary predisposition, and a capability of yielding a full quantity of milk, will necessarily increase this liability. It has often been observed that cows of this description, which in the latter period of utero-gestation have ceased to give milk, and are generously fed, and perhaps allowed to remain at pasture in the summer when the rest of the herd are driven home for milking, have their susceptibility thereby increased. These several things explain, in part, the well-established fact of the disease being prevalent in some districts and rarely seen in others.

Some persons have sought an explanation of this localisation of parturient apoplexy simply in the character of the soil, the rich quality of the food, and the generous feeding of the animals. It is true that on sandy and poor soils the malady is rare; but its prevalence in other districts does not exclusively depend on an opposite condition of the soil, nor on the good management or richness of the grazing land, nor on the high feeding of the cows; nor, I may add, is it due to the large number of animals which are kept within a limited area. In many dairy districts, where these conditions exist, but where well-bred and good milking cows are sparsely distributed, very few cases of parturient apoplexy are seen. I am practically familiar with many such districts, as with others where the malady is exceedingly rife.

In speaking of the causes which favour predisposition, the influence of the weather must not be lost sight of. In the height of summer, although fewer cows may calve within a given area, more cases will occur than in the spring, when the larger number of calves are born. It is also noteworthy that in some years the disease is comparatively rare, while in others it is very prevalent.

In considering the predisposing causes of the attack, attention may also be directed to the conformation of bovine animals, their liability to great excitation at the time of parturition, and their idiosyncrasy or natural tendency to brain disturbance, especially when suffering from diseases which implicate the functions of the stomachs, and none the less also of the uterus and other organs. Compared with simple-stomached herbivora, and with many other ruminants, bovine animals are short-necked, and are provided with a more capacious venous system for the return of the blood from the brain. This latter anatomical peculiarity probably depends on the greater length of time which they naturally occupy in grazing, and the necessary pendent position of the head during the whole of such time.

The shortness of the neck may, however, exert an influence also in the production of that excited condition of the brain which is often observed both in cows and heifers immediately after parturition in the defence of their young. Their ordinary docile habit is not unfrequently changed to such an extent as to amount to parturient delirium, rendering it dangerous to approach them, and not unfrequently leading to their killing their offspring.

Conformation and advanced age in cows, as in the human subject, are powerful agents in the production of apoplectic attacks. Susceptibility is also increased by a previous attack.

Cows which recover from the disease are exceedingly liable to become victims to it at the next calving. Exceptions are, however, now and then met with, but the danger is so great that no risk of the kind should be run.

In the preceding observations I have endeavoured to explain most of the causes which increase the susceptibility of an animal to be attacked, and I here add that among such causes is that of the period of utero-gestation being fully completed. The malady does not attend, or very rarely, on abortion or premature labour, nor even on protracted labour, especially if manual assistance has been necessary to effect delivery.

Inflammation of the uterus, with which dropping has so long been confounded, follows commonly enough on *first* births, and in *young* and also *impoverished* animals and *bad milkers*, as well as on cases of *abortion*, *premature labours*, and *mechanically-assisted deliveries*. These, indeed, are fruitful sources of inflammation of the uterus, but not of apoplectic attacks.

Another marked difference between the two affections is the time which elapses subsequent to delivery and the occurrence of ill-health. Inflammation of the uterus rarely shows itself before the fourth or fifth day after parturition, and is always preceded by febrile excitement and its concomitants, whereas, as has been stated, the susceptibility to parturient apoplexy has either greatly diminished or entirely passed away by the expiration of the third, or fourth day at the furthest, after delivery. Coma also does not necessarily belong to inflammation, but it is the leading diagnostic symptoms of "dropping."

Again, in inflammation of the uterus, death rarely follows in less than four to five days; while in dropping forty-eight hours, with very few exceptions, is the extreme period of duration. Cows which, as "in-calvers," are sent from market to market, undergoing exertion thereby, are rendered less liable to dropping, but not to inflammation. Lastly, I may repeat that every variety of animal is liable to inflammation of the uterus, but the cow only to parturient apoplexy.

Pathology.—From what has been advanced, it will be seen that I regard "dropping after calving" as true apoplexy, due to the act of parturition. In what way the apoplectic attack may be caused is not so easy to determine. Some persons have spoken of its production by the "throwing back into the system of the access of blood which had been sent to the fœtus" *in utero*. Strictly speaking, no such throwing back takes place, the fœtus having its own independent set of blood-vessels. It is quite true, however, that by the con-

traction of the walls of the uterus after delivery its vessels are closed against the passage of the blood to a very great extent, and consequently for a time repletion of all the other vessels of the body may be said to exist. Doubtless the rapidity with which balance of the circulation is obtained will be in proportion to the activity of the several secretory organs, and perhaps by none more so than by the mammary glands A free secretion of milk, especially charged as it now is with *colostrum*, gives earlier and more complete relief to the vessels than would be afforded by any other secretion, milk and blood being so closely allied in composition. It is, however, to be remembered that this secretion often precedes parturition, and continues until arrested by the apoplectic attack; and not only so, but until coma succeeds, and that during the same time all the other secreting glands are apparently in a state of activity. Simple repletion of the blood-vessels, under such circumstances, would be early removed, and doubtless fairly completed by the third or fourth day, not *until which time*, however, will the attack in many instances be found to occur.

With reference to the relationship existing between the nervous system and the secretion of milk, it may be affirmed that no secretion is so much under the influence of nerve force. It is not improbable that science may hereafter establish a close connection between an attack of parturient apoplexy and the capability of the mammary glands not merely to secrete but to freely effect the formation of the granulated cells of *colostrum*, with which the *first* milk is so largely charged. By their free production, it may certainly be affirmed that fatty matter is effectively and in a rapid manner eliminated from the blood, thus reducing plethora of the vessels and changing the character of the fluid, and probably its action thereby over the entire nervous system.

The influence of *nerve force* upon the amount of the lacteal secretion is doubtless best seen in the human subject, as is that of the character of the *secretion* itself. Dr. Carpenter, in his 'Manual of Physiology,' says: "Under the influence of grief or anxiety the secretion of milk is either checked altogether, or it is diminished in amount and deteriorated in quality. The secretion is usually checked altogether by terror, and under the influence of violent passion it may be so changed in its characters as to produce the most injurious and even fatal consequences to the infant."

I quote this passage chiefly to show the probability of an alteration in the power of the mammary glands in secreting the *first* or colostric milk, as having an important and direct

influence over the nervous system, or indirectly upon it through the quality of the blood; this in turn depending upon the amount of fatty matter the circulating fluid contains, or, in other words, on the *quantity of colostrum* which is secreted immediately before or after parturition. It is not difficult to understand how, under such circumstances, the blood and the nervous system can act and react abnormally on each other.

So closely attendant on parturition is an attack of the disease, that in a few instances the cow has fallen even before the birth of the calf had been completed. Parturient apoplexy, however, as a rule, occurs shortly after calving, and may happen at any time, as before stated, between the birth of the calf and the close of the fourth day. Why the liability should cease so soon is not easy to determine. It may possibly, as has been hinted at, depend on the excitability of the nervous system being now removed by the mammary glands having eliminated with the lacteal secretion a large proportion of the fatty matter of the blood in the cells of colostrum. In support of this view is the well-known fact that by this time the milk has to a great extent lost the characters of a *colostric* secretion.

Doubtless this theory of the pathology of the disease is open to objection, and so, as it appears to me, is that which fixes primarily the disordered nerve force on the ganglionic nerves of the uterus. It has been supposed that some marked but undefined impress is made on these nerves by parturition, which is quickly conveyed to the cerebro-spinal and cerebral systems. If this be so, it is not difficult to account for the congested state of the vessels of the spinal cord and the brain, of which apoplexy essentially consists. The remarkable suddenness of the attack may also be said to favour the view of the nervous system being primarily and directly impressed. Thus a cow, in all respects in perfect health and exercising her natural maternal interest towards her calf, will be observed to suddenly stagger, fall, and soon to pass into comatose condition, which ends too often in speedy death.

Indications and Progress of the Attack.—Apart from the very exceptional cases alluded to in which the attack takes place even before parturition, I may here repeat that immediately after her delivery the cow is likely to be affected. The earlier the attack the more serious does the case become as a rule.

In some instances premonitory symptoms are to be observed, but not in the majority of cases. Indeed it will be found that not only has the cow calved without difficulty,

and labour been completed by the expulsion of the fœtal membranes but that she has yielded a fair quantity of milk, partaken of her food with an appetite, has ruminated, digested, and assimilated it, and voided the fæculent matter in its natural condition, and given every other indication of unimpaired health. Suddenly, however, she is observed to cease feeding, to stagger or assume a fixed position, seemingly conscious that if she attempts to move she will fall. The eyes becomes glassy and amaurotic, and with a bewildered stare she recognises her calf for an instant, moans or bellows, staggers and falls. With mouth half open, tongue protruding, breathing laboured, and countenance expressive of intense suffering, she will sometimes make two or three ineffectual attempts to rise. As a rule, however, she remains down, and either throws herself on her side or lies on the belly, with the head carried backwards towards the flank, and resting on the floor. The body becomes clammy, the extremities cold, and the evacuations of fæces and urine cease. The pupilary openings of the eyes are dilated, and the vessels of eyelids engorged with blood, tears not unfrequently trickling down the face. Perfect unconsciousness quickly succeeds, or, in medical language, she becomes comatose, and one by one the special senses are lost as well as all voluntary movements.

Coma has been rightly defined to be "that condition in which the functions of animal life are suspended, with the exception of the mixed function of respiration; while the functions of organic life, and especially of the circulation, continue in action. There is neither thought, nor the power of voluntary motion nor sensation."* Thus it will be observed that in the stricken cow the eyes are insensible to the stimulus of light, the limbs to feeling, the ears to sound, and the nostrils to the sense of smell. The taste also and the power of deglutition are gone, the breathing is difficult and stertorous, and the pulse indistinct, wavering, and irregular. Besides the loss of swallowing, the implication of the digestive organs in the morbid process is shown by the ingesta in the rumen passing into a state of fermentation, producing that distension of the viscus termed tympanitis. This condition of the organ is accompanied with frequent eructations, and what is most remarkable in connection with these is the passing of ingesta from the rumen into the œsophagus, its ascent up the tube to the mouth, and its descent therefrom into the windpipe, and ultimately into the ramifications of

* Dr. Thomas Watson's 'Lectures on the Principles and Practice of Medicine.

the bronchial tubes. In such cases death depends not directly on the apoplectic state of the brain and spinal marrow, but upon suffocation—asphyxia.

The tympanitic state of the rumen, apart from the eructations, adds greatly to the animal's suffering, by impeding the breathing, and thereby adding to the difficulty of the circulation. Exacerbations of suffering are well marked throughout, and are accompanied with spasmodic twitchings and often with painful convulsions. The cow no longer rests on the belly, but struggles to get on her side, in doing which the head falls heavily on the floor, and generally in a line with the body. No effort on the part of those in attendance can prevent these spasms. Convulsion succeeds convulsion, only to cease with death. Such, in brief, are the symptoms which mark the existence and progress of parturient apoplexy.

The duration of the disease varies, and, as can be readily understood, the recoveries are very few. The majority of the animals are found to sink in twenty to twenty-four hours from the attack. Life is rarely prolonged more than forty-eight hours; indeed, it often ceases within four to six hours in cases which are accompanied with convulsions from the beginning.

In some instances the disease assumes a less various type, and the cow is found to retain consciousness for a short time after dropping, to be followed, however, by coma, usually within the first twelve hours, all the leading phenomena of the malady following in due course. Such cases are none the less fatal on this account; but in the still rarer instances in which the animal does not exhibit a *complete* withdrawal of consciousness the recovery is pretty certain. It would appear that, in such cases as these, the vessels of the spinal marrow only are in an apoplectic condition, those of the brain being congested, but not to engorgement.

Occasionally, however, even in cases in which complete coma is present for twenty-four hours or upwards, the animal has been found to rally. Throughout the attack the cow has lain quiet, convulsions have had hardly any existence, and spasmodic twitchings of muscles have been only slightly marked. Returning consciousness is the most favorable indication of recovery, especially if associated with a temporary recognition of the calf, a desire to partake of water or other fluid, a passing away of the tympanitic state of the belly, and a return of the functions of the bowels. In these cases the warmth comes back to the extremities, the pulse becomes distinct and regular, and the breathing unaccompanied with stertor. The animal soon rises under such favorable con-

ditions, and the secretions—manifestly that of the milk—as well as the excretion are speedily resumed.

Not the least remarkable thing is the rapidity with which a favorable change takes place. We have often left animals, despairing almost entirely of their restoration, and have returned within three or four hours and found them standing with scarcely an unfavorable symptom present. The only explanation which can be given of these cases is that the congested state of the blood-vessels of the brain and spinal marrow had quickly yielded, and a free circulation of the blood been re-established.

Post-Mortem Appearances.—It may be correctly affirmed that had veterinary surgeons earlier followed up their observations on the symptoms and progress of parturient apoplexy by searching *post-mortem* examinations, its true pathology would sooner have been recognised. In bygone days it was too much the custom for opinions to be drawn of he nature of almost all internal maladies, simply from the lesions which were to be detected either in the abdomen or chest. In this way we account for the long existing opinion that parturient apoplexy of the cow was of the same nature as puerperal fever of the human female, viz. that essentially it consisted of inflammation of the uterus and peritoneum. Rarely, however, will it be observed that even the uterus itself presents conditions which would not have been noticed had the cow suffered no illness of any kind, but been slaughtered within the period of calving that the attack usually comes on. Now and then a blush of redness will be seen on its peritoneal surface, limited in extent, and due merely to a hyperæmic condition of its vessels. In no case have we met with diffused inflammation of the peritoneum, nor of the coats of any of the abdominal viscera.

The liver sometimes gives evidence of congestion, and the mucous membrane of the fourth stomach, and also of the intestinal canal, will not unfrequently present here and there a slight inflammatory blush, which owes its origin in most cases to the large doses of cathartic and other medicinal agents which had been administered. Now and then also the omasum—third stomach—will be found to contain an unusual amount of ingesta, which is rather hard and dry—a state of things simply due to coma having impaired its function and led consequently to retention of its contents.

The viscera of the chest are more frequently involved in morbid action; but the pleura cannot be said to give evidence of true inflammation except under peculiar circumstances. The heart, and also the vessels of the lungs, are generally

distended with dark-coloured blood, as the result of mere passive congestion.

A most remarkable lesion is not unfrequently met with in the windpipe and bronchial tubes, even to their smallest ramifications, produced by the presence of ingesta which had found its way from the rumen—the first stomach—into the air-passages. In the spasmodic eructations which accompany the comatose stage of the disease, portions of the contents of the rumen—as has been stated in the description of the symptoms—are forced into the œsophagus, and, ascending into the fauces, pass with the tidal air directly into the windpipe. Nothing can more distinctly show the amount of coma which is present than this, for the passage of the ingesta from the fauces through the glottal opening and larynx is unaccompanied with cough or any immediate distress on the part of the animal. In such instances death results from asphyxia, and it may be added that not only ingesta, but even some of the medicine which had incautiously been given—without the appliance of the stomach-pump to secure its conveyance into the rumen—will not unfrequently be found within the bronchial tubes.

As will be surmised from the foregoing observations, the special lesions of parturient apoplexy will be found in the brain and spinal cord. The vessels of both the cerebrum and cerebellum are turgid with blood, and not unfrequently blood extravasations are met with between the membranes of the brain, within its ventricles or on its surface. A similar state of the vessels will be found in the spinal cord, especially in its cervical portion. Here both the turgescence of the vessels and the extravasation of blood are often far greater than in the brain itself. The sheath of the cord participates in the morbid action, and in some instances its vessels, even from the atlas to the lumbar vertebræ, will be found engorged with blood. In one remarkable case examined several years since we found the spinal sheath throughout its full length in such a hyperæmic condition that it appeared as if it had been dipped in a deep red dye. In this case also softening of the cord itself existed in the lumbar region. The animal was attacked twenty-two hours after parturition, and survived only about thirty-six hours. She was prostrate for a longer time before coma became complete than is generally observed in the disease.

In connection with the lesions of the brain and spinal cord mention may be made of a remarkable case which happened to a cow of our own. The animal survived the attack for the long space of 120 hours; and although the coma yielded

somewhat during the time, she never became fully conscious, nor rose from the recumbent position. On making a *post-mortem* examination the upper portion of the sheath of the spinal cord, from its origin to the extent of several inches, was found deeply stained of a red colour, and a considerable amount of gelatinous exudation of serum existed between the cord and its sheath.

Nothing can more satisfactorily prove the true nature of dropping after calving than lesions such as these.

Treatment.—It cannot be expected in a disease like parturient apoplexy that curative measures would prove efficacious except in very rare instances. Some practitioners centre all their hopes of cure on being able by a free use of cathartic agents to excite the bowels to increased action; others rely on unloading the surcharged blood-vessels by bloodlettings; and others, again, by the use of stimulants, to rouse suspended nerve force, that the blood may thus be driven through the congested and disabled vessels, and the balance of the circulation re-established. Besides these means we meet with practitioners who, regarding the disease as milk-fever, direct their efforts mainly to restoring the lacteal secretion by frequent drawing at the teats. The value of these measures may be said to consist rather in their combination than in their individuality; and it may therefore be said that none of them should be neglected. With reference to the withdrawal of blood, it may be stated that its advantages will depend on the stage of the disease when the animal is first seen. Should the cow be still standing, although supporting the position with the greatest difficulty, or even should she be down, but not yet in a comatose condition, a copious bloodletting should be adopted. If blood be abstracted, it should flow until the pulse wavers from its loss; but if coma should have set in, no justification can be found for bloodletting. We have often known the abstraction of blood in this stage to speedily bring about a fatal termination.

As with the withdrawal of blood so with the exhibition of cathartic medicine, it should be early adopted. A compound formed of *sulphate of magnesia, powdered croton, compound tincture of aloes, and a small quantity of calomel,* will be found to be as good as any. The dose should be a powerful one, consisting of three fourths to a pound of the sulphate of magnesia, twenty to thirty grains of croton-seed, four to six ounces of compound tincture of aloes, and a drachm of calomel; for if an impress can be made on the nerves of organic life by arousing the half-suspended peristaltic action of the intestines,

great good will be done. We hold, indeed, that benefit results more from quickening the peristaltic movements than by the mere evacuation of fæces. Still, it must be borne in mind that the administration of repeated doses of drastic purgatives is not to be commended, for it frequently happens that, should a favorable change in the symptoms take place, a copious and continuous diarrhœa will set in, which will prove fatal to the semi-convalescent animal, being the result of inflammation of the mucous membrane of the stomachs and intestines induced by the medicine. If any adjunct to the cathartic *first* administered be required, it should consist of enemas often repeated; a stimulating one occasionally, but mainly composed of a bland fluid like soap-and-water.

We take no objection to drawing at the teats if not too perseveringly had recourse to, for such a proceeding does, in our opinion, more harm than good, by disquieting the animal by so frequently altering her position to get at the mammary glands. Milking can only remove the fluid from the reservoirs of the glands which had been secreted prior to the attack; and afterwards it can go but little way towards restoring the secretion of the mammæ when coma has set in.

As adjuncts to these means, as well as to others yet to be named, the animal should be thickly clothed, and every effort made to promote warmth of the surface. For this purpose we have known warm *flat-irons,* as used in the laundry, gently passed over the body from time to time, to be attended with advantage. The legs should also be rubbed with a stimulating liniment, such as turpentine and oil in equal quantities, and wrapped in warm flannel bandages. Sinapisms should likewise be applied to the abdomen. The spine may be rubbed with a stimulating liniment, particularly over the region of the back and loins; but the head should be kept cool by the application of cloths dipped in cold water. To this extent and to no further should the so-called antiphlogistic plan of treatment be adopted. Contrasted with the phlogistic, which consists of the exhibition of stimulating agents even from the commencement of the attack, experience has shown that it is less successful.

(*To be continued.*)

MICROPHYTES IN THE BLOOD AND THEIR RELATION TO DISEASE.*

Mr. T. R. Lewis contributes a paper of fifty pages on this important subject, giving a critical *résumé* of the work of former observers, as well as the results of his own investigations.

Mr. Lewis, first of all, goes over the evidence for the opinion that bacteria are the actual cause of the morbid symptoms in splenic fever, septicæmia, infectious pneumo-enteritis of the pig, and recurrent fever, the diseases in which there is the strongest evidence for a *contagium vivum*. He then recounts some observations of his own as to the occurrence of bacteria in the blood of perfectly healthy animals, and gives his reasons for thinking that the presence of microphytes in the blood is a mere epi-phenomenon, having no causal relation with the disease. The chief reasons adduced may be summed up as follows:—

1. It is by no means proved that the various forms of *Bacillus spirillum*, &c., occurring in certain diseases are specifically distinct from forms having no relation whatever to any pathological conditions.

2. All the representatives of the Schizomycetes may be and have been introduced into the blood without causing any morbid symptoms.†

3. In the diseases supposed to be due to bacteria, the microphytes are "never to be detected in the earlier stages of the disease, but only at a brief period before and after a fatal termination."

4. "The poisonous properties of septinous blood and of other decomposing animal solutions gradually disappear toward the third or fourth day, a fact which is scarcely reconcilable with the doctrine that the poison resides in the almost imperishable 'spores' of the bacilli, which existed during the earlier stages of decomposition."

5. Septinous fluids retain their virulent properties after filtration through fine porous materials, the effect of the filtration being to free them from the "visible molecules of every description."

* 'Quart. Journ. Micr. Sci.,' xix (1879), p. 356.

† With regard to these two points, cf. Koch, 'Wundinfectionskrankheiten,' *ante*, p. 754.

6. "The coagulum produced by boiling a septinous fluid is more virulent than the fluid itself." Eleven hours' boiling does not destroy the poisonous properties of such a fluid; a watery extract of the residue of such a fluid evaporated to dryness has an intense toxic effect.

7. The poison (septine or sepsin) of some of these fluids may be made to combine with acids so as to form salts, which latter retain all the toxic properties of the original fluid.*

8. The living tissues, under the influence of a chemical irritant (iodine or ammonia), may secrete a virulent fluid, capable of communicating disease from animal to animal.

Mr. Lewis concludes "that the living tissue elements of the body itself play a much more important part in the elaboration of septinous and allied poisons than what has of late been ordinarily ascribed to them."—*Journ. of the Roy. Mic. Soc.*

"WOOLSORTERS' DISEASE" AND BLOOD-POISONING IN CATTLE.

We are indebted to Mr. Horner, of Keighley, for the following particulars, taken from a local paper, relative to the connection existing between the "woolsorters' disease and blood-poisoning in cattle":

"During the past few days fresh testimony has been afforded of the virulent character of the poison, the effects of which produce such dire results in what is known as 'woolsorters' disease.' Several weeks ago a cow belonging to Mr. Walter Dunlop, of the Grange, Harden, died from causes not clearly understood at the time, but upon which recent circumstances have thrown some light. Since then two sheep belonging to Mr. Dunlop have been found dead in the pastures grazed by the defunct animal, and on Wednesday, June 30th, a fine heifer, which had also been pastured upon the same ground, died.

"On Tuesday the last-named animal was observed by the herdsman not to be 'cudding,' *i. e.* 'chewing the cud,' otherwise it seemed not to be ailing. Towards evening, however, after being housed in the shed, a manifest indisposition was observable, and Mr. Horner, veterinary surgeon, Keighley, was sent for. Every attention was paid to the

* The possibility that the non-living contagium indicated in §§ 5, 6, and 7, may itself be a result of organic action, should not be lost sight of.

case by that gentleman and those in attendance, but the animal died about 10 o'clock on Wednesday morning. The circumstances of the case being of so singular a character, and from a belief that the cause of death bore some affinity to that found in 'woolsorters' disease,' a *post-mortem* examination of the carcase was made on the next day, when Dr. Bell, of Bradford, Dr. Roberts, of Keighley, and Mr. Collins, veterinary surgeon, of Bradford, were invited to be present, and took part in the examination.

"The result clearly demonstrated the cause of death to be splenic fever, differing only in form from that usually accompanying death in woolsorters and others coming in contact with infected wool. Instead of the disease having been contracted through the medium of the lungs, as is usually the case in men, it was found to have operated upon the bowels, spleen, and heart of the beast, but death, within much less than twenty-four hours from the commencement of illness, resulted.

"Dr. Bell, who made an analytic examination of the blood taken from the animal, found it to literally swarm with the minute organisms familiar to anthrax.

"The discovery thus made materially tended to determine the question as to how the animals had contracted the disease. It appeared that the two fields in which the heifer, as well as the animals which had previously died, had pastured, received the 'sud-water from the Harden Mills, which, after being conducted to them, was distributed in various directions by means of extemporised trenches. At Harden Mills Van and Cape mohairs are freely used, and it will be remembered that only a month or two ago two woolsorters employed there died from symptoms unmistakably identified with blood-poisoning. The water in which these wools is washed, however, seems to have been drunk by the heifer, and presumably by the other animals as well, with the fatal results described.

"It is a question of some interest how far infection is likely to be carried into the milk given by animals who thus refresh themselves without contracting fatal consequences, or into the flesh which is being fattened for market. Another phase of the disease, to which attention has been directed in previous cases, was very marked in the case of a sorter of Persian and Bokhara wools, employed by Messrs. Feather and Son, of Bradford. This was a case of anthrax in the arm. A fornight ago a little spot on the left arm was all that was perceptible, which becoming inflamed, increased the man's inability to follow his employment; otherwise, he felt

no internal ailment. The eruption developed to about the size of a shilling, and continued very painful. Mr. Mercer, surgeon, attended the case, and has had charge of it until convalesence has been restored.

"A week ago, however, Dr. Bell saw the case, on which occasion he took a small quantity of blood, and this being ejected into the system of a guinea-pig, produced death in fifty-four hours. Upon the blood of this animal being examined, it also contained myriads of the organisms so fatally present in anthrax or 'woolsorters' disease,' of which we have the local form of development illustrated in the pustule described above; the intestinal form in which it attacked the oxen and sheep; and the pulmonary form, which has carried off so many woolsorters. We are glad to hear that Dr. Spear, the medical inspector of the Local Government Board, who contracted the local form of the disease through absorption into the system while taking part in the recent *post-mortem* examination at Bradford, has nearly recovered from the effects. There have been two deaths, however, attributable to the terrible disease since that period, into which it was not considered necessary to make special inquiry."

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The Monthly Council of the Society was held in Carlisle show-yard, July 14th. Mr. Dent in the chair.

VETERINARY COMMITTEE.

Mr. Davies reported that the Committee had received the following report from Professor Simonds, Principal of the Royal Veterinary College:

Since the last meeting of the Committee the consultations taking place have had reference mostly to the fluke disease, and especially as to the course which should be taken with a breeding flock among which rot is known to exist. The advice so freely distributed by the Society on the feeding and management of fluke-stricken sheep has had a most beneficial effect, and in numerous instances in which the recommendations have been fully carried out, ewes have not only gone safely through the lambing season, but have reared their lambs without any serious loss of condition.

In consequence of this, many persons have been disposed to keep the ewes on for another year, and on this point in particular, advice has been sought. With the experience of past years before us, we could not recommend the adoption of such a plan. The risk is great; the rule being that as soon as autumn sets in, and the grasses begin to lose their nutritive qualities, the sheep fall away in condition, became anæmiated (weak from poorness of blood), and sink during the winter months. It should always be borne in mind that emaciation does not exclusively depend on the mere existence of flukes in the biliary ducts of the liver,

great as the drain on the system may be, but on the amount of structural change and diseased function of the liver itself.

Persons have spoken of a security which they see in the life-history of the fluke, as influencing its indwelling within the biliary ducts, which they believe to be short. Our knowledge on a point of this kind is at present too limited to enable us to fix the period of the life of flukes; but it is not too much to suppose that this may be prolonged or otherwise by the quality of the bile on which the entozoa live—if fairly good, they would longer survive than if the opposite conditions of the fluid existed.

It may thus be seen that the very means which have led to the ewes passing through their lambing in a satisfactory manner, are those which would preserve the function of the liver in a fairly healthy state for a longer time than usual, and thus they would become the cause of an increased indwelling of the flukes, and probably also would produce a prolonged life of the entozoa.

ROYAL VETERINARY COLLEGE.

FIFTH ANNUAL REPORT UNDER THE ROYAL CHARTER OF INCORPORATION, ORDERED BY THE GOVERNORS OF THE COLLEGE TO BE PRESENTED TO THE SUBSCRIBERS.

General Government.

No alterations have been made during the past year in the Bye-laws and Regulations relating to the Government of the Institution, those at present in force having been found to work satisfactorily.

By the death of his Grace the late Duke of Portland, a vacancy has occurred in the list of Vice-Presidents, and the number of Governors is still incomplete. The election to these officers is in the hands of those Subscribers who are qualified to vote at all General Meetings.

In October last, Mr. G. D. Whatman resigned the Chairmanship of the General Purposes Committee, which he had held for upwards of four years, and Sir C. S. Paul Hunter, Bart., was elected to the vacant post.

According to instructions a short *résumé* of the proceedings of the Quarterly Meeting of the Committee has been forwarded to the leading daily papers, and to the Principal Veterinary and Agricultural Journals.

Education.

It has been found expedient that certain alterations in the Regulations should be made, which will enable the Governors to better regulate the attendance and conduct of the Students. These alterations have been submitted to the Quarterly Meeting of the General Purposes Committee, and will in due course come into operation.

No alteration has been made since July last in the subjects for the Matriculation Examination, it will, however, be seen from the statistics herein given that the reduction in the number of Students entering the College still continues.

The "Cheap Practice" has been regularly carried out during the year, and the number of cases treated shows a considerable and continuous increase since its institution in May, 1879. The attendance of

the Senior Students at the Deptford and Metropolitan Cattle Markets has also been satisfactory.

The admission of all Students to the use of the Library belonging to the Veterinary Medical Association has worked satisfactorily. The Librarian reports that "the Library has been freely used by all classes of Students," that the number of subscribers to the reading-room is 57, and that the subscriptions, 2s. 6d. per term, are expended in the purchase of periodicals, sixteen of which are taken in.

By the resignation of Professor Pritchard, a vacancy occurred on March 25th in the Professorial Staff, the Governors have great pleasure in announcing that by the appointment of Mr. William Robertson, F.R.C.V.S., a gentleman well known in the Veterinary Profession, and a member of the Board of Examiners, a most competent successor has been secured. Mr. Robertson will enter formally on his duties in October next.

The increase in the number of successful Candidates for the Diploma Examination, of which mention was made in last year's Report, the Governors are pleased to find has continued; in the past twelve months out of forty-seven Students who presented themselves under the new system only one was rejected.

The Examinations for Students under the two years' system came to an end in January last.

Buildings.

During the past year a new Students' room has been provided by utilising four stalls in the stable next to the Pharmacy. A glass roof has been erected for the accommodation of the "Cheap Practice" patients; and in compliance with a memorial on the part of the Students, a lavatory has been placed in the dissecting room.

Finance.

From the Quarterly statements of receipts and expenditure, it appears that the receipts from March 31st, 1879, to March 31st, 1880, amounted to £10,546 16s. 10d. and the expenditure £10,191 19s. 4d., against £11,677 12s. receipts and £11,801 10s. 11d. expenditure during the previous twelve months. The receipts, however, during that period include a temporary loan of £1000, which has since been repaid.

It will be seen from this that the receipts during the past twelve months are in excess of expenditure by £354 17s. 6d., whilst in the year before the expenditure exceeded the receipts by £123 18s. 11d.

It must, however, be borne in mind that by the alteration in the mode of payment of the pupils' fees the amount received under this head, viz. £2479 1s., is larger than it would otherwise have been, and that unless the diminution in the number of admissions should cease, it will in future years be materially lessened.

On the recommendation of a Committee appointed to confer with a deputation of Veterinary Surgeons, the charge for Horses has been raised *from* 3*s.* 6*d. to* 4*s. per diem*, and the privileges of Subscribers with regard to the examination of Horses for soundness have been curtailed. Should no diminution take place in the number of Horses admitted into the Infirmary for treatment, nor in the number of Subscribers, both these measures will increase the revenue of the College.

Royal Agricultural Society.

The Governors are pleased to be able to report that their relations with the Society remain in every respect satisfactory.

During the past twelve months, twelve outbreaks of disease in animals the property of members of the Society have been investigated and reported on; in addition to which several consultations have taken place, both personal and by letter.

An investigation into the disease termed "rot" has been ordered to be made by the Council of the Society, partly in accordance with a draft scheme which the Principal of the College was requested to prepare.

Statistics.

During the year ending June 30th, 1880, 248 new Subscribers have been added to the list, and 186 have from death and other causes been removed. There are at present 77 Life-Subscribers and 1099 Annual, being an increase of 60 Annual and 2 Life-Subscribers.

Since 1875 there has been a total increase of 380, showing an average annual increase of 76.

The average number of horses daily in the infirmary during the past year has been 80, and of dogs 10, against 87 and 8 respectively last year; and the total number of horses examined for soundness has been 1363, against 1447. The number of cases treated in the "Cheap Practice" has been 784, of which 353 were fresh cases.

The number of Students who have entered the College during the past year has been 49 against 65 and 84 respectively during the past two years, showing a falling off of 16 this year against 19 last, and of 35 in the two years.

The total number of Students to whom Diplomas have been granted during the year is 52, 46 being under the New, and 6 under the Old System.

Scholarship and Coleman Medal.

The Principal recommends that the Scholarship be awarded to Mr. James Smith, and the Coleman Silver Medal to Mr. E. G. Johnson, the Bronze Medal to Mr. G. Gartside Mayor, and the Certificate of Merit to Mr. A. W. Briggs.

Conclusion.

In conclusion the Governors think that on the whole the results of the past year may be looked upon as satisfactory. The number of Subscribers continues to increase, and the work done in the infirmary has been up to the average. The only cause for uneasiness is the continued yearly decline in the number of students entering. This is doubtless attributable to the increased stringency of the Matriculation Examination. The Governors, however, hope that as time goes on this falling off will to a great extent disappear.

C. N. Newdegate,
Chairman.

ROYAL COLLEGE OF VETERINARY SURGEONS.

THE EXAMINATIONS.

At the several meetings of the Royal College of Veterinary Surgeons, held from the 6th to the 10th of July, the following students from the Royal Veterinary College passed their respective examinations:

FIRST EXAMINATION.

Mr. Frank Glover.
— Henry Edgar.
— Thos. Ashton Smith.
— Jno. Sutcliffe Hurndall.
— Henry Sumner.
— Richd. Hutton McRaith.
— Jno. Warden Edwards.
— James Smith.
— Thos. Bolton.
— Albert Edw. Michell.
— Sydney Howard Slocock.
Mr. Sydney Thos. Daidge Symons.
— Jno. Buscomb.
— James Mark.
— Richd. Barker.
— Harry Astley Young.
— Chas. Pack.
— James Brodie Gresswell.
— Alexander Edw. Richardson.
— George Thomas Pickering.
— Frederick Albert Moss.
— Herbert Ernest Pinel.

The following passed with "GREAT CREDIT":

Mr. Henry Sumner.
— Richd. Hutton McRaith.
Mr. John Buscomb.
— Richd. Barker.
And James Brodie Gresswell.

SECOND EXAMINATION.

Mr. Henry Redford.
— John Wm. Barford.
— Edward Henry Scott.
— Arthur Everard Barlow.
Mr. William Green.
— William Tavener.
— Henry Hubert Roberts.
— Joseph Rowtham Kinsey.

Messrs. H. H. Roberts and J. R. Kinsey passed with GREAT CREDIT.

THIRD, OR DIPLOMA EXAMINATION.

Mr. Edward Harvey Kelly . .	Aldershot.
— Fred. Frank Elworthy . .	Crediton.
— Wm. Frederick Wright . .	Yexford.
— Johnson Wm. Carlisle . .	Hetton, York.
— Wm. Francis Mulcahy . .	Ballydonough, Clonmel.
— Fred. Wm. Whitney . .	Tiverton.
— John Darby	Rugby.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above was held at the Blackfriars Hotel, on Tuesday, June the 29th, 1880. Wm. Dacre, Esq., in the chair.

Present—Dr. A. Gamgee, M.D., F.R.S., Professor at Owens College, Manchester; Messrs. T. Greaves, Peter Taylor, Tom Taylor, W. Whittle, T. Hopkin, C. W. Elam, B. Taylor, Geo. Darwell, W. Leather, E. Faulkner, T. W. Moore, W. A. Taylor, Hugh Furgusson, J. B. Wolstenholme, J. Bunnel, A. Lawson, John Lawson, T. A. Dollar, J. W. Ingram, E. Yorston, Messrs. Cooke, Harrison, Lingard, Marshall, and Smelt, Dr. Renshaw, and the Secretary.

The minutes of the last meeting were read and confirmed.

Letters were received from Messrs. Reynolds, Liverpool; H. Thompson, Aspatria; R. Roberts, Kendal; P. Walker, Bradford; J. Marshall, Knutsford; Geo. Fleming, London; and Principal Walley, Edinburgh, regretting their inability to attend the meeting.

The *Secretary* read a letter from the Council of the Royal College of Veterinary Surgeons expressing their thanks to the society for their hearty support and co-operation in regard to the Penal Act.

The *Secretary* stated that in accordance with the alteration of Clause II in Rule XVII, with regard to the election of Honorary Associates, he had forwarded voting papers to all members, with the names of the following gentlemen affixed (who had been proposed and seconded) :—Sir F. Fitzwygram, Professor Williams, and Mr. Geo. Fleming. Thirty papers had been returned by members, all voting in favour of the gentlemen named.

The *President* then said he had great pleasure in informing the meeting that Sir F. Fitzwygram, Prof. Williams, and Mr. Geo. Fleming were unanimously elected Honorary Associates of this society. (Applause.)

Mr. C. E. Challinor proposed as member of this Association Mr. A. W. Briggs, of Bury. *Mr. Hopkin* seconded. Carried.

Mr. A. Lawson proposed Mr. James Polding, of Burnley. *Mr. B. Taylor* seconded. Carried.

The *Secretary* nominated Mr. J. W. Ingram, of Manchester.

Prof. Arthur Gamgee, M.D., F.R.S., of Owens College, Manchester, delivered the second of two lectures on the "Physiology of Digestion." After recapitulating the substance of his first lecture, Dr. Gamgee proceeded to consider the changes which the food undergoes in the small intestines, devoting particular attention to the action of the bile and pancreatic juice, the second of these fluids, he pointed out, possesses, as recent researches have shown, remarkable powers, containing three ferments, capable respectively of digesting—1st, proteids or albuminous bodies ; 2nd, starches ; 3rd, by emulsionising and decomposing the neutral fats. These actions were experimentally demonstrated by the lecturer. In the case of the pancreas, the lecturer pointed out that changes in secreting cells may be observed to be associated with the condition of rest and activity. After pointing out the function of the bile (which while aiding pancreatic digestion by the part it takes in neutralising the acid chyme, is mainly a substance carrying away from the blood excrementitious matter) the lecturer examined the remaining changes which take place in the alimentary canal, and concluded his lecture by a brief sketch of the views now held of the function of the liver.

Mr. P. Taylor proposed a vote of thanks to Dr. Gamgee, seconded by *Mr. T. Greaves* and supported by *Mr. Elam*, which was carried by acclamation.

Dr. Gamgee, in response, said it gave him great pleasure to come before the members of the Lancashire Veterinary Medical Association to give a lecture, as every one seemed to take such great interest in the matter, and he hoped on some future occasion to have the opportunity of again lecturing before them, and advised all to read the leading scientific subjects, especially recommending Dr. Foster's physiology.

A vote of thanks to the chairman closed the meeting.

SAM. LOCKE, *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE annual meeting of this Association was held in the Turk's Head Hotel, Newcastle-on-Tyne, on Friday, May 28th, the President, Mr. D. Dudgeon, occupied the chair. There were also present Messrs. J. Gofton, C. Stephenson, G. Elphick, W. F. Mulvey, W. Awde, A. Hunter, H. Hunter, D. Macgregor, F. Corbett, W. S. Pringle, F. Malcolm, A. Chivas, F. Temple, Prof. Pritchard, W. Grieve, C. Hunting, — Wilkinson, junr., — Whitfield, Dr. Armstrong, and the Secretary.

Apologies were received from Profs. Walley, Williams, McCall, and Axe; also Messrs. F. B. Nisbet, and C. Shorten.

The minutes of the last meeting were read and confirmed, and the following gentlemen were elected members:—G. Fanow, junr. (Durham), A. Chivas (Corbridge-on-Tyne), and F. Temple (Chester-le-Street).

The Treasurer's account, which showed that £12 5s. 1d. had been received during the year, the outlay had been £7 0s. 6d., leaving a balance in hand of £5 4s. 7d. The report was adopted.

Professor Pritchard read a paper on "Some of the Contagious Diseases affecting Cart Horses." The Professor dwelt more particularly on hereditary diseases, and defined hereditary predisposition as the transmission of the seeds of disease or a predisposition to disease from the parent to the progeny. He next gave a list of hereditary diseases, then showed that the disease might often disappear for a time; he said a horse which was a "roarer" might breed and the disease might not show itself until two or three generations afterwards. If a horse had been bred of a roarer and had not shown any of the disease when young they might depend upon it if the horse was subject to some great exertion or some fright, it would become a roarer at once.

A discussion on the paper followed, in which Messrs. Mulvey, H. Hunter, D. Macgregor, Elphick, Gofton, Corbett, the President, Stephenson, A. Hunter, and W. Awde took part.

The *President* next delivered his inaugural address; amongst other remarks he said, "He thought the tendency of the present age was to overdo everything, and he sometimes thought the Council of the Royal College of Veterinary Surgeons were not exempt from that tendency. He wished it to be distinctly understood that no one valued education more than he did, and in one sense no one could educate a man too highly. But it must be borne in mind that they could not all be army veterinary surgeons, they could not all be located in large cities and have large and lucrative practices. There must still remain a great number of quiet practitioners. Nevertheless, those men were as useful in their sphere as their more fortunate brethren. Referring to the Contagious Diseases (Animals) Act, the speaker said that one of their local papers a short time since devoted a leader to what he described as "The Dear Meat Act." Its whole scope and tendency was the very reverse. It had been the means of almost completely stamping out those devastating contagious diseases which only a few years ago proved fatal to their flocks and herds, and cost the country millions of money. He had no hesitation in saying that the firm and judicious action of the veterinary department of the Privy Council, aided by the local authorities and their veterinary inspectors, had done more to keep down the price of butcher meat than all the free importation of foreign stock. He congratulated the members upon the amount of success which had attended this association during the past year. The good feeling and good fellowship which was developing amongst them he hoped would continue to develop, and that their membership would be largely increased. In conclusion, he thanked the members for having twice elected him president." (Applause.) He proposed a vote of thanks to Prof. Pritchard for his trouble in coming from London, and giving them such an interesting paper. Mr. Mulvey seconded the motion, which was carried with acclamation.

Afterwards the members and guests sat down to an excellent dinner, at which all the loyal and other toasts were ably proposed and responded to, a very enjoyable evening being spent.

G. R. DUDGEON,
Hon. Sec.

ESTABLISHMENT OF A VETERINARY MEDICAL ASSOCIATION AT MELBOURNE, VICTORIA.

A MEETING of veterinary surgeons took place on the 1st inst. at Menzie's Hotel for the purpose of forming a veterinary medical association for Australia; Mr. Graham Mitchell, F.R.C.V.S., presided.

The chairman stated that this movement had been started by Mr. Kendall, and read a letter written by that gentleman, which appeared in *The Leader* a few weeks ago, pointing out the unsatisfactory state of veterinary science in these colonies. He then went on to show that the profession had met with so little encouragement either from the Government or the public that many good scientific men had left the ranks of the profession to follow occupations of a more thankful nature. The prevailing diseases of stock were then briefly alluded to, and it was stated that the regulations of the Stock department, as at present existing, were totally unfit to cope with the spread of disease.

Mr. Mitchell also observed that tuberculosis (consumption) was a very serious disease in cattle, as instances had been known of the disease being produced in children by drinking the milk from affected cattle. The hydatid disease in sheep is now very prevalent, and as numbers of sheep are pasturing on the watersheds supplying the Yan Yean, the water may possibly become impregnated with the larvæ of these entozana, which in the adult form become developed into tape worms in the human subject and the dog. Many other diseases were mentioned which it will be the duty of the association to inquire into.

The chief objects will be to promote veterinary science by encouraging the united action of members of the profession throughout these colonies in the investigation of diseases of animals and the important effects they have upon the health of the community.

To draw the attention of stockowners to the necessity of rendering all the assistance they can in these investigations, by describing outbreaks of disease and noting their progress, and by forwarding, whenever opportunities occur, morbid specimens for examination, &c.

To watch the general interests of the profession, and to protect it against the frauds and impositions of unqualified persons.

To facilitate these objects it is intended to hold monthly or quarterly meetings, at which papers will be read, pathological specimens exhibited, and subjects brought forward for discussion.

Several letters were then read from members of the profession in different parts of the country regretting their inability to attend, and expressing their sympathy with and approval of the movement.

It was then proposed by Mr. Kendall and seconded by Mr. T. C. Dobson, that a Veterinary Medical Association for Australia be formed, which was carried unanimously.

Mr. Kendall was then elected hon. sec. *pro tem*, and the following gentlemen appointed as a provisional committee to draw up rules for the working of the association, to be submitted at the next meeting, to be held at Menzie's Hotel on the 1st July next:—Messrs. J. P. Vincent, G. Mitchell, T. C. Dobson, and W. T. Kendall.

GLASGOW VETERINARY COLLEGE.

THE summer session of this institution terminated on Monday, and yesterday the examinations for the Diploma of the Royal College of

Veterinary Surgeons were conducted within the museum of the College. The Board of Examiners included the following gentlemen :—Professor A. Crum Brown; Dr. Andrew Wilson, University, Edinburgh; Dr. Dunsmure, Edinburgh. The following gentlemen were also present as *ex officio* members :—Principal M'Call, Professors Knox, Cooke, and Macqueen, Glasgow Veterinary College. Twenty-four students presented themselves for their first professional examination, and of this number twenty-one were successful in passing a highly-creditable examination. Messrs. W. A. M'Gregor, Freeland, Kelly, Renfrew, and Martin passing with "great credit." Medals granted by the Highland and Agricultural Society of Scotland, Principal M'Call, and certificates of merit by the college were awarded in the different branches of study as follows :

Botany.—Gold medal, Mr. John Renfrew, Hurlet, Renfrewshire; silver medal, Mr. J. F. Hayes, Portroe, co. Tipperary. 1st class certificates—Mr. James Martin, Glasgow; Mr. W. A. M'Gregor, Pollokshields. 2nd class certificates—Mr. J. Dickie, Paisley; Mr. P. D. Kelly, Cooraclare.

Materia Medica.—Gold medal, Mr. Hayes; silver medal, Mr. Renfrew. 1st class certificates—Mr. A. Brown, Neilston; Mr. Martin and Mr. J. Hughes, Knockbridge. 2nd class certificates—Messrs. Kelly and W. A. M'Gregor.

Chemistry.—Gold medal, Mr. Kelly; silver medal, Mr. Renfrew. 1st class certificates—Mr. Martin and Mr. Freeland, Glasgow. 2nd class certificates—Mr. A. Brown, Mr. Reid, Beith; and Mr. W. A. M'Gregor.—*Glasgow Herald*, July 17th, 1880.

A MILITARY VETERINARY SCHOOL.

By a General Order just issued, a new educational department has been established in the Army, viz. a Military Veterinary School at Aldershot. The school is to provide for the training of officers in the mounted branches of the service in the proper care and management of horses and other animals, including a knowledge of their forage, shoeing, and stable management in camp, barracks, and on board ship. Farriers and shoeing smiths are also to be trained as veterinary assistants, so as to render them available for the veterinary charge of detached parties; careful instruction in the principles of shoeing will also be given to these non-commissioned officers.

A class will also be opened for veterinary surgeons on probation, where instruction will be given in the routine of military veterinary duties, the sanitation of barracks and camps, and the diseases and accidents peculiar to animals employed for military purposes both at home and abroad.

The Veterinary Department of the Army comprises 63 veterinary surgeons, and the total cost of the department, including the cost of medicines, is somewhat over £21,000 a year. The number of horses, exclusive of officers' chargers, is 14,365 at home and in the Colonies, and 10,924 in India. Curious as it may seem, the Artillery possess more horses than the Cavalry by nearly 500, a fact in which the British Army is probably unique.

A Royal Warrant, issued on the 1st ult., provides that "the officer appointed as instructor, to take charge of the Military Veterinary School, shall receive, besides the pay of his grade in the Veterinary Department, extra pay at the rate of £150 a year."

COLEMAN PRIZE AWARD.

It will be seen by reference to the Annual Report of the Governors of the College, held July 5th, that they made the following award, on the report of the Principal, of the Coleman Prizes.

1st prize. *Silver Medal* to Mr. Edw. George Johnson, South Austen, Rotherham.
2nd prize. *Bronze Medal* to Mr. George Gartside Mayor, Kirkham.
3rd prize. *Certificate of Merit* to Mr. Arthur Wm. Briggs, Bury.

SCHOLARSHIP AWARD AT THE ROYAL VETERINARY COLLEGE.

At the same meeting the Scholarship of £25 for two consecutive years was awarded to Mr. James Smith, Louth, Lincolnshire. Honorable Mention was made of Mr. Jno. Buscomb, Bodmin.

EDINBURGH UNIVERSITY EXAMINATION.

Summer Session.

Mr. A. Grey, junr., M.R.C.V.S., of the Dick College, obtained a Bronze Medal in the class of Practical Pathology.

PARLIAMENTARY INTELLIGENCE.

CATTLE MARKING.

House of Commons, *July 19th.*

Sir W. Harcourt, in reply to Mr. Storer, said, that having regard to the professional evidence that the ear-marking of cattle by order of the steward of the Duke of Leeds caused great harm and sometimes produced festering sores, he could not interfere with the fine of 4s. 6d. and 9s. costs inflicted by the Bedall magistrates.

GRAIN FOR FEEDING CATTLE.

Mr. Gladstone, replying to Mr. R. Power, who had put a question respecting the preparation of grain for feeding cattle in Ireland, said, that under the new law the generality of restrictions on the malting of grain would, he hoped, be abolished both in Great Britain and Ireland.

OBITUARY.—Erratum.

[In the June number of the *Veterinarian,* a notice of the death of Mr. D. Winton, M.R.C.V.S., Enfield, was inserted on the authority of the writer of a letter to that effect. We have since learned that the statement was without foundation, and we much regret having been made the means of publishing false information, and causing both Mr. Winton and his friends so much anxiety.]

THE

VETERINARIAN.

VOL. LIII. No. 633. SEPTEMBER, 1880. Fourth Series, No. 309.

Communications and Cases:

VACCINE AND CALF VACCINATION.

As the obtainment of primary vaccine lymph from the cow has now become a great *desideratum,* in consequence of the steps which have been taken by the Government with reference to so-called *animal vaccination,* we deem it important that any efforts which are made in this direction should, whether successful or not, be recorded in our pages. For this purpose we give insertion to the following particulars relating to a supposed outbreak of *natural vaccinia* and the experiments which were had recourse to to determine the nature of the eruption.

In the last week of June we were informed by Mr. Wallis, a student at the Royal Veterinary College, that his father, an eminent veterinary surgeon, residing at Halstead, Essex, whom we knew to have had considerable experience in *ovine variola,* had just been called to some cases of *vaccinia.* With a view to obtain lymph for experimental purposes, we at once forwarded some points to Mr. Wallis, with a request that he would carefully and *abundantly charge* them with lymph from the vesicles in their earliest but well-developed stage. The request was kindly and promptly complied with.

The history of the outbreak is thus given by Mr. Wallis:

HALSTEAD, *August 6th,* 1880.

DEAR PROF. SIMONDS.—I most cheerfully comply with your request to furnish *data* and some particulars with regard to the supposed cases of natural cow-pox which, within the

last few weeks, have come under my notice at Mr. Jacob Evans', Bois Hall, in this parish. I regret, however, that, owing to circumstances over which I had no control, I am unable to give you definite information as to exact time of the occurrence of the disease, and also as to the successive stages which marked the progress of the first cases.

I gathered from the cowman, who is the only milker, that he first noticed a sore on the udder of one of the cows on June 1st, and that he then applied to my assistant for a box of ointment with which to dress it. After this other cows were similarly affected, and on June 19th I was requested to see them. This I did, and found one cow with several papulæ on the udder somewhat flattened and of a slightly red colour. Only one of these papulæ subsequently developed a well-formed vesicle, and from this, on June 26th, I charged some points with very nice limpid lymph and forwarded them to you.

The other cows *then* affected were evidently recovering.

On the 24th of June, in consequence of a communication made by Dr. Hinds, surgeon of this town, to the Local Government Board, Dr. Stevens came and examined the herd with me, when *two fresh cases in the papula stage* were discovered. One of these, on the 26th, seemed likely in a day or two to afford lymph; but the papules afterwards assumed the brown colour of desquamation.

On June 30th Drs. Buchanan and Burdon Sanderson and Mr. Ceely visited the herd with me and my friend Dr. Hinds. *There were now two or three other fresh cases in the papula stage.* Mr. Ceely regarded the disease as spurious and partaking of an eczematous nature. Drs. Sanderson and Buchanan expressed no opinion on the matter.

After this two other cows were attacked, but failed to develop vesicles of a size sufficient to yield lymph.

From another case, however, I charged some points and forwarded them on July 3rd to Dr. Buchanan and Mr. Ceely. You will easily understand, as the cows were all turned out, that many of the vesicles were prematurely ruptured by their lying down in the pasture, as well as by the friction of their legs against the udder.

After this date I saw the cows daily for a time, and then at intervals. They all gradually recovered, and in a week or two all indications of the malady had passed away. In no case was there any marked disturbance of the general health, nor, as far as could be ascertained, was there any deleterious quality imparted to the milk. I continued to visit the cows up to July 10th, when they all appeared to be doing well.

I feel that what I have been able to report is very meagre, and I only wish it had been in my power to send you a better and practically a more useful description of the disease.

I am, &c.,

W. S. WALLIS.

EXPERIMENTS.

Vaccination of a Calf with the reputed Primary Vaccine Lymph.

July 2nd.—A well-bred, healthy, red-and-white male calf, about fourteen weeks, was vaccinated at the Royal Veterinary College with the Halstead lymph. The place selected was the under part of the abdomen in front of the scrotum, where the skin was very thin and white in colour, being devoid of pigment. Previously to the punctures being made the hair was removed by shaving, so as to leave the part perfectly nude, that the effects of the vaccination might be more closely and satisfactorily observed. *Twelve punctures* were made, from half to three fourths of an inch apart, and *four sets of scratches.* Fully half an hour was occupied in the vaccination, and the quantity of lymph employed was large, not less than three well-charged points being used in each of the punctures, with a corresponding quantity on each set of scratches.

The animal was examined day by day, and with the exception of a little diffused redness, which on the day following the vaccination was present on the part generally, but chiefly on the site of the punctures and scratches, *no effects whatever were produced.* One puncture, on the *third* day looked as if a bulla might form; such, however, did not take place.

On the sixth day of the vaccination the failure of the experiment was forwarded to Dr. Buchanan and Mr. Ceely.

Vaccination of the Human Subject.

On July 9th Dr. Buchanan, in acknowledging the receipt of the report, stated that some experiments were being made on the human subject by the lymph; and on July 11th Mr. Ceely wrote as follows:

AYLESBURY.

MY DEAR SIR,—Many thanks for your obliging, note and especially for the care and pains you have taken with the reputed "primary vaccine."

I fully expected that the result of the insertion of the points would prove the spurious character of the eruption. The utmost that I looked for was the reproduction of the vesicle or bulla

commonly yielded by the affected udder, but it appears that no result has occurred, proving that the *serous* fluid of the vesicle or bulla was neither specific enough to irritate the hand of the milker, nor to be reproduced on the calf by inoculation. I introduced some points into the arm of a child *without any result, and rubbed three points on a cluster of scratches on the back of my left hund, with the same result.*

In cases where the fluid of such vesicles or bullæ has become acrid, I have several times reproduced a vesicle on that part of the hand in perfection; and some years ago I made an old man very ill by inserting some *serum* of the same kind into his arm. Some day I will show you the drawing of that inoculation, and drawings of casual vesicles and bullæ on the hands of milkers. Yours truly,

ROBERT CEELY.

J. B. SIMONDS, Esq.

In a subsequent latter received from Mr. Ceely, he says that *no result followed the use of some of the points charged at Halstead* which I gave to Dr. Cory, the vaccinator at the Local Government Board's station at Rowland Hill's Chapel, Blackfriars Road. I was prepared to expect nothing more from their use than what ordinarily results from the spurious vesicle, as I did not see any indications of the source of the fluid being of the nature of true vaccine.

The spurious vesicle will sometimes reproduce itself, as I have proved on myself and others, but not always. I was, therefore, not disappointed in the trials with the Halstead points.

ADDENDUM.

In connection with the subject of variolous affections of domestic animals we insert an extract from the *Mark Lane Express,* August 8th, relative to the affirmed transmission of *equine variola to the calf.*

"According to the *Gazette Médicale,* among the horses of a German horse-dealer, on May 5th, M. Alexander showed to M. Le Blanc a case of horse-pox in a well-bred animal from Germany. Lymph from this animal was inoculated by M. Chambon, on a three months' old heifer, by three punctures on the udder. These inoculations were most successful, and from this heifer another was as successfully inoculated on May 13th. On the 19th there was a very fine vaccinal eruption, no fewer than sixty pustules being present. With the lymph from these two other heifers were vaccinated, and from them the vaccination department of the Société de Hygiène was amply supplied with lymph for vaccination purposes."

EXPERIMENTS WITH *TRICHINA SPIRALIS* IN ITALY.

By Professor E. Perroncito, M.D., Turin.

With the view of resolving the question so important to public health, as to whether the usual method of cooking fresh and salted pork be sufficient to kill the animal parasites that might, in using the meat, enter into the human body, I undertook a series of experiments in my own laboratory, as well as in the shop of a sausage-maker, who allowed me to do so. Having already experimentally demonstrated that the greater number of helminths and the larval forms belonging to them die at a temperature of 48—50° C., if only kept up for five minutes, the question was reduced to seeing what time was necessary for a temperature of 50° C. to penetrate to the middle of the largest pieces of meat, fresh or salted, and if, with the usual boiling, this condition was effected in different kinds of sausage and salted meats. Here are the experiments made and their results:

1. A piece of veal from a calf one year old, about 7 centimeters thick (or $2\frac{3}{4}$ inches), and $9\frac{1}{2}$ decimeters broad (or 4 inches), after ten minutes' boiling was at 53° C. in the centre. After twenty minutes' boiling, in different parts it was 63°, 65°, and 66° C.

2. A square-shaped piece of rump of beef, 8 centimeters thick (or 3 inches), and 4 inches broad, put into boiling water; after twenty minutes the centre was half raw, though it showed a temperature of 47° C., and after thirty-five minutes parts of it were found at 68° and 70° C. It is well known that pieces of meat of this size are cooked at least for an hour, so that the temperature would rise many more degrees.

3. A ham, weighing over 12 lbs., put into cold water, was found to have 25° C. of central temperature when boiling point was reached. After thirty minutes the thermometer indicated at different parts of the centre 35° and 40° C.; after two hours were marked 46°, 55°, 58°, 62°, 64°, and 67° C. In the centre of the thick stratum of fat covering the ham the heat was 64° C.

4. Another ham, weighing 16 lbs., after two hours and a half's boiling, the centre part presented a temperature of $44\frac{1}{2}$° C.; after three hours and twenty-five minutes it was 62°, 63°, 74°, $78\frac{1}{2}$°, and 84° C. in different central points.

5. A third ham, of 14 lbs. weight, after three hours and

twenty-five minutes' boiling, gave the following degrees of heat at different parts in the centre :—67½°, 73°, 74°, and 75° C.

6. A fourth ham, weighing 14 lbs., after three hours' cooking, was 51°, 59°, 61½°, 65½°, and 67° C. Ten minutes after the ham was taken out of the water; in the part where it was only 51° C. it was found to be 58° C. Near the middle part of the femur, it was 65½° C.; in the middle of the fat, 67° C. As hams are cooked for two and a half to three hours and a half, according to their size and weight, it is certain that cooked ham cannot transmit trichinosis.

7. A piece of rolled-up belly, weighing 500 grammes (or about 1 lb.), of a cylindrical form, after twenty-two minutes of boiling, in the centre was at 44° C; after fifty-two minutes the temperature had risen in the middle to 87° C.

8. A belly-piece not rolled up, weighing 12 pounds, after an hour and a quarter's cooking, in the inmost central points was at 66½° C. It is to be noticed that these parts are usually cooked for one or two hours from the time the water begins to boil.

9. Tongues put into the saucepan with the hams. Boiling point was reached only after an hour. Eight minutes' boiling having passed, the thickest muscular part of a calf's tongue was found to be 63° C.; after twenty minutes an ox-tongue (tried at the thickest part) was 58° C.; after fifty-five minutes' cooking, another calf's tongue was 89° C.; after an hour's boiling, an ox-tongue was 81° C.; and in another tongue, of about the same size, after two hours and a half's cooking, it was 90° C., in less than three minutes from the immersion of the thermometer in the thickest part. A pig's tongue, after an hour and forty-five minutes' boiling, had also 90° C. in the thickest part. Calves' and pigs' tongues are cooked two hours, ox-tongues two and a half to three hours, counting from the time the water boils.

10. In a pig's cheek, after an hour and three quarter's boiling, near the eye I found the heat to be 90° C.

11. In the snout, after two hours' boiling, the heat was 96° C. Generally the head and snout are cooked for two hours; then the flesh is taken from the bones and put in a cloth, thus forming the brawn, which is then cooked for half an hour.

12. A *salame di testa* (brawn), after an hour's boiling, gave 86° C. in the centre portion. A second *salame*, made of raw meat, weighing 4½ lbs., 9 centimeters wide (3¾ inches), after two hours' cooking was 83° C. in the middle. A third *salame*, over 4 lbs., made three months previously, was also in the centre parts heated to 83° C. after boiling two hours

13. A sausage with garlic, 10 centimeters long (4 inches), and weighing 120 grm., 17 minutes after being put in boiling water, had internal heat of 65° C.

14. A piece of pig's lungs, after an hour and a quarter's boiling, notwithstanding the rapid cooking of so spongy a part, gave a heat of 86° C.

All these experiments show that the usual way of cooking, done diligently and carefully, is sufficient to raise the temperature beyond what is necessary to kill, not only the Cysticercus of the Tænia capable of lodging in the human body, as Cobbold has said, but also the Trichinæ, which, according to my experiments, would not resist the general law of heat, as I have shown for the majority of helminths parasitic in man and in animals.

Note.—The above interesting and highly instructive communication contains the substance of researches already published in the *Annali della R. Accad. d'Agricoltura di Torino.*—Eds.

SEROUS ABSCESSES IN THE DOG.

By Harold Leeney, M.R.C.V.S., Brighton.

The very frequent occurrence of serous abscesses in the dog, and the scanty amount of literature on the subject, induce me to make a few remarks upon cases that have come within my own knowledge and occurred in my own practice.

The majority of these cases occur in fighting-dogs, and are, in my opinion, the direct result of injuries received in combat or occasionally otherwise, proof of which statement may, I think, be found in the fact that they invariably occur in those parts where dogs are accustomed to seize one another, *i. e.* the neck, ears, and brisket. Many of those which I have met with have included all the parts mentioned, and, as a rule, those occupying the largest space and containing the greatest amount of fluid have proved the most rapidly amenable to treatment. The owner of the dog has almost always a battle to describe in which his dog was not victorious, and as the animal seemed all right for nearly a week afterwards, so that he (the owner) thinks that it cannot be due to the fight, but that it was only right to mention it.

I will not describe more than three cases, for fear of trespassing too much on your space, and as these are recent ones,

and I have only my ledger instead of a note-book to guide me, I trust you will not be hypercritical.

Case 1. A heavy-built black-and-tan terrier, with a trace of bull blood, had always enjoyed the reputation of a bruiser, and was much feared by dogs in his immediate neighbourhood.

Brought to me with a swelling on the left side of the neck, immediately below the ear, and extending some three inches down it. Finding it fluctuated on pressure, and had the usual appearance of such abscesses, I punctured it, and some five or six ounces of fluid escaped. The next day the opening was sealed up, and more fluid than before had been secreted. Fomented the punctured place, and with difficulty squeezed out contents.

Third day.—Sealed up again, and accumulation as before. Now introduced a seton from the superior to the most dependent part, and dressed it from time to time with Cupri Sulph., gr. x; Ung. Resinæ, ʒij. This treatment was continued for nearly a week, and, as might be expected, the discharge became gradually transformed from serum to good healthy pus, and I then concluded that the sac was destroyed, and removed the seton. For two or three days following pus continued to flow in decreasing quantities, and the tumour became rapidly smaller, so that at the end of three weeks no trace remained, and the dog completely recovered. I should have said, that when first brought in, the skin bore the mark of a somewhat recent bite.

Case 2.—A large yard-dog, of no particular breed, but very pugnacious disposition, had been "doctored" for some time by "a gentleman of the fancy," who had feared to use any means of evacuating the tumour, the walls of which had become considerably thickened; and a question arose in my mind if a seton would now have the effect of disintegrating it. I, however, tried one, making my dressing rather more of an escharotic than the last named, and with the effect of having nearly removed the whole of it; it is, however, still under treatment.

Case 3.—A bull terrier, of about fifteen pounds weight, and described by his owner as "the hero of a hundred fights," was brought into my infirmary on July 28th last, having an enlargement immediately over the thyroids, and occupying all the throat from the submaxillary gland to about three inches down the neck.

This tumour had been several times punctured by amateurs, and large quantities of serum had escaped. The owner traced this swelling to a particular fight about twelve

months before. Finding the cyst of unusual thickness, I made a large enough puncture at the most dependent part to admit my finger, and after evacuating fourteen ounces of sero-sanguineous fluid, besides some inspissated pus having the appearance of millet-seed and almost its toughness, I introduced a pledget of tow dressed with Ung. Resinæ. Examined the next day, the dog was found to have removed the dressing, and the wound had sealed up and refilled with the same fluid matter. Having reopened it, and passed my finger all round the inside of the cyst, I determined on dissecting out what appeared to me impossible to slough out, and I think my decision was correct, for upon examination I found that both jugular veins were in immediate contact with it, and both thyroids attached to it; these I dissected away, and with much care separated the tumour from the veins without pricking them, the dog meanwhile struggling and plunging.

At the deepest seated portion, and attached to the sterno-thyro-hyoideus muscle, were two other sacs, about the size of hazel-nuts, and containing a gelatinous fluid; these also I removed, and, together with the larger sac, weighed over two ounces.

The subject of this operation is making a rapid recovery, never having lost his appetite or his desire to escape from my kennels.

Pathological Contributions.

CATTLE PLAGUE.

No further reports have been received relative to cattle plague in Russia since the issue of our Journal of last month; but serious outbreaks of Siberian plague have occurred among cattle in several districts of the Province of St. Petersburg, as well as in the District of Viborg and other parts of the Grand Duchy of Finland.

Cattle plague has appeared at Largaza in Turkey.

PLEURO-PNEUMONIA.

This disease continues to be reported from different parts of the United States. Recently an outbreak occurred in the

lower section of Elizabeth, a town in New Jersey, and several cows have died.

In Great Britain there were, during the month of July, seventy-six fresh outbreaks and 180 cattle attacked with pleuro-pneumonia.

During the six months ending July 31st, 1880, there were 528 outbreaks and 1401 animals were attacked; this is a diminution in the number of outbreaks for the corresponding period of 1879, of 218 and of 721 in the number of animals attacked.

SWINE FEVER.

During the three months ending July 31st, 1880, there were 565 outbreaks of this disease reported in Great Britain. In the corresponding period of 1879 there were 713 outbreaks. The number of animals attacked during this period in 1880 was 3025, and in 1879 the number was 5064, being a decrease of 2039 cases.

Facts and Observations.

Cattle Statistics.—According to the recent statement of the President of the Foreign Cattle Trade Association, in 1875 the number of English cattle was 6,012,024, and in 1879, 5,856,356, showing a decrease of 155,668; while in 1875 the number of sheep was 29,167,438, and in 1879 28,157,080, a decrease of 1,010,358. The total number of cattle imported in 1879 was (including the imports from Ireland) 880,010, and the total number of sheep 1,617,103. The total import from all sources of sheep and cattle in 1879 was 2,986,251, as against 3,043,090 in 1878, showing a decrease of 156,839. In the year 1879 there had been a depreciation in the number of English cattle and sheep of 1,322,865.

New Test for Aloes.—Hugo Borntraeger has recently described a test for the detection of aloes, which we have no doubt will prove extremely useful. The liquid, or the cold alcoholic extract of the suspected solid, is shaken up with about twice its bulk of benzol. The benzol, which, in the presence of aloes, assumes a yellowish-green colour, is taken off with a pipette, and agitated with a little strong ammonia. The ammonia will now assume a fine violet-red colour, even

if not more than one part of aloes had been present in 5000 parts of the liquid. The red colour is destroyed by acids, but restored again by alkalies. Other caustic alkalies may be employed, but none yield such good results as ammonia. In the case of beer, the presence of aloes can be demonstrated without any previous preparation, provided about fourteen grains of aloes had been added to the gallon.

Nature of the Albumins in Hydrocele. By J. Béchamp (*Comt. rend.*, 88, 608—610).—In a former communication published in *Compt. rend.*, 87, the author had shown that in all hydroceles, the liquid contains an albuminous matter having a lævogyratory power of 70°. In the present paper he states that he has succeeded in separating from this albuminous matter two, if not three, distinct albumins. Of these one has a rotatory power of 65·8°, another of 72·2°. The first is precipitated by monoplumbic acetate, and has no action on starch; the second is precipitated by hexplumbic acetate, and renders starch soluble after acting on it for one or two hours at 40°. They both differ from the albumin of the blood, for the highest rotatory power of any of the blood-albumins does not exceed 63°; moreover, the albumins of blood are absolutely insoluble in water after their precipitation by alcohol, whilst those of hydrocele, on the contrary, are soluble. The author has never found the albumins of the blood in the liquids of discharges. In such cases, therefore, there is not merely a transudation, but a transformation.—*Journal of the Chemical Society.*

Testing Drugs. By L. Siebold (*Analyst*, 1879, 190—191).—The method for the detection of mineral adulteration in flour by means of chloroform (C. Himly, *Year Book of Pharmacy*, 1877) may be applied for the same purpose to drugs. The powdered drug is shaken with chloroform when the mineral matter sinks to the bottom, and in the cases of acacia, tragacanth, starches, myrrh, Barbadoes aloes, jalap, saffron, cinchonas, nux vomica, mustard, white pepper, capsicum, and guarana, the drugs float on the top. By pouring the chloroform off, the lower stratum of mineral matter may be collected and weighed.

In some cases, however, such as gamboge, scammony, opium, Socotrine aloes, liquorice root, ginger, colocynth, coussa, ipecacuanha, cinnamon, and cardamoms, a portion of the drug sinks with the mineral matter. The test may, however, be applied qualitatively, since adulteration may be detected by a careful inspection of the sediment.—L. T. O'S.—*Journal of the Chemical Society.*

THE VETERINARIAN, SEPTEMBER 1, 1880.

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

SPLENIC FEVER AMONG CATTLE FROM AMERICA.

THE landing of two cargoes of American cattle at Liverpool, with splenic fever or splenic apoplexy among them, naturally suggests the possibility of Texas fever, which is often described as splenic fever or Spanish fever by American writers.

There appears to be no doubt that Texas fever is characterised by an engorgement of the spleen and by hæmorrhagic patches on various parts of the body, as well as by ulcerations or deep excavations in the mucous membrane of parts of the alimentary canal. We do not find, however, that the *Bacillus anthracis*, which is the distinguishing mark of splenic fever in this country and in Europe generally, has been detected in the blood of cattle which have succumbed to Texas fever.

In the history of Texas fever, as it is recorded by Professor Gamgee in 1868, and by previous and subsequent investigators, there are important details, which lead to the conclusion that the disease is not the one which is known as splenic apoplexy in various parts of the kingdom. This malady is not confined to cattle, and the poison, which is eliminated from the organism of an infected animal, acts fatally on other animals and on man, as numerous deaths from accidental inoculation prove. The infective energy of splenic fever, so far from ceasing with the infection of one set of animals, extends independently, and the infective matter, it seems, may be transmitted from one system to another, gaining rather than losing power in the process.

Texas fever is, according to all accounts, a malady of most peculiar character. Starting with Texas cattle, in whose system it appears to be latent, it extends with deadly effect to other breeds of cattle with which the Texan may come in

contact, or which may feed on pastures over which Texan cattle have passed. The precise source of the infection does not appear to have been determined, but the general and, we may add, reasonable idea is that the poison is contained in the excrement of the Texan beasts, and that the roads and lands along their route are, as a matter of course, contaminated.

Cattle which take the disease from Texan cattle seldom recover. Nine out of every ten attacked are looked upon as lost, but the infection of the malady, oddly enough, dies with them; indeed, neither living nor dead are they a source of danger to other cattle. All this reads very much like a romance in pathology, but the statements in support of this view are so numerous that we could not offer any justification for doubting its truth; but we may remark that the disease stands alone in this respect among maladies which are communicable from sick to healthy subjects.

Notwithstanding the special kind of infectiveness which belongs to Texas fever, it is evident that its fatal character would result in an undesirable addition to our list of diseases, already sufficiently long, and becomes the more necessary to guard against its entrance. The evidence which we have at present as to the wasted appearance of the American cattle at Liverpool, is not sufficient to permit us to attempt to determine whether the disease is Texas Fever or the ordinary splenic fever of this country, but it is worthy of note that while the general indications were those of splenic fever, no *Bacteria* have been found in the blood, a fact which is probably due to the circumstance that the animals which were examined did not die of the disease but were slaughtered in the ordinary course by the butcher. Under these circumstances it may be assumed that the normal time for the appearance of the rods had not arrived. Experiments have been made with the object of ascertaining if the rods could be cultivated from splenic blood, but up to this time the results have been negative. Some of the morbid parts taken from the intestinal canal presented the deep erosions of the mucous membrane which are said to be

apparent in Texas fever, and were certainly not usual in splenic fever, so that there is at least room for questioning with which of the diseases the cattle at Liverpool were affected.

Review.

Quid sit pulchrum, quid turpe, quid utile, quid non.—HOR.

PROFESSOR COBBOLD'S WORK ON PARASITES.

THE *Live Stock Journal* for the 16th of July last presents its readers with the following review of Professor Cobbold's recent volume; and as certain portions of the critique seem to us to require an answer, we have added some remarks contributed by the author:

"This is an exceedingly uncomfortable book to take up and study, but it is one of immense importance, and on its special ground is, we should not hesitate to say, the most thorough and exhaustive of its kind. Dr. Cobbold published an elementary work many years ago on the Entozoa, but that has long been out of print; and the present volume, though built upon the lines of the earlier work, is by no means a simple reproduction of it. It is, in fact, an original treatise of some considerable extent, with which is incorporated fragmentary portions of the older work, so far as they harmonise with the wider design of the new book.

"The author tells us his work is not professional—'that is to say, it does not concern itself with the therapeutics or the curative treatment of parasitic affections.' It is popular in its treatment, and might with advantage have been a little more so in its phraseology. It is difficult to turn away from a terse and exact scientific terminology, especially when to us it has become familiar and easy; but there are some subjects—and this is one of them—where everything that has to be said could be put into simplest Saxon, or good English at any rate, and so be understood by all men. We are not finding fault with Dr. Cobbold; he sins less than most writers who claim to appeal to the general reader often do; but we put it to the Doctor whether 'worms' is not more to the common mind than 'helminthology' will ever convey.

"Now, having entered a mild protest against style, let us hasten to summarise the contents of the work.

"Commencing with a general introduction which is uncommonly well done, Dr. Cobbold treats first of the parasites incidental to human beings, and then of those which are found in animals. In both sections his details are, whilst full and exhaustive, given with a delicacy and dexterity that make a repulsive subject attractive, if not absolutely fascinating reading.

"The secret of this is not far to seek—the writer is passionately enamoured of his subject, and his enthusiasm is catching. He brushes aside with serene contempt 'the puerile horror which even some scientific persons affect to display in regard to these much-abused worms.' To the writer the entozoa are simply a peculiar *fauna*, destined and designed to occupy an equally peculiar territory. What our native country is to us the bodies of animals are to them. And the study, definition, and knowledge of these creatures is just as important and interesting, when taken up seriously, as the more attractive branches of zoology in its higher forms.

"When we consider its bearing on health it is scarcely possible to overrate its importance, but we are very pleased to see Dr. Cobbold take the pains he does to dispel the absurd superstitions which exist so extensively with regard to parasites and their presence in the human form. He says, 'Most people, not excluding even the votaries of the healing art, following tradition, regard the internal parasites or entozoa as creatures either directly resulting from certain diseased conditions of their *hosts*, or as organisms which could not have existed if their *bearers* had been perfectly healthy. Nothing can be more absurd. Such a conclusion is utterly at variance with all logical deduction from known facts.'

"Starting from such a sensible and scientific basis, it is to be expected that the work before us is throughout a practical rather than theoretical one. Its author declines to flatter the prejudices of his readers, or to pander to their predilections. He speaks from actual experience largely his own, and, where not personal, culled only from reliable authorities.

"At the same time—and from a literary point of view this is most interesting—the bibliography of every known species is most carefully given. We do not suppose this portion of the work has ever been equalled, or even attempted, on any such scale before. To the students of all time Dr.

Cobbold's careful and exhaustive list of books, essays, lectures, and papers, on every, even the most minute sections of his subject, will be simply invaluable. They range over not only our own language, but include everything that has been written on this department of science in every language of the known world.

"The practical value of such a book as this cannot be too highly estimated; it suggests fields for further investigation as freely as it supplies material for every-day application. To breeders of every kind of domestic animal it is full of valuable hints, and we shall endeavour to get the learned author to favour us in a more familiar form with some of the more prominent lessons his work teaches as to the treatment of the diseases common to cattle, horses, dogs, and poultry. Certainly no man living is more competent to do so."

Note by Dr. Cobbold.—In acknowledging the kind and flattering terms in which the reviewer has spoken of my efforts, I wish to say that, as I had already employed the title 'Worms' to a small professional work—embodying the lectures on helminthology which I delivered at the Middlesex Hospital many years back—that fact in itself afforded good ground for not repeating the title. Apart from this circumstance, however, the term "worms" would, I think, have been eminently unsuitable for a treatise embracing some account of numerous parasitic creatures which have not the remotest structural relation to "worms" or *Vermes*, properly so called. On the other hand, the fact that I had already used the term for the title of a book dealing almost exclusively with creatures coming fairly within the class *Vermes* shows that, where I could possibly meet the requirements of the general and professional reader, I was quite willing to make the concession. The reviewer says that my work is "popular in its treatment." I am much obliged to him, but I certainly did not design that it should be so, except in so far that it should plainly serve as a guide to more substantial and pretentious works and monographs. To be candid, I am entirely dissatisfied with the book; yet I do not see how (within the limits of time at my command) I could have avoided some of the many errors and defects which it contains. Through sheer haste and the necessity of occasionally quoting authorities second-hand almost all of the errors are fairly attributable. The science of helminthology makes such strides that to have spent more than two years over the manuscript of the book would have rendered the earlier part of it out of date. To object to the

term "helminthology" is natural, because, as yet, the science is not generally cultivated; but for several decades of years the term helminthology has been employed on the Continent. No one objects to the terms botany and zoology, yet the sciences of plants and animals are thus fittingly spoken of.

Having regard to the fact that I had already dealt with the subject of curative *treatment* of parasitic disease in purely professional volumes, I did not repeat my experiences on this head; moreover, I did not wish to mislead people, for I had retired from practice as a physician. However, should a second edition of the treatise be ever demanded, I shall bear in mind the friendly remarks of the reviewer, and at the risk of being again annoyed with endless applications for *advice*—both as regards the vermifuges suitable for particular human and animal parasitic disorders—I will at least say something concerning the general principles of curative treatment. As regards prophylaxis, or the prevention of parasitic diseases, on that point, as is generally admitted, I have devoted as much space as could well be spared.

T. S. C.

Extracts from British and Foreign Journals.

DISEASE AMONG AMERICAN CATTLE.

The Detroit Post says that a CATTLE SANITARY COMMISSION has recently been appointed by the Governor of the State of Michigan, which shall have power to use means to prevent the spread of dangerous diseases among animals, and protect the people of the state from the dangers arising from the consumption of diseased meat. The first meeting of the commission was held at the office of the State Board of Health in Lansing; the commissioners are S. B. Mann of Adrian, J. B. Griswold, M.D., of Grand Rapids, and A. J. Murray, Veterinary Surgeon of Detroit. The commission organised by the appointment of Mr. Mann as President, and Mr. Murray as Secretary.

Among the topics discussed were the Texas cattle disease, glanders, pleuro-pneumonia, hog-cholera, the dangers arising from the sale of diseased meat, and the management and feeding of cows in connection with the sale of milk. In order that the commissioners may carry out the duties which

devolve on them, they request that farmers, physicians, veterinary practitioners, and others, will inform them of any facts which have come under their observation in regard to the prevalence of Texas cattle disease, glanders, hog-cholera, or any other contagious disease in the State of Michigan. They also desire to be informed of any cases in which disease has been transmitted by a contaminating element in milk, or in which it has been occasioned by the consumption of diseased meat.

As this is a matter of public interest the press of the state is solicited to give publicity to the request of the commissioners. Communications on the above subject can be addressed to the Secretary of the Commission, A. J. Murray, Veterinary Surgeon, 89, Congress Street East, Detroit.

REPORT ON PLEURO-PNEUMONIA IN AUSTRALIA.

THE following communications with respect to pleuro-pneumonia, have been received by Mr. C. J. Coates, Secretary to the Royal Agricultural and Horticultural Society, and handed to us for publication :—

"To Mr. C. J. Coates—In reply to your letter, dated the 11th ultimo, asking that some action might be taken to prevent the spread of pleuro-pneumonia, and recommending that a number of cattle should be obtained for experimental purposes in order to ascertain whether the disease is contagious, and whether inoculation properly performed is a preventive, I have the honour, by direction of the Commissioner, to forward herewith copy of a report from the Chief Inspector of Stock upon the subject, and to state that the Government agree therewith.—H. J. ANDREWS, Secretary to the Commissioner of Crown Lands."

"To the Hon. Commissioner of Crown Lands—I have the honour to report on the action taken in regard to the spread of pleuro-pneumonia, recommended by the Committee of management of the Royal Agricultural Society of South Australia, for the Government to obtain a small number of cattle for experimental purposes in order to ascertain whether the disease is contagious, and whether inoculation properly performed is a preventive. It appears from the course recommended that the committee had failed to note the general course of events in connection with the spread of pleuro, and the action taken both in Europe and America and in the colonies. Pleuro-pneumonia is described by the veterinary

authorities to be a 'specific contagious fever, with extensive exudations into the chest and lungs.' Professor Gamgee terms it a 'malignant fever,' never known except following the movement of cattle. It was introduced into England in 1842, into Australia in 1858, since which time it has flourished in the colonies, destroying cattle by thousands, and always spreading by contagion. These facts are so well known and established by the highest veterinary authorities in the world, that to quarantine cattle to prove a fact would be loss of time and money. A number of experiments as to the value of inoculation have already been tried in Europe and Great Britain; in Germany and France the experiments were in favour of its value, and in the Netherlands compulsory inoculation is established. The veterinary authorities in England are still undecided as to the value of inoculation as a preventive, but practical men, such as owners of dairies in London and other large cities (places in which the contagion will remain for a long term), have practised inoculation for years. In the north of Britain a Mr. Rutherford has been inoculating with great success, and many of the veterinarians in Great Britain are now wavering in their opposition to the practice. Can I quote stronger proof of the value of inoculation than the practice of it by dairymen? At the Cape it has been practised successfully for years. In the colonies thousands of cattle are inoculated every year, and thousands are left uninoculated to disseminate the disease, as has been done and is still being done in the colony. Pleuro-pneumonia is never found in the province unless it has been carried by the movements of cattle. Professor Gamgee, in practising inoculation, lost less than 1 per cent. out of the first 2000 cattle inoculated in his earliest trials, and after seventeen years' extensive practice, he also states that not once during that term has contagion from inoculated animals been witnessed. He is firm with many other celebrated veterinarians in belief of the efficacy of inoculation as a preventive against pleuro-pneumonia. There have been several meetings of veterinarians in Europe from time to time, and the opinions were in favour of inoculation. All veterinarians agree that medical treatment can do but little good. Professor Law says:—'To preserve the sick is not less reprehensible than to preserve cattle suffering from rinderpest. As the poison is more subtle, and more diffusible through the atmosphere than the disease, it is hidden unsuspected for a greater length of time in the body of its victim; no treatment but the destruction of the sick, isolation, and disinfection is of value.' Inoculation has been and is practised by cattle-holders

throughout the colonies, as well as in other countries, but like vaccination it has its opponents. It is a means of prevention within the reach of holders of both large and small herds, and the operation is simple. To defer action now for the purpose of experiments already tried—the very difficulty of starting, which on a sound basis with cattle that could positively proved to be healthy—is almost an impossibility, and is delaying practical work to attempt to show what has already been carried out for some years, viz. inoculation as a preventive of disease. Professor Law, so late as 1879, says of pleuro-pneumonia:—'This is the most insidious of all our animal plagues—the one which now most urgently presses for active interference, and which if neglected will bring a terrible retribution in the future.' I have reported perhaps rather more fully than you may consider absolutely necessary, but in doing so I wished to show the course recommended by the committee—although no doubt given with every intention of dealing with a most important matter—fails as being actually of no practical value, and if followed would put the Government to needless expense, and defer the prompt and decided action necessary to arrest the spread of pleuro-pneumonia. I venture to hope that no such action as recommended will be taken.—I have &c., C. J. VALENTINE, Chief Inspector of Sheep."—*South Australia Advertiser.*

THE TRANSMISSIBILITY OF TUBERCULOSIS BY MILK.

M. PUECH, having recognised the existence of phthisis in a cow which was sold for killing, and yet continued to yield three or four litres of milk daily, fed with the milk two sucking-pigs and two rabbits. He has communicated the following results to the Académie des Sciences. The animals, when killed, showed tuberculous lesions in strict proportion to the length of time the milk had been administered. These facts, according to M. Puech, showed that phthisis is transmissible by milk direct from the cow. It remains to be determined whether this liquid loses its contagious properties when it is boiled. M. Bouley afterwards submitted to the Academy a jar containing fragments of the lung, liver, spleen, the phrenic centre of the diaghragm, and the bronchial and submaxillary glands of a pig, five months old, killed sixty-seven days after an inoculation of two cubic centimètres of meat juice, pressed with an hydraulic press out of a fragment of the ischio-tibial muscles of the tuberculous cow mentioned in M. Puech's note. This experiment was made at Toulouse

by M. Toussaint of the Veterinary College. Examination of the fragments in the jar showed tuberculous lesions in a very advanced condition. M. Bouley said that these facts, which demonstrate beyond doubt the transmission of tuberculosis from the cow by the alimentary use of unboiled milk and the inoculation of the juice of uncooked meat, should not pass unnoted. In addition, they are not unique, since, in Germany, experiments of the same kind have been made, and have yielded identical results, to which, however, it does not appear that sufficient importance has been attached. The danger is, according to M. Bouley, indubitably a real one; and it is well that the public should be warned of it, so that they may take proper precautions, especially as the use of raw meat is now often prescribed as a remedy for anæmic disorders. The outcome of these facts is, that inspection in regard to phthisis occurring in cows should be extremely strict in the slaughter-houses, and that it would be prudent to make use of boiled milk, especially for the feeding of infants, when the source whence it is derived is not beyond suspicion. Cooking, which destroys cellular and parasitic life, should render both milk and meat harmless.—*Brit. Med. Journ.*

THE GOAT AS A SOURCE OF MILK SUPPLY.

At a meeting of the British Goat Society, recently held at its rooms, 446, Strand, a letter was read from the Earl of Rosslyn accepting the office of president of the institution. The hon. secretary, Mr. H. S. Holmes Pegler, said he was glad to be able to announce that the Baroness Burdett-Coutts had become patroness of the Society, and that the Duke of Wellington and the Earl of Shaftesbury had agreed to act as vice-presidents. He said it was a well-established fact that in rural districts the families of the poor rarely tasted other than "skim" milk, in consequence of the difficulty of obtaining the pure article, which was either sent wholesale to London, or utilised at once in butter or cheese making. He added that on the Continent and in Ireland the goat was regarded as the poor man's cow. The Society claimed that the goat was especially adapted for such a purpose. It supplied just milk enough for the ample requirements of an ordinary household during the greater part of the year, and as it ate almost every kind of herb and vegetable, and possessed a hardy constitution, it was kept with very little trouble and almost nominal expense. Fifteen members were elected, making a total of 100. It was resolved to give a

kid dinner, under the auspices of the Society, at the Agricultural Hall, during the forthcoming dairy show, in October, the viands to consist solely of the flesh of the kid served in different ways. Several letters were read from cottagers desirous of purchasing a goat by instalments, in response to an invitation issued by the society.

WOOLSORTERS' DISEASE.

Our contemporary, the *British Medical Journal*, referring to the recent case of "Woolsorters' Disease" at Bradford, says that Mr. Spear has now sufficiently recovered from his recent attack to be able to resume his investigations at Bradford as to the causation of this disease. Dr. Greenfield's laboratory experiments have proved beyond a doubt that "woolsorters' disease" in the human, and "splenic fever" in cattle, are one and the same disorder. It may be added as a matter of interest that, while this investigation is going on in England, M. Pasteur has been continuing in France his experiments into the same disease, under the name of "Charbon." Not deterred by a storm which he recently raised in the Academy of Medicine, with regard to the question of fowl-cholera, the eminent chemist, at the Academy's last meeting, read a further memoir on the subject of anthrax, in which he recapitulated the experiments that have already been quoted in these columns. He wound up by saying that, if farmers chose, anthrax would soon be only a memory for their animals, their shepherds, for butchers and tanners, because the disease is never spontaneous, but exists where it has been imported, whence its germs are disseminated by the unconscious agency of earth-worms; that, in short, if in a particular locality the conditions for its preservation did not exist, it would disappear there in the course of a few years. A correspondent in another column suggests an easy remedy, which does not involve the destruction of the useful earth-worm.

OBSERVATIONS ON THE LUNG PLAGUE OF CATTLE (PLEURO-PNEUMONIA CONTAGIOSA BOVINA).*

By Professor James Law.

As the writer has been engaged during 1879 in the direction of measures for the extirpation of this foreign plague from our

* Extracted from the 'First Annual Report of the Cornell University Experiment Station, 1879—80.'

territory, it seems reasonable that this bulletin should set forth a summary of what has been accomplished, and what lessons have been learned from the experience. It must, however, be premised that no means were provided for experimental observation, so that questions of the deepest interest to the pathologist and epidemiologist have had to lie unaffected by such crucial tests as the experimentalist alone can apply. In some respects this is to be regretted, as doctrines, which are now but the deductions of empirical observations, might have been placed on an irrefragable basis, and certain fields of pathological science might have been illuminated with a clearer light.

Yet the observations inseparable from the daily application of suppressive measures are far from being unimportant, and in many respects the results obtained are no less conclusive than if they had been the outcome of the most carefully devised experiment. The width of the field under observation, so far exceeding what could have been subjected to experiment, served to give a conclusiveness to obvious causations and results that appeared unvaryingly for an indefinite number of times in succession, which could not have been obtained by a limited number of experiments, liable as these are to be invalidated by the introduction of an unsuspected disturbing element.

Question of the Generation de novo of Lung Plague.—This is the fundamentally important question with reference to the possibility of the final extinction of this disease here or elsewhere. If the malady can and does originate on this Continent no present outlay in money, and no effort for its present extinction, can give us any guarantee of permanent immunity. After we have rooted out the last existing contagious germ, new germs will still continue to appear at more or less frequent intervals, and in more or less remote localities, demanding in every such case the repetition of the work of the outlay and suspense that have already repeatedly taxed the energies of the nation. And if such a spontaneous generation of the germs be possible, new spontaneous outbreaks of the disease must become increasingly common as our waste lands become more uniformly settled, as our farms become more fully and carefully tilled, and as the herds of cattle become more numerous. When our present stock of cattle shall have been doubled, we shall have just double the number of such outbreaks; when trebled quadrupled, and quintupled, so will the newly developed germs and infected localities be three, four, or five times as many as at present, and the question might well arise whether the nation could afford to continue the suppression of such an uncertain, intangible, and unconquerable enemy.

But if we can demonstrate that this plague has never been

shown to exist on the Western Continent except at points to which we can clearly trace the germs from the bodies of infected animals imported from Europe; if we can show that wherever such imported germs have been carefully destroyed the plague has been definitely and finally exterminated; and if we can show that the testimony to this effect is not confined to America, but that the long experience of Western Europe, and the more recent history of the disease in the Southern Hemisphere, show with equal clearness that this affection never appears in a new country save as the result of imported affection, it follows that national measures for its extinction are fully warranted, and, indeed, imperatively demanded. In this case the outlay of to-day is but a trifle as compared with the vast sums that the present suppression of the disease will so certainly save to the country in all future time.

This subject is placed first as furnishing the *raison d'être* of the law, which has been to some extent put in force during the past year, and as being a matter which is apparently no better understood by the general public to day than it was a year ago. Those great public educators, the daily newspapers, still speak of the plague as inseparable from feeding on distillery swill, and in place of recognising the fact that the infection is restricted to very limited area on the Atlantic seaboard, they affirm that "it has been found wherever it has been sought for." (See *New York Herald*, April 19th, 1880.

Origin of the Lung Plague in America.—Though the bovine race represented by the buffalo have been undoubtedly coeval with man on the Western Continent, and though domesticated cattle have been in existence in all the settlements since first introduced in the beginning of the sixteenth century, the Lung Plague of cattle was unknown on these shores until 1843. In that year Peter Dunn, a milkman, near South Ferry, Brooklyn, purchased a cow from an English ship, and placed her with the rest of his herd. Some weeks later this cow sickened and died, and infected other cows in his stable. From this the plague soon spread to other stables in the vicinity, including the great distillery stables in Skillman Street, and in a few years it had overrun Brooklyn, New York, and Jersey City, and extended somewhat into the country. Many are still living who recollect all the facts of the advent of the plague, and of the ruinous losses that overtook many of the unfortunate dairymen.

Wm. Meakim, of Flushing, informs us that his father, William Meakim, kept a large dairy at Bushwick, L. I., which was infected in 1849 by the carelessness of an employé, who hauled a dead cow from a Brooklyn stable with his (Meakim's) working oxen. In a few weeks the oxen sickened and died

followed by forty of his dairy cows, in the short space of three months. For the remaining twenty years that he remained in in the business he continued to lose from six to ten cows yearly.

Twenty years ago (1859) Benjamin Albertson, of Queens, L. I., purchased four cows from a herd from Herkimer Co., but which had been kept over night in the cattle market, Sixth Street, New York. These cows sickened soon after, and conveyed the plague to his remaining herd of 100 head, 25 of which died in rapid succession, and 19 more slowly. He was left with but 60 out of a herd of 104 animals, and these he sold into already infected Brooklyn stables.

Dr. Bathgate, of Fordham Avenue and One-hundred and seventy-first Street, New York, reports that in the same year (1859) his father's herd of Jerseys contracted the Lung Plague by exposure to infection, and that the disease prevailed in the herd for several years, and until the infected buildings were accidentally burned. He reports further that the plague has never been entirely absent from the neighbourhood since.

Cases of this kind might be recorded indefinitely. Enough has been given, however, to show that with the advent of Peter Dunn's cow, purchased from the English ship, and of the infection she carried, there came upon the cities clustered around the port of New York a pestilence which has never since relaxed its hold on the bovine population. In the Skillman Street (Brooklyn) stables alone, which were infected in 1843, the plague prevailed as long as they stood, and its prevalence there was reported by the Massachusetts Commissioners, who visited this city in 1861. From that time to this it has been constantly extending, not only in the cities named, but through the cities and villages of New Jersey, Delaware, Pennsylvania, Maryland, and Virginia, as the demand for cows caused these to draw upon the market of New York, or as the owners of infected herds saw fit to unload their dangerous property upon unsuspecting purchasers in new and uninfected districts.

Where the plague was introduced into herds on enclosed farms, the unfortunate owners of which were not so selfish as to sell out the herd and infection to a new victim, the duration of the pestilence was necessarily limited. Sooner or later all the cattle on the place had passed through the disease, and become proof against a second attack, and if no calves were raised, as is the rule on farms supplying the large cities with milk, and if no new stock was bought in, the disease expired for the lack of fresh cattle capable of contracting it. In the towns and villages the case was altogether

different. Here numerous herds mingled on open commons and unfenced lots, so that infection spread easily from herd to herd, and as fresh cows were being constantly purchased to replace those that had become dry or fat, there was at no time any lack of susceptible animals for the infection to lay under its malignant spell.

(*To be continued.*)

FISH AS CATTLE FOOD.

THERE are records nearly 50 years old showing that fish was used a good deal as food for cattle upon portions of the Massachussets coast. The Maine farmers, as early as 1864, found fish pomice (from herring) a valuable food for sheep, swine, and poultry. Mr. W. D. Dana, in the report of the Board of Agriculture of Maine for that year, states that "sheep thrive well, get fat, and yield heavier fleeces when fed upon this food than when fed upon anything else produced in this section of the state." Careful and observing farmers who fed it asserted that it was equal to good hay, ton for ton, and that as a manure it lost none of its value by having passed through this "living mill."

Experiments in feeding fish scrap to sheep, to test its value as compared with corn meal, were conducted through 16 weeks of 1875 by Professor Farrington, at the State College at Orono, Me., and he says the corn-fed stock gained 48 lbs., while the increase in weight of the stock fed upon fish scrap was 47½ lbs.

In the fish commission report for 1877, Professor Atwater states that "the chief defect of our fodder materials, as a whole, is the lack of nitrogen; and this is true of forage crops in general, and of poor hay, straw, and corn crops in particular." He says further, that nitrogen is the one thing most needed in profitable stock-feeding; that it will make manure plenty and rich, and the crops large and nutritious; and that in fish products we find one of the cheapest, most useful, and best forms in which it may be furnished.

Mr. Wilder, of Pembroke, Me., feeds his sheep upon thrashed straw, with one half pound of dried fish scrap per day to each sheep. He claims that the animals are more eager for it than for grain, and come out in the spring in better condition than when fed on corn and good English hay.—*The Farmers' Gazette*, Dublin.

THE FRENCH EXPERIMENTS OF DEPRIVING HORSES OF FOOD.

THE *Echo* of August 9th, alluding to Dr. Tanner's pretended fast, quotes the following:—"The *Schweizer Militärzeitung*, noticing the fasting experiment of Dr. Tanner, says that a similar cruel attempt was made with a number of horses in Paris, in the spring of 1876. There was, indeed, this difference between the two cases—that the fast was forced upon the poor quadrupeds without their consent, and that there was pretence of utility about the French experiment. The aim, as it was stated at the time, was to discover how long horses could go without food in the event of the scarcity which accompanies a state of siege. The following results were obtained from the inhuman experiment:

"It was proved beyond all doubt that a horse can hold out for twenty-five days without any solid nourishment, providing it is supplied with sufficient and good drinking water.

"A horse can barely hold out for five days without water, even though it is supplied with regular food.

"If a horse is well fed for ten days, but insufficiently provided with water throughout the same period, it will not outlive the eleventh day. One horse, from which water had been entirely withheld for three days, drank on the fourth day sixty litres of water within three minutes. A horse which received no solid nourishment for twelve days was nevertheless in a condition on the twelfth day of its fast to draw a load of two hundred and seventy-nine kilos.

"We believe that such a set of experiments, if attempted in England, would be arrested in their course by the interference of the law, and deservedly so, in spite of the miserable plea of scientific and military utility. One fact comes out clearly from them, and inferentially also from Dr. Tanner's feat—namely, a modern confirmation of the old Greek saying, 'Water is the best of everything.' The Paris Correspondent of the *Basler Nachrichten* says that Dr. Tanner has found an imitator in Lyons in the person of a young physician. He has undertaken to fast for a fortnight. If he accomplishes the feat he is to receive one hundred louis d'ors. If he breaks down before the term ends he is to pay a hundred francs a day from the day of his failure to the close of the specified fast."

OBSERVATIONS ON THE DISEASE OF THE COW, COMMONLY KNOWN AS DROPPING AFTER CALVING.

By James Beart Simonds, Principal of the Royal Veterinary College.

Continued from p. 583.

We may here state that it is of the first importance, nay, imperatively necessary, that whatever is given either as medicine or as a dietetic agent, it should be administered by the stomach-pump. Before coma sets in, the power of deglutition is impaired, and afterwards it is lost, and even when consciousness is returning it is barely restored. Fluids poured into the mouth will under such circumstances often pass into the windpipe instead of the stomach. Again and again, in making *post-mortem* examinations, have we found medicine, gruel, &c., in the bronchial tubes, and we repeat that many an animal has been sacrificed—fatal as may be the disease—to a want of precaution in the administration of remedial agents.

With reference to the exhibition of stimulants it must be borne in mind that one of the earliest symptoms after the animal falls is the rapid fermentation of the ingesta in the rumen, producing that distended state of the abdomen before alluded to. This condition of the rumen adds greatly to the animal's sufferings, being accompanied with painful eructations. The gaseous matter evolved from the fermenting ingesta practically consists of carbonic anhydride, to neutralise which ammonia is required. Aromatic spirit of ammonia, in one-ounce to two-ounce doses, with a somewhat larger quantity of tincture of ginger, should be given, and repeated according to circumstances. The tympany may also be relieved, and indeed should be, by occasionally passing the tube of the stomach-pump into the rumen, thus mechanically effecting the removal of the gaseous matter. This procedure will not unfrequently be beneficial in another and no less important way, for by it ingesta will be detected in the œsophagus, which by moderate pressure, as in cases of choking, can be thrust back into the rumen, affording considerable relief to the animal.

The list of stimulating tinctures and mixtures which are admissible is great, and for the most part they may be advantageously mixed with ordinary spirits, such as brandy, whisky, gin, wine, &c. Good wine is to be preferred to spirit, especially in those cases where agents of this kind have frequently to be administered. Its effects are more lasting than those of spirit; besides which much less irritation

of the mucous membrane of the stomachs and bowels will attend its repeated exhibition. The agent, however, of the stimulating class which in our hands has proved the most useful is the oil of turpentine. It may be given conjoined with the ethers, nitric or sulphuric, in doses of an ounce and a half every three to four hours for the first sixteen or eighteen hours, should coma continue so long.

Throughout the whole attack the cow must be well propped up with bundles of straw, and kept lying as much as possible on the belly. She should also be *occasionally* moved over from one side to the other. This is of more importance than may at first appear, for by it slight tympany will often be removed, but what is even of greater importance is that stagnation of blood in the parts of the body most pressed upon is thereby prevented. A want of turning has led in several instances to gangrene of the hind quarters, and ultimately to death therefrom, of animals which had recovered from the comatose condition, had risen, and had entered upon the convalescent stage.

From the preceding remarks it will be inferred that medicinal agents will have been employed to their full extent while the condition of the animal demanded their use. On a favorable change taking place, and especially if the cow should rise, recognise her calf, and present indications of recovery, no more medicine should be given, but every care and attention be paid to the animal by good nursing and a careful selection of easily digested food.

Preventive Measures.—The great fatality of the disease, notwithstanding the best directed efforts of cure, gives an increased value to the means of prevention, as on them reliance has to be placed for diminishing the number of attacks. The basis on which prevention rests is that of bringing the pregnant animal into as healthy and natural a condition as possible, by the adoption of hygienic and dietetic principles. Cows of a full habit of body or plethoric tendency are, as we have seen, the most predisposed to the disease. To lessen this, restricted diet, selection of food containing less nutritive matter but good in quality and easy of digestion, daily walking exercise, clean lairage, the occupancy of well-ventilated buildings, and the keeping of the secretory and excretory organs active by the exhibition of medicinal agents, may be said to be among the most effective of these means.

The value of prophylactics, great as it may be, is sometimes diminished by causes over which we seem to have little or no control. This position may be illustrated by the following particulars. For five years, 1838-42, we had under our care

a very valuable herd of English-bred Jersey cows—twenty-five in number—among which parturient apoplexy had prevailed to a most serious extent, the annual losses by death averaging not less than 20 per cent. The animals, which were the property of a nobleman, were well cared for, and never allowed to leave the park in which the ducal mansion was situated. Being a so-called self-supporting herd, the annual losses were filled up by the bringing in of the in-calf heifers. We had full authority to use any means thought right for the purpose of preventing the occurrence of the disease, and did not fail to make good use of the privilege. Hygienic principles were adopted throughout the whole period of utero-gestation, and these were added to by the exhibition of aperient and other medicinal agents both immediately before and after parturition. In selected cases bleeding was had recourse to, and, when the state of the mammary glands permitted or required, milking before calving was also adopted. From the time of the birth of the calf till the expiration of the third day a cowman was kept night and day watching the animal, ready to take advantage of the slightest appearance of ill-health by the exhibition of medicine with which he was furnished. As may be supposed, many attacks were avoided and more lives were spared, but it was a remarkable circumstance that, during the five years alluded to, the mortality was never reduced below two a year, or 8 per cent. of the whole herd. The saving of 12 per cent. was doubtless a great gain, but it might have been supposed that the disease would have been entirely annihilated by the precautions which were taken.

Statements of the effective prevention of the disease by simply administering aperient medicine within a few days of calving, placing the animal on a restricted and less nutritious diet, and giving a second dose of aperient medicine directly after parturition, are frequently sounded in our ears. Many persons speak as if it were an absolute certainty that the cow would have dropped had not such measures been adopted. It is right to take precautions with every herd; but it must be remembered that thousands of cows in high condition annually produce their calves, even in districts where the disease is common, towards whom no measures of prevention are adopted, and that they pass through labour unscathed. Put these boasted means to the crucial test, as in such herds as we have named, and they will unquestionably fail.

It may be asked—Are we then to conclude that parturient apoplexy is as difficult to prevent as to cure? Certainly not; the lives of more cows may, we believe, be saved by the

exhibition of *sedative medicine* immediately on the completion of parturition, conjoined, of course, with the adoption of dietetic and hygienic principles, than by the use of aperients, We quote an instance in point. A dairy of fine Jersey cows, the property of a gentleman, which were always grazed in a park, suffered annually from the malady to a serious extent.

Thus, in 1868, out of a herd of sixteen, two died; in 1869, three; in 1870, three, and in 1871, three.

We were then consulted, and suggested that the cows in the latter period of gestation should be supplied with less food, by being kept in the spring and summer for a few hours in the sheds, be regularly exercised, milked if the state of the mammary glands permitted prior to calving, take salines occasionally, such as nitrate and bicarbonate of potash with the hypersulphite of soda in moderate quantities, viz. from two to three drachms of the nitrate and four to six of the other preparations; and that *immediately on the completion of labour* a full dose of tincture of opium—an ounce and half to two ounces—mixed with an equal quantity of spirits of nitric ether should be administered. The result was even more satisfactory than could have been hoped for, no animal having died since 1871 in the herd from parturient apoplexy.

It is not to be expected that in all cases a result like this will be attained, but we have no hesitation in saying that the system of administering a sedative agent has answered our full expectation, and succeeded far better than any other.

We may add to these remarks one other prophylactic measure, but which would scarcely be carried out to the full extent, unless, as was the case in the nobleman's herd, failures continued to occur which it was determined to prevent if possible. The measure alluded to is never to run the risk of a *fourth* calving, but to fatten or sell all the cows in turn after producing their third calf.

We may thus summarise prevention: part with all the old cows milk late in utero-gestation, and resume it if possible immediately before delivery; enforce daily walking exercise, although the animals may be at pasture; adopt means to lessen the continued supply of rich food; avoid over-repletion of the stomachs after calving; bleed before parturition in cases of plethora; give aperient medicine and follow with salines; keep the animals as free from excitement as possible after delivery, and early administer a full dose of tincture of opium. Other sedatives, such as chloral hydrate, might be combined with the opium, and perhaps with advantage; but of such a combination we have had no experience.

ADDENDUM.

Adynamic Fever.

We append a few remarks on cases in which a pregnant cow drops *prior to parturition*, for by many persons an attack of this kind is viewed as being essentially of the same nature as parturient apoplexy. A close investigation of the circumstances under which the attack occurs, the symptoms by which it is accompanied, and its general result, will show that the affection is altogether of a different nature. The recumbent cow, being incapable of rising until *after* parturition, has led to the belief that the loss of power was due to that form of paralysis termed paraplegia. We do not deny that paraplegia may exist in some cases of "*dropping before calving*," but these are quite exceptional and of a somewhat different nature. It will be found that in the affection we are considering, paraplegia cannot be present, as both sensation and voluntary motion exist in the hind extremities; that no impairment of the functions of the bowels nor of the urinary bladder is present; that on the completion of the period of utero-gestation labour-pains come on, and are as powerful and as regular as in an animal which had not dropped; and that the leading symptoms, viz. the incapability to rise, is speedily removed when parturition has been effected.

If the term *adynamic* fever be at all applicable to a prostrate cow when pregnant, it would be in these cases. The animal assumes the recumbent position at varying times before calving, but never until the latter period of gestation, when the weight of the fœtus and the gravid uterus, which for many weeks had gone on increasing, had arrived at a stage which the animal is unable to sustain. This may happen even a month before calving, and although at the commencement of the attack indications of febrile action are present, they are not accompanied with coma, nor with any of the ordinary symptoms of parturient apoplexy. Usually within three or four days the febrile symptoms pass off, and the animal is simply the subject of *adynamy*. She lies, feeds well, ruminates, passes the urine and fæces naturally, breathes freely, has no decrease of external temperature, nor any increased pulsatory action of the heart and arteries.

It is not difficult to understand that the muscles of the lumbar region in particular, having to support so great a weight as that of a nearly perfected fœtus, which, when fully developed, we have known to weigh at birth as much as 112 lbs., tire under the strain, and lose to some extent their tonicity, as well as their active power of natural contraction. We

refer these cases mainly to such a cause; and it is easy to understand why cows should be affected with adynamy and mares not, if a glance only be taken of the great length and weakness of the loins of the cow compared with the mare, besides which the spine has to carry the weight of the capacious rumen filled with ingesta, together with that of the other stomachs, bowels, liver, and abdominal viscera, in addition to the gravid uterus.

Allusion has been made to cases in which paralysis to a certain extent does exist; and it is easy to understand why such a complication should exist, by looking to the primary cause and consequent diminished power of the lumbar muscles. Impaired tonicity alone would necessarily be associated with weakened nerve force, and may be also with passive congestion, to a certain extent, of the lumbar portion of the spinal cord. Adynamy in these cases is accompanied with indications of febrile action, such as disturbed breathing, increased circulation, loathing of food, suspension of rumination, constipation of bowels, diminished external temperature, and the other usual concomitants of pyrexia. The recumbent position is, however, often sufficient to lessen the severity of the symptoms; but when not, they usually yield to the exhibition of saline aperients, followed by mild febrifuges, warm clothing of the body, stimulating the loins, and well nursing the patient.

Treatment of a similar kind, but not carried to the same extent so far as the exhibition of medicine is concerned, may be demanded in those cases in which congestion of the vessels of the spinal cord is *not* a necessary complication. Attention to comfort is the main thing here, and above all it should be remembered that under no circumstances must the animal be allowed to lie for many hours together on the same side, but be moved over from right to left and *vice versâ* day by day, so that the pressure upon the prominent parts of the body, and the now enlarged mammary glands, may not be continuous.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD 29TH JULY, 1880.

Present:—The President (in the chair), Sir F. Fitzwygram, Professors Pritchard and Walley, Messrs. Blakeway, Cartwright, Coates, Collins, Dollar, Dray, Dun, Greaves, Harpley, Taylor, Whittle, Woods, and the Secretary.

The *Secretary* read the notice convening the meeting.

The minutes of last meeting were read and confirmed.

The *President* called attention to the position which the Royal College held with the Conference that had lately been held at Brussels. The Brussels veterinary surgeons determined this year to have an International Conference, and had sent invitations to all the veterinary schools in Europe, America, and elsewhere, but he found that the Royal College of Veterinary Surgeons was not known on the Continent, and was not in any way recognised. An invitation was sent to him individually to attend the Conference, and he attended and was well received by the members. There were representatives from Germany, Holland, France, and Belgium. The reception given to him by the Belgians was most cordial. They did not know of the existence of the Royal College of Veterinary Surgeons, and apologised for not having that knowledge, thinking that their ignorance on the matter might be taken as a slight. He wished to draw attention to this, because, although present at the Conference, he had no official status. He thought the time had come when they should elect some of their professional brethren on the Continent as Honorary Fellows of the Royal College.

Signatures were affixed to diplomas in favour of Mr. James Shivas, Frith View, Invergordon, and Mr. E. J. A. C. Yorston, of Manchester.

The *Secretary* announced that letters had been received from Prof. Williams, and Messrs. Robertson, Reynolds, Anderton, Freeman, Cox, and Morgan, regretting their inability to attend the meeting. Mr. Robertson stated that, owing to his accepting the appointment of Teacher to the Royal Veterinary College in London, it would be incumbent on him to resign his position as Examiner. In doing so, he begged to convey to the Council his sincere thanks for the honour conferred upon him, and for the uniform courtesy he had received during the period he had acted in his official capacity.

It was proposed that a vote of thanks be tendered to Mr. Robertson, for the manner in which he had carried out his duties as Examiner.

The *President* pointed out that it would be necessary to appoint a successor to Mr. Robertson at the next meeting of Council.

Fellowship Degree Examination.

The *President* said, that at the last meeting of the Council there were three candidates for this examination. Since that time there were three additional names. One gentleman would leave for America in the middle of August, and he was anxious to undergo the examination before that period. He therefore thought it would suit if the 12th of August were fixed for the examination.

The *Secretary* read the correspondence, and was instructed to reply to the several letters.

Report of Examinations.

At a meeting of the Court of Examiners, held in London on the 6th of July, 1880, for the Pass Examination, seven candidates passed, and three were rejected. At a meeting held in Edinburgh on the 22nd July, three passed from the Edinburgh Veterinary College; and from the New Veterinary College eight passed and one was rejected.

At a meeting for the Second Examination, held in London on July 7th, 1880, eight passed.

At a meeting for the First Examination, held on July 8th, 9th, and 10th, twenty-two passed, and seven were rejected.

At a meeting of the Scotch Section of the Court of Examiners, held on July 23rd and 24th, for the Second Examination, seven passed from the Edinburgh Veterinary College; two passed and one was rejected

from the New Veterinary College; and three passed and two were rejected from the Glasgow Veterinary College.

The Report of the Museum Committee was read, and it was recommended that the sum of £37 10s. should be expended on glass cases for the preservation of the various specimens.

The report was received and adopted.

The Obituary Notice was read.

The Registration Committee Report, containing several suggestions, was received and adopted.

It was pointed out by some of the Council, that if any mistakes were observable in the Register it was the duty of those who noticed them to point them out to the Registrar. In the course of the various observations offered, *Mr. Greaves* spoke highly of the painstaking care of the Secretary and Registrar in compiling the Register.

The *President* pointed out that the Register was largely at the mercy of the members of the profession themselves for corrections.

Ultimately it was resolved that proofs of the list of members be sent out to each member of Council, and that ten days be allowed to return them.

Finance Committee.

The vouchers and receipts for payments during the preceding quarter were examined and found correct. The present liabilities amounted to £141 11s. 4d., which the Committee recommended should be discharged. There was a balance left at the banker's of £918 10s.

The *President* called attention to the item paid for police attendance in Edinburgh during the examination of students, and expressed his regret at such a state of affairs. The public, seeing policemen stationed in the hall, would not make very complimentary remarks, and he hoped the Professors would use their best endeavours to instil notions of order. He also alluded to the untidy condition in which some of them appeared as candidates for admission to a profession which ought to be held in high esteem by them. He was convinced that the Principals of the schools in Edinburgh had the welfare of the profession at heart, and that they would see the necessity of his making these remarks. He apologised for bringing the matter before the Council, but it was, he thought, quite time that steps were taken to remedy the evil.

Professor Walley said that all the professors in Scotland were equally annoyed at policemen having to be in attendance at these examinations, and nobody could impress upon the students more than he himself did the necessity of appearing before the Examiners as gentlemen in every sense of the word. He suggested that if the students were allowed to wait in a room, as in London, and not kept idling about, such disturbances would not occur at all.

The President said that two years ago the damage done to the walls of the Masonic Hall was so great, and the students were so ill-behaved, that the authorities gave notice that the hall would not be granted in future unless there were policemen to guard the students.

Professor Walley said that the subject was one which had occupied his attention for some time, but he thought that a notice ought to have been given to the principals of the schools before the matter was mentioned at the Council.

On the motion of *Mr. Pritchard*, seconded by *Professor Walley*, the Finance Report was received.

Cheques were ordered to be drawn for current expenses.

Professor Walley moved that the Report be adopted, and that the Treasurer be instructed to invest £500.

Mr. Blakeway seconded the motion, which was carried.

House Committee.

The Report was taken as read.

On the motion of *Mr. Dray* seconded by *Mr. Pritchard*, the Secretary was empowered to purchase a safe in which to deposit the documents of the Council, at a sum not exceeding £20.

Major-General Sir F. Fitzwygram moved that a second Examiner be appointed in each subject in the Pass Examination. In doing so, he referred to the present satisfactory state of the funds. It would be in their recollection that four or five years ago the College was gradually drifting into insolvency, and they were obliged to take some stringent steps in regard to their fees. It was then conceded for the time, though it was considerably objected to then, that some portion of the two earlier examinations should be carried on by single Examiners, and that in the Pass Examination, in which hitherto there had been two Examiners, there should be only one Examiner. That system had gone on up to the present time, but it was one which was open to objection, and he was one of those who were responsible for moving that the old custom of the College should be reverted to as soon as the funds would admit of it. He was quite aware that this subject had become complicated in consequence of another subject having one Examiner, but he would ask the Council that night, especially, as Professor Williams was not present, to agree simply on the broad grounds of the question, if the funds would allow it, to have two Examiners in each examination. He wished to disconnect his proposal from anything that might have occurred outside.

Mr. Dray seconded the motion.

Mr. Harpley suggested that the motion should include the proposal that an Examiner should be appointed at the next quarterly meeting.

The *President* said he had not urged the necessity of appointing a second Examiner at his table, and that he was willing to perform the duties as he was, single-handed. He could not, therefore, see the necessity for having a helpmate. He should prefer to remain single-handed until the Examiners in the First and Second Examinations should sit double.

Mr. Dollar said that in his opinion the Pass Examination was of much greater importance to the Examiners, to individuals, and to the profession, than the First and Second Examinations. Speaking as an Examiner of twenty years' experience, he thought it was of the greatest importance to the Examiner himself and the individual examined that there should be some one to assist him. There was no one except those who had sat eight hours Examining students right off—with no one to assist them—who knew what a trying matter it was. He thought there ought to be two Examiners at the Pass Examination table.

Mr. Greaves said he agreed with Mr. Dollar that there should be two Examiners at the Pass Examination, and would support the motion. Mr. Fleming had been an Examiner for a great many years, and had given great satisfaction. If the students were not fit to pass Mr. Fleming was just the man who would not pass them. The only desire for having a second Examiner was to give confidence to the other Examiner, and satisfaction to the table and the examination itself.

Prof. Walley said that on looking over the list of examinations he had found the percentage of rejections by the Examiners to be pretty well equal.

Mr. Dollar rose to order, because he did not think they were sitting there as a jury on Mr. Fleming.

Major-General Sir F. Fitzwygram said his motion was made with the best feeling towards Mr. Fleming, who was a personal friend of his own, and if Mr. Fleming had rejected more students than the average of Examiners had done, he should consider, from what he himself had seen of these examinations, that that was a very high qualification for Mr. Fleming sitting alone. If any reports had been circulated in regard to him because he had had the courage to do his duty alone, that was a reason why he ought to have the assistance of a second Examiner alongside of him. The motion he had always intended to make, and felt it his duty to make, on the distinct understanding that the Council should appoint another Examiner as soon as the funds would allow of it.

The President said he should prefer to wait for the appointment of a second Examiner at his table until the Royal College could see its way to increase the number of Examiners all round. In his professional work he had not got any assistance in the other important matters he had in hand, and he was willing to go on in this. He thought the appointment of a second Examiner at his table alone would be a reflection on him.

Sir F. Fitzwygram said he should be willing to modify his motion. He gave notice that at the next quarterly meeting he would move "That the Finance Committee be requested to report how soon the finances of the College would admit of the appointment of a second Examiner at each table in the First, Second, and Pass Examinations, and report thereon."

Mr. Harpley said, he wished to recall to the Council the circumstances under which Mr. Fleming accepted the office of Examiner single-handed for the Pass Examination. It was to oblige the College, in so far as their finances were concerned. Mr. Fleming at the time personally objected to such a proposal. He had, however, filled the position allotted to him both with credit to himself and with honour to the profession, and had the confidence not only of that meeting, but of all the Examiners serving with him. He (Mr. Harpley) was also asked to be single-handed, but he said he could not be so, because there was a Practical Examination in the morning. He did not think there was any member of the Council who would have a doubt as to Mr. Fleming's integrity (hear, hear), and he thought that no student should have the paltry excuse that he was sent back because he belonged to a particular college. He (Mr. Harpley) did not know whether the students who presented themselves before him belonged to Edinburgh or Glasgow, and he thought Mr. Fleming occupied the same position. If Mr. Fleming thought that, having two Examiners at his table, reflected in any way on his integrity, as a body the Council could not pass the motion. They must draw out new rules, and have additional Examiners for the First and Second Examinations, rather than Mr. Fleming, as an examiner, should be slighted in any possible way. He would propose, therefore, a postponement of the question.

The *President* again expressed his opinion that, at the present time, he preferred that there should not be a second Examiner appointed at his table.

Mr. Harpley proposed, as an amendment, that the discussion on the question be referred to the next meeting.

Mr. Cartwright seconded the amendment.

Sir F. Fitzwggram's motion, as modified, was then put, which was seconded by *Mr. Dray*, and carried.

The *President* then read the following motion, which had been put on the notice board for confirmation :—" That before a medical gentleman is allowed to appear for any examination, he shall furnish sufficient evidence as to the legal qualification he holds in medicine or surgery."

On the motion of *Mr. Dray*, seconded by *Prof. Pritchard*, the motion was carried.

Mr. Walley asked for the interpretation of Bye-law 34, which was explained by the President.

The *President*, again referring to the Belgian Conference, said that at next meeting he should bring forward the names of certain gentlemen on the Continent who were distinguished in Veterinary Medicine, and move that they be, with the permission of the Council, elected Honorary Fellows of the College.

Mr. Dollar gave notice of the following motion :

" That the Third Examination will begin with the Practical and Clinical, and any candidate failing to obtain a sufficient number of marks in this part of the examination will be prevented proceeding to the Final Examination."

On the motion of *Mr. Dray* a vote of thanks was accorded to the President for his very able conduct in the chair, and the Council then adjourned.

BRITISH MEDICAL ASSOCIATION.

The forty-eighth annual meeting was held at Cambridge, commencing on Tuesday, 10th August. On that day, at 4 p.m., the Bishop of Ely delivered a sermon in King's College Chapel, after which a collection was made in aid of the British Medical Benevolent Fund. At 8 p.m., at the Senate House, where all the general meetings were held, the President, Professor Humphrey, delivered his address. He traced the relations of medical science to the English Universities, and expressed his opinion that in no other branch of knowledge are true science and sound practice so well combined as in medicine; and he agreed with Descartes that all grand movements in the world—of philosophy, morals, and government, come out of medicine. He then urged the value of unity in collection of facts illustrating the relations of natural phenomena, temperature, climate, &c., to disease.

Honorary degrees (LL.D.) were then conferred on twelve of the leading members, including Brown-Séquard, Donders, Jenner, Gull, Lister, Simon, and Haughton of Dublin. Professor Chauveau, of Lyons, was also to have received this honour, but was prevented from personal attendance. In this new honour conferred on the representative of the veterinary profession in France, English veterinarians will feel some satisfaction; but this meeting has been noteworthy in the annals of the profession, also, since veterinary surgeons received invitations to take part in the work of the *Section D, Public Medicine*. The following were the officers :

President—Henry W. Acland, M.D., LL.D., F.R.S. (Oxford).

Vice-Presidents—Arthur Ransome, M.A., M.D. (Manchester); Thos. Pridgin Teale, M.A., F.R.C.S. (Leeds).

Honorary Secretaries—William Armistead, M.B. (Cambridge); Thos J. Walker, M.D. (Peterboro').

The list of papers was very long, and time prevented many of the subjects being brought forward, as also so full a discussion of those which were submitted as might have been possible. However, on Friday, 13th August, Mr. CEELY, the veteran worker in comparative pathology, demonstrated "the true and false cow-pox in the animal and in man, and some other eruptive diseases of the cow and the variola bovina; and the variolation of the cow, and the transfer of the resulting lymph to man." Though upwards of eighty years of age, he treated his subject in a manner which commanded respect from his hearers, however they might question the conclusions to which his observations lead. Then Dr. FRANCIS VACHER, Medical Officer of Health, Birkenhead, opened the discussion on *Diseases communicable to man from diseased animals when used as food.* He treated, then, in order the following diseases of lower animals:

1. *Rinderpest*, which has been considered to become typhoid fever or smallpox in man. There is no evidence to substantiate this idea.

2. *Pig Typhoid* has been compared with smallpox and enteric fever, but seems not to be either of these disorders. Professor Axe's work on this subject was alluded to, but not considered conclusive.

3. *Pleuro-pneumonia Epizootica.*—Of this there are three fairly well recorded instances by Livingstone, Letheby, and Gamgee. But it is questionable whether these were true cases of lung disease, or anthrax.

4. *Foot-and-mouth Disease* is certainly communicable to man.

5. *Erysipelas* is very probably communicable to man.

6. *Tuberculosis.*—Creighton's cases, as recorded recently in the *Lancet*, were alluded to, and it was shown that they are even remarkable for the entire absence of historical connection with bovine disease. The question of the identity of bovine and human tuberculosis was discussed, and it was stated that in the former disease there is no emaciation (!) The difference alleged to occur between the position of the giant cell in the two diseases was noticed, as also Virchow's opinion of the sarcomatous nature of tubercle. There is strong evidence that this disorder is communicable to man.

Mr. GEORGE FLEMING, who had prepared a paper, preferred to base some impromptu observations on the remarks of Mr. Vacher. He noted the omission of glanders in the opening discourse, and thought in these days of progressing hippophagy this disease also ought to be considered in this relation. He then treated of each of the diseases which had hitherto been mentioned, quoting evidence for and against the views previously advanced. He expressed his opinion that it is better to interdict all suspected meat, and alluded to a recent observation of M. Toussaint concerning the communication of tuberculosis to lower animals by inoculation with serum of the blood of a phthisical man. This has a most important bearing on the urgent question of animal vaccination.

Dr. SYSON then in a few words gave his views on this subject, and mentioned *Dropping after Calving* as a disease omitted from Dr. Vacher's list.

In the course of a short discussion, Dr. CAMERON, of Dublin, urged the deleterious properties of pleuro-pneumonic flesh.

The PRESIDENT expressed his sense of the importance of the question, and a resolution was passed requesting the Council of the Association to form a committee to inquire into the matter before the grand International Meeting to be held in London in 1881, when doubtless it will receive all the attention it deserves.

The papers by Dr. J. H. Bell, *On Anthrax from Mohair in Woolsorters, and Anthracæmia from Mohair in Woolsorters and Heifers*, were

read in the PATHOLOGY SECTION on Thursday, instead of at the Section of Public Medicine. They were most interesting contributions to comparative pathology. Here, also, after the profound and eloquent address of the President of the Section, SIR JAMES PAGET, on diseases of low organisms, PROFESSOR LISTER opened a discussion on *Micro-Organisms; their relation to disease*, in which he touched on the recent observations of French, German, and Italian workers on Bacteria, such as those of anthrax and fowl cholera. A fowl, upon which the method of "anthrax vaccination," recently discovered by Pasteur, had been tried by the learned *savant* himself, was exhibited. Drs. Aiken and Bell, among others, joined in the discussion, and the learned PROFESSOR TOUSSAINT, of Toulouse, whose recent work constituted the basis of the greater part of Lister's remarks, addressed a few words in French to the meeting. Dr. GREENFIELD stated the results of the work in this direction at the Brown Institution.

Among other interesting papers to be brought forward in this Section, there were announced:

JULIUS DRESCHFIELD, M.D.—*The Histological relations of some forms of Sarcoma and Carcinoma.*

D. J. HAMILTON, M.D.—*A brief résumé of pathological researches on Tubercle and allied affections of the Lungs.*

FREDERICK EVE, F.R.C.S.— *Relation of Epithelium to Chronic Irritation.*

In *Section A, Medicine*, under the presidency of Dr. PAGET, of Cambridge; Drs. Marcet, McCall Anderson, Ferrier, Sturges, Mahomed, and Tibbets, were announced as authors of papers.

In *Section B, Surgery*, WILLIAM S. SAVORY, of London, President; SIR HENRY THOMPSON drew attention to Lithotomy at a single sitting; a Subsection of OTOLOGY was also held.

In *Section C, Obstetric Medicine*, Dr. PLAYFAIR, of London, President; papers were announced from Drs. Matthews Duncan, Graily Hewitt, Mapother, Macnaughton Jones, and Lawson Tait.

In *Section H, Ophthalmology*, President, Dr. BOWMAN, of London; papers were announced from Messrs. Hutchinson, Power, Pridgin Teale, Critchett, and Fuchs.

Section E. Psychology, was presided over by Dr. CRIGHTON BROWNE, of London.

In the *Physiology Section, F*, under the Presidency of PROF. MICHAEL FOSTER, in the absence of Dr. RUTHERFORD, some most excellent work was done. The following were some of the communications:

1. Dr. J. HAMILTON, M.D.—*Demonstration of Microscopic Sections of the entire Brain, by means of the oxyhydrogen light.*

2. PROF. RANVIER. — *Demonstration of the mode of termination of nerves in Epithelium and Muscles.*

3. PROF. MARCY.—*On Comparative Studies on the pulsation of the two ventricles and Arterial Pulse.*

4. Dr. GOWERS.—*Clinical Measurement of the Corpuscles and Hæmoglobin of the Blood.*

5. PROF. GAMGEE.—*Experiments with the Fibrine Ferment.*

6. PROF. PREYER, of Jena.—*Discussion on Sleep and Hypnotism.*

7. Dr. BROWN-SÉQUARD.—*The effects produced by various lesions of the Base of the Brain, on the excitability of the so-called motor centres.*

8. Drs. FERRIER and YEO on the *Cerebral Visual Centres.*

This, therefore, proved one of the most interesting of the Sections. The address in physiology, by Dr. MICHAEL FOSTER, on the Friday, was most eloquent and masterly. Addresses were read also in Medicine and

Surgery by Drs. Bradbury and Timothy Holmes. Throughout the meeting the good people of Cambridge exercised the most genial hospitality, and succeeded in making this one of the most successful meetings ever held. The soirées, garden parties, and conversaziones were largely attended and much appreciated after the severer work of the day was finished.

The colleges and most excellent museums and curious old churches were thrown open to the visitors, and every convenience was afforded to facilitate the working of the officers of the Association. At the public dinner in the hall of Trinity College about 370 members and visitors sat down, and the subsequent speeches were interesting, though somewhat numerous, and finally, on the Saturday, those members who could make time joined in the excursions to Ely, Peterborough, and Audley End, the latter being so arranged that those who wished could perform a pilgrimage to the tomb of Harvey. This large and successful meeting of the British Medical Association in the town of the largest of our Universities has a special significance in connection with the recent successful efforts, mainly of Dr. Humphrey, to promote the study of medicine at Cambridge.

CENTRAL VETERINARY MEDICAL SOCIETY.

At an ordinary meeting of this Society, held at No. 10, Red Lion Square, W.C., on July 15th, in the absence of the President, Mr J. Gerrrad took the chair.

Mr. G. A. Banham exhibited a specimen with vegetated growths on the valves and in the aorta, supposed to arise from carditis, the surface becoming roughened, and having blood on the roughened surface. The animal had diarrhœa before death. The history of the case would probably be given by Mr. Shipley, of Yarmouth, and appear in the *Veterinary Journals*. The animal died from diarrhœa associated with ascites, which might have been caused by congestion.

The *Chairman* introduced a specimen consisting of a portion of the spinal cord of a cow that was killed while labouring under the disease known as parturient apoplexy, which he thought might be interesting to the Fellows, as showing the true apoplectic nature of that disease. The part exhibited was the enlarged portion in the lower cervical and commencement of the dorsal regions, where the brachial plexus is given off. The membranes were intact when taken out, but on being cut into a large clot was found along the whole length of the specimen, about nine inches. It had been in spirits for two months, but the clot was still easily seen. He said he had made a number of *post-mortems* of this disease lately, and his conviction was strengthened that, in all bad cases, not only serous effusion but blood-clot was to be found, showing the fatal character of the disease and the hopelessness of any system of treatment. In some cases killed he had failed to find distinct lesions, and was frequently puzzled to account for it. He thought that *post-mortem* contraction of the arteries in slight cases, killed before effusion went so far as in this case, might account for the absence of visible lesions.

In reply to *Mr. Samson*, the *Chairman* said he had bled in nearly all stages of the disease, and did not think it was of much use in any. In the early stage he had frequently found it excite them more and make them

go down sooner. The idea was gaining ground that if bled before calving it was beneficial. He had used the galvanic battery with good effects in some cases, while in others, such as the specimen before them, it was of no use, nor did he think that anything could be; in fact, it was an incurable condition. One might as well ask a medical man to cure his apoplectic fellow-creature, as to remove the clot from such a subject.

He then asked the attention of the Fellows to Mr. Broad's paper on "Glanders and Farcy," read at the previous meeting, and said he regretted more members were not present to favour them with their opinions upon so important a subject, and trusted a good discussion might ensue.

The *Secretary* observed he had but little to say in relation to glanders; the disease did not occur in his practice once in six months. He believed that if a compulsory examination could be made, any one night of all the cab horses in London, and the result recorded, there would soon be great diminution of the disease; very many cab horses were knowingly or suspiciously affected, and frequently when such was the case they were laid by for a time awaiting the temporary appearance of the symptoms, and then disposed of. There was an American or German affection strongly resembling glanders, which had proved rather troublesome to some practitioners; he had had some such, and it was with difficulty he persuaded the owners the animals were not attacked with the contagious affection.

Mr. Sheather felt convinced very little would be done in a curative way as regarded glanders and farcy, and veterinary surgeons should rather turn their attention to the prevention of such disease, for which purpose he had brought an apparatus with him that evening for their examination, which was of great utility for disinfecting stables. Many stables were badly ventilated, and it was difficult to keep a current of pure air through them. The apparatus consisted of a steam boiler, with a separate lamp underneath; the pressure could be regulated to thirty, forty, or fifty pounds to the square inch; when turned on full a spray could be thrown out a distance of eight or nine feet (illustrating it), and when suspended from a ceiling of a stable by a meat-jack and rotating the spray went through the air all round. Anything might be used by it, but for disinfecting purpose carbolic acid was necessary, and by being emitted from the apparatus exhibited the air was thoroughly purified. It was also very useful in cases of ophthalmia; a horse would stand quiet and permit a person to spray his eye, and one could follow the motions of the animal's head; thus, any lotion could be used, whereas in the ordinary way most of it was wasted. He had never known a horse refuse its application. The apparatus was rather expensive—costing £5 5*s.*, but was unlikely to wear out, and he believed it would amply repay its cost.

Mr. Hancock said he heard an argument raised with reference to the temperature of the discharge from the nostrils in glanders; some asserted it was cold, others that it was warm. He would like the opinion of gentlemen present on this point, because if it was a positive fact that the discharge was always a certain temperature, it would be of great assistance in dealing with the disease, concerning which one *fact* was of far greater assistance than any amount of theory.

Mr. Hunting observed he hoped the discussion they would have might elucidate some further points, and, if possible, give them a standard work upon glanders and farcy. A great practical difficulty was to decide what was glanders and what was not. Frequently there were

many different symptoms and complications due to other diseases, and very few diagnostic; in truth, there was no single symptom of glanders but what might be found in other diseases, and a diagnosis could only be made by considering the whole group of symptoms. Veterinary surgeons, as a rule, were inclined to err upon the side of saving the animal's life. When called in by the owner they frequently expressed doubt and would look for the ulcer in the nostril, without which many thought the animal ought not to be killed. This idea should be exploded at once. It was very difficult for one, as an inspector, to condemn a horse without risk of much bother, especially if the owner produced some veterinary surgeon to say the horse was not suffering from glanders, in which case one would run the risk of having an action for damages brought against him. According to the Act of Parliament no man has a right to have a suspicious horse about the streets, and a policeman is justified in stopping such a case as much as if it was a most confirmed case of glanders. This was an advantage, because one could order a suspicious case to be isolated, and few persons cared to provide a place for that purpose, and preferred having the animal destroyed instead. At times one meets remarkable cases of glanders complicated by other diseases, or arising as the result of accident. That either farcy or glanders could be originated as the result of some other disease he would deny. In all cases where glanders or farcy supervened upon another disease or injury, the poison had existed in the system for some time, and would become developed sooner or later, but accident or other diseases might tend to develop the primary affection. Some time since he had a case in which the first appearance the animal presented one would think it was a case of acute farcy; the animal had farcy buds all over him. He set the case down as nettlerash accompanying acute glanders. The buds varied in size from a pea to a walnut. There were the usual symptoms of acute glanders—the discharge of pus and blood from the nose with well-marked ulceration.

As regarded the temperature of discharge, he thought no faith should be placed in it whatever; had not used a thermometer to ascertain it, but within a few degrees could trust to his hand. In cases of acute glanders, with much inflammation, there was a higher temperature. Sometimes the discharge was from the lungs and not the nostrils, in which case, no doubt, the temperature was higher than in other nasal discharges. He had seen a case which bore upon the question, in which a horse, having no discharge from the nose whatever and no enlargement of the glands, walked some distance. At the end of its journey it was seen by the slaughterer to have a very considerable discharge from the nose, and some enlargement of the glands. That was on a Saturday. He saw the horse the day following and the swelling in the glands had nearly disappeared, and there was no ulcer in the nostril. The horse was killed. Upon making a *post-mortem* he found it had glandered lungs, from a cavity in which there had, no doubt, been a recent escape of purulent matter. This case also proved the incurability of farcy. The animal was most undoubtedly suffering from an attack of farcy some four years previous to death, when it had glandered lungs, but no veterinary surgeon could have detected any disease in the animal. There were many other cases met with which tended to prove that one could not believe more in the curability of farcy than they could of glanders. It was arguable that in some of the very slightest cases of farcy, where there was very slight swelling and only one or two farcy buds, some good might be done, but it would not hold good that it was a curable disease. If farcy were curable there would be a very strong argument against the Government in enforcing the slaughtering of all

animals suffering therefrom, and given no compensation. He attended the meeting that evening specially to bring this view before them. In the year 1873, before the Parliamentary Committee, Professor Brown gave evidence upon the subject of glanders and farcy, and he there (as did also Mr. Hunting) recommended the allowance of compensation for farcy; they did so simply because it was a question whether some of the very mild cases were curable or not, and if curable it was hard to receive no recompense for the loss of an animal. In cases of pleuro-pneumonia compensation was given for animals slaughtered; in other words, the animal is slaughtered in the public weal and the man compensated, but in glanders and farcy no compensation is allowed. The argument against allowing such would be—that farcy can by means of inoculation produce glanders, and that a man is having a good turn served him by the removal of such a disease. So long as uncertainty existed as to the curability of these diseases, human nature would continue to treat them. Many persons in London and the country treated farcy regularly. He did not know whether to blame them. If compensation was given to the extent of one half the value of an animal the incentive to treat cases would be taken away, and sources of contagion would not be kept upon men's premises; the law should take notice of this, and try and hit upon some expedient to induce a man to get rid of all cases of farcy in the early stages; it was quite possible to stamp out the disease in this country just as much as the cattle plague. The Government should give compensation in all mild cases of farcy, and then we should get rid of farcy and glanders in about two years.

As to disinfecting stables for glanders and farcy, he would venture to say he disbelieved in it as usually carried out. To properly disinfect requires about two and a half per cent. of carbolic acid to destroy the poison of glanders, and that strength is about four times as strong as most disinfectants used. To think that the atmosphere of a stable can be disinfected is utter nonsense, because the disinfectant, if used in sufficient strength to purify the air, rendered it destructive to animal life. The plan he adopted was to see that the stable was thoroughly washed first with boiling water and soda and then scraped down (the law requires powder), and he used a bit of limewash afterwards, but never permitted that to be done until it had been thoroughly washed with carbolic acid of two and a half degrees; then one had true disinfection, but not otherwise.

Mr. Shaw had tried some experiments in relation to the temperature of the discharge from the nostrils, and considered his own hand the best test, and observed it was either deathly cold or very warm indeed; some practitioners differed and asserted that the discharge was always cold. He was aware diseased horses worked about London at night, and, in his opinion, many diseases were brought about by drinking troughs, particularly among horses belonging to market men. Several cases he knew of could be distinctly traced to this cause. In reference to disinfectants, before used the place should be thoroughly scrubbed and whitewashed; many stables were so old and filthy they were only fit to be pulled down and burnt.

Mr. Sheather thought if compulsory slaughtering were introduced, fully one third of the cab stables would be pulled down. If to disinfect the air was a myth, as Mr. Hunting had observed, still an owner of a stable is justified in adopting means to preserve ventilation, if there is no draught; one should purify the air in some way or other. With the apparatus he had exhibited a spray consisting of steam and carbolic acid could be thrown out; it certainly was one method of keeping a stable

healthy. He believed farcy affected the whole animal tribe. He had known many cases recover and work well, and apparently get quite well, but some morning or other one's attention was called to the animal; sometimes there is a discharge, and the symptoms return again. Cases of farcy were *never* cured; the disease still existed, and the secretions from the animal would create the disease in healthy animals, and the one diseased was rarely suspected as the cause. He knew a case where the culprit escaped detection for a long time. Wherever there was a suspected case he would have it destroyed at once, it was the cheapest plan in the end. He always advised his clients so, and if they refused he would not undertake treatment. In cases of supposed cure one would find that if the animal was galloped it would roar; this also applied to suspected cases (he would not say it was diagnostic). He had heard them groan, and observed, in the majority of cases, that as the farcy disappeared the groaning diminished. Two or three years since, by way of treatment, he injected into the jugular vein of an animal twenty or thirty drops of carbolic acid dissolved in glycerine. It slowly recovered and the limb returned to its normal size, but the acid produced atrophy of the muscles, for which it had to be destroyed. It was beneficial for farcy, but produced wasting away of the muscles and extreme debility.

Mr. Sampson said some years since he remembered treating and recovering a valuable horse; he personally attended him. He had eighteen buds, cost no end of money, and ate a great deal. He galloped him round the grounds and found he grunted; since then he had observed this symptom in other horses affected with farcy. Another case of farcy he knew in which the animal had only one bud on the neck. He was eight or nine years old. He made a *post-mortem* on him, and could find no trace of farcy. Syphilis was a blood poison and was curable, therefore farcy ought to be curable. It was worth while to consider farcy in this light.

Mr. Sheather could not see why the public should be compensated for lung disease more than for glanders and farcy; if compensation was allowed more cases would be reported. He did not believe in whitewashing stables, the infection was still kept there. He used small hoes to scrape down the walls, and then scrubbed them with hot water and carbolic acid, and unless that was done the whitewashing had no good effect. He considered horse repositories a great source of infection; the inspectors should visit them before a sale, and inspect the horses. Cabmen and omnibus proprietors having suspected horses instead of killing them sent them to be sold. He knew it by having purchased horses at sales himself. Such horses when bought spread infection among others,

Mr. Shaw drew attention to the fact that frequently grooms used brushes and combs that had been used to diseased horses to healthy ones, thereby spreading the disease.

The *Secretary* said he would like Mr. Broad to give him his experience of the mirror he produced on a former occasion to which he (the Secretary) took exception as being too flat. Also, was it possible to refuse entry to any officer for the purpose of inspecting a case or supposed case? Also, if he advised a client to have a horse destroyed without stipulating the disease, and the knackers on cutting the animal up for meat discover it to be diseased, does the owner incur the penalty, or both of us?

With reference to stables, many of them were rickety and slovenly to the last degree—broken doors, displaced boards, &c. It frequently happened that the animal that caused the spread of the disease in a

stable escaped detection for a long while. One remarkable case he remembered hearing detailed at a previous meeting. The disease had broken out among the Duke of Salisbury's horses, and a veterinary surgeon was sent for. He minutely examined all the horses and stables without detecting the cause. He then inquired if he had seen all, and was informed he had. He could not account for the outbreak and again made inquiry, and was told there was only one more horse, the Duke of Wellington's old charger, which was allowed to run out, and was pensioned off. He asked for him to be brought, and found it to be a most confirmed case of glanders.

Mr. Banham thought inspectors should have no other duties, and that a private practitioner could not conscientiously perform the duty of an inspector. As regarded stables, he agreed with Mr. Hunting. Some persons believed glanders to be a fixed virus, others thought it volatile. He thought it should be considered volatile.

The *Chairman* said he read with profit Mr. Broad's paper in the *Veterinary Journal,* and had enjoyed the discussion that evening. His experience of glanders and farcy was rather limited compared to several of the speakers. Since coming to the neighbourhood of London he had unfortunately seen too much of these diseases, and from the facts brought out in discussion it seemed to him London was the producing centre or hot-bed for the disease. All the cases he had seen in his district could be traced to its source in London, or from horses sent down to graze; felt convinced drinking troughs were a great source of its spread, the same as it had been alleged drinking fountains are a source of disease to the human family.

Regarding the question of temperature of the discharge in this disease, as a means of diagnosis, he could not speak confidently, having never tried it, but thought it would very much depend upon where it was taken from and the exposure it had been subjected to, and great precision would be necessary to enable a correct conclusion to be drawn from this test, so as to form it into a diagnostic symptom. There was another subject relating to the diagnosis of this disease, and one which had been frequently regarded as diagnostic, that had not been referred to that evening, viz. the *density* of the discharge. This was first noticed, he believed, by the late Professor Barlow, who taught that the discharge from a glandered subject was very heavy and sank in water, while the nasal discharge from a common cold or influenza would float in water, the explanation being the excess of albuminous material in the glander discharge. This test he had known to have been used in courts of law to ascertain the presence or absence of the disease, but he considered it rather misleading and not to be depended upon; and, as stated by Mr. Hunting, there were no thoroughly differential diagnostic symptoms of the disease; and frequently, if we wait until the nature of the discharge or ulceration of membranes enables us to give a definite opinion, the subject may have done any quantity of mischief to the stable or the animals he may have been in contact with. Hence the necessity of dealing early with a suspicious case, and acting as much upon negative as positive evidence of the disease.

With respect to disinfectants, he believed good might be accomplished by using such an apparatus as Mr. Sheather had exhibited in destroying the germs or purifying the atmosphere of the stable, or, at least, some stables, such as we find under railway arches and such like, where it frequently breaks out, or where the air is still and no draught exists. This principle Mr. Greaves, of Manchester, introduced to their notice a few years since, by burning large quantities of fuel in some of those

crypts and *cul-de-sacs* about Manchester called stables, where influenza prevailed, not so much on the principle of burning the germs out of the air as the induction of a current by means of heat and a better circulation of pure air.

As to the curability of farcy, he pleaded guilty to having attempted to treat it, and with variable success. He had cured some cases which remained well for years, while others resisted all the medicine in use, even Mr. Moore's specific *kali bichromicum*. Had not noticed the grunting said to be present in those cases cured of farcy.

One point noticed by Mr. Broad had not been referred to that evening, viz. the change of name he suggested for the disease. He (the Chairman) did not think any of the names mentioned would be suitable, and doubted whether a better could be found than that at present in use, which, although it did not give any idea of the nature of the disease, was sufficiently expressive for all practical purposes, especially when they reflected upon the fact that so little was known of the essential nature of it.

There was one point, he said, that he should be inclined to join issue with Mr. Broad in, regarding the spontaneous origin, or whether it was ever produced *de novo* in the horse. He believed that it could be, and that it did arise in circumstances where, according to all human foresight, contagion was impossible, but as the subject had not been touched upon by any of the Fellows, and it was rather late, he would defer any remarks to some future occasion.

Mr. Broad, in reply, said he differed from the Chairman, who believed the disease might be spontaneously produced, and Mr. G. Fleming had changed his ideas, as they would see by reference to the number of the *Veterinary Journal* for June last. With reference to the mirror alluded to by the Secretary, it was of assistance in cases where a horse was fractious or given to sneeze; in several cases lately he had found it extremely useful in discovering ulcers highly situated. Any inspector could enter a stable if he suspected a horse to be diseased. A veterinary surgeon was not compelled to give notice of a case. It might be desirable if such were the law, but he believed any opinion given by him would shield the owner from proceedings; the owner looks to him for advice, and if he can say the veterinary surgeon would not give an opinion he would be shielded. He agreed with Mr. Samson as to horse repositories spreading the disease; there was not sufficient care taken in admitting horses to such places. Mr. Sheather had drawn attention to groaning as a symptom that would indicate lung mischief, which could only be detected by auscultation and alterations in respiration. Temperature of discharge had been touched upon by Mr. Shaw and Mr. Hancock. He had never made examination with that view, but believed it mainly depended upon the length of time the discharge had been exposed, but considered no value could be attached to it as a diagnostic symptom. He agreed with Mr. Hunting that there was not any symptom always present, but regarded the ulcer in the nose as diagnostic. He considered that compensation for farcy and glanders had much to recommend it, but would involve great difficulty. If it were for farcy only it would be hard to draw the line of distinction. Owners will treat farcy, and the authorities would do well in the interests of the owners and the public, in preventing this. As to tubercles on the lungs as a symptom of glanders, their presence being found on *post-mortem* examinations would not always enable us to say that the horse was the subject of glanders. He believed it was more essential to disinfect the stables and walls thoroughly than it was to

attempt to disinfect the air; thought the poison might be carried through the air at times.

After some further remarks it was agreed to adjourn the discussion until next meeting (specially appointed) to be held on August 5th.

The usual vote of thanks were then passed, and the proceedings terminated.

Present 11 Fellows, and 3 visitors.

JAMES ROWE,
Hon. Sec.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE usual summer quarterly meeting of the Society was held at the Queen's Hotel, Leeds, on Thursday, the 22nd July, the President, Mr. W. G. Schofield, in the chair. The following members were present, viz. Messrs. Naylor, Jas. Freeman, Anderson, J. S. Carter, Peter Walker, J. M. Axe, Lodge, Deighton, and the Secretary. Messrs. Robertson, Howard, and Lawson, M.R.C.V.S., Leeds, and Mr. Greenhalgh, student, likewise attended the meeting.

Apologies for non-attendance were received from Prof. Williams, Messrs. Dray, J. and J. Freeman, T. Greaves, Danby, Patterson, and Ferguson.

The minutes of the last meeting were read and confirmed.

A letter from the Secretary of the Council of the Royal College of Veterinary Surgeons, thanking the Society for the offer of assistance in obtaining a penal clause, was read.

The *Secretary*, on behalf of Mrs. Cuthbert and family, thanked the members for their kind expression of sympathy which had been embodied in their resolution.

The *President* said that he deeply lamented to inform the meeting that death had again visited their Society and removed from among them one of their young and respected members. With a few well-chosen sentences of sympathy he moved that a letter of condolence be sent to Mrs. Murdoch and family, expressive of the deep sympathy of the Society with them in their recent sad bereavement. *Mr. Freeman* seconded. Carried.

The *Secretary* proposed, and *Mr. Naylor* seconded, the election of Mr. Robert Lees Robertson, M.R.C.V.S., Leeds, as a new member. Carried.

Mr. Deighton nominated Mr. Snarry, York.

Mr. Freeman nominated Mr. Wm. Chambers Lawson, Leeds.

Mr. Howard then read the particulars of a case of violent injury to the fetlock-joint in a mare, the parts being severely crushed and lacerated; and although Mr. Howard expressed his opinion that treatment would be useless in the case, the owners persisted in a trial of recovery being made. The mare was placed in slings, where she remained for many months, during which time the parts went through the various phases of inflammatory action, until complete anchylosis, associated with caries of bone-tissue, had taken place. After a period of twelve months the animal was destroyed.

Mr. Howard exhibited the pathological specimen, which was exceedingly interesting and instructive. [See appended history of the case.]

Mr. Naylor stated that recently there had come under his observation several cases of malignant sore throat in the low-lying districts of

Wakefield and Pontefract, and although the animals had mostly done well, yet great care and attention had been requisite to carry them through the low type of febrile disturbance which existed.

The *President* also related some cases of sore throat occurring amongst the horses on a farm, traceable to the drinking of water impregnated with sewage.

Mr. Lawson narrated the particulars of cases simulating strangles, arising from the drinking of impure water, occurring upon a large farm in Herefordshire.

Mr. Freeman likewise mentioned some cases of throat disease, originating through impure drinking water.

Mr. Lodge gave the details of a persistent and troublesome case of abscesses in the parotideal region which he had under treatment. A large tumour had originally formed on each side of the throat, rendering deglutition difficult and the elevation of the animal's head impossible. The application of constant fomentations and poultices, with subsequent use of blisters and setons, had failed to give relief.

The *President* related a case of obstruction of the bowels, in which he had extracted a large calculus from the rectum, showing the necessity of exploring that bowel in these cases. The calculus was high up in the bowel.

The *President* also exhibited a case of fracture of the sacral and lumbar vertebræ. The mare had been thrown down an embankment, and in the course of a week was apparently ready to work. She was, however, at the end of that time found down and unable to rise, the true nature of the injury being now apparent. She was consequently at once destroyed.

Messrs. Walker, *Anderton*, and *Lawson* made a few remarks upon the treatment of fracture, after which the meeting broke up.

WM. BROUGHTON, *Hon. Sec.*

PARTICULARS OF THE CASE NARRATED BY MR. JOHN HOWARD, M.R.C.V.S., ON COMPLETE ANCHYLOSIS OF THE METACARPAL ARTICULATION IN A CHESTNUT MARE.

ON the 12th May, 1878, a fine chestnut mare, six years old, and valued at 100 guineas, the property of Messrs. Lucas and Aird, Silvertown, and North Woolwich, London, the contractors for the New Victoria Dock Extension, met with a serious accident, by being knocked down by a truck used in tipping on the new dock embankment. One of the iron wheels of the truck passed over her fetlock-joint, crushing it severely between the wheel and the iron rail.

The injury presented the appearance of a very serious lacerated and contused wound, the joint being completely opened on the inner side, and, as may be supposed, the animal's suffering was intense. When seen by me she was at once placed in slings, and fomentations applied as early as possible. A paste, composed of carbolic acid, flour, and camphorated water, was applied, and over it a white linen bandage was placed, which was kept continually saturated with carbolised cold water.

The constitutional disturbance was severe, and the animal suffered so much pain that in the early part of the case I anticipated that death would result from irritative fever, inducing marasmus and general wasting of the tissues.

While this severe suffering existed I used an injection of muriate of morphia three times a day, which proved extremely valuable, never failing to afford temporary relief. When not under the influence of the sedative she would place her head in the manger, and resting it there by an hour at a time, would groan aloud, and occasionally raise her mutilated limb, although the act evidently was accompanied with severe torture.

It was not until the expiration of six weeks that the severe constitutional symptoms had subsided, but the discharge from the joint had become so offensive that it was evident that internal caries and necrosis were going on. Under these circumstances I recommended that the mare should be destroyed, the case being quite hopeless. The firm, however, determined on further treatment, regardless of the advice tendered, being doubtless influenced by the fact that I had attended the stud, which was a large one, for some years on contract, and therefore the treatment of this case involved no extra expense to them on the score of surgical treatment.

The mare was kept on hand for twelve months, during the first six of which the wound continually discharged large quantities of glairy fetid lymph. By the end of the seventh month the external opening was completely closed, and although an open joint no longer existed, yet a low form of inflammation persisted in the interior of it. Slings were continually used up to the end of the eighth month, when their use was dispensed with, but only by day.

At the end of the tenth month, although still very lame, she was turned into a field close by to graze; but she experienced so much difficulty in walking that she began to lose flesh, and when she laid down could not rise without assistance.

The affected joint had now lost all mobility, and as the lameness was on the increase the owners ordered, at the end of twelve months, her destruction.

Description.—Mr. Howard said, I have here a beautiful specimen (or rather an appalling one) of acute inflammation of bone. The compact tissues of the epiphyses of the great metacarpal and os suffraginis, you will observe, have thrown out numerous coral-like projections, which completely envelope the joint, producing *anchylosis.* The inner condyle and central ridge of the metacarpal are marked with porcellanous deposit, while the corresponding articulatory surfaces of the os suffraginis are almost covered with the same pathological product.

Again, the external condyle of the metacarpal, and the subjacent socket of the os suffraginis appear to have suffered most from destruction of their articulatory cartilages, the compact tissue being completely removed by carious ulceration, which had been insidiously making its way into the cancellated structures of both bones. You will observe also that both the sessamoids are involved in the anchylosis.

I have introduced this case as a good illustration of the pathology of open joint, for it is very rare indeed that one of the kind is permitted to run uninterruptedly through all the phases of disease for a period of twelve months, and that in direct opposition to the expressed opinion of the surgeon in attendance. However, the case owed its existence for such a length of time to its being one of a contract, which did not at all sensibly increase the annual outlay for professional attendance.

NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

At the meeting of this association held at the Norfolk Hotel, the President (Mr. A. H. Santy, F.R.C.V.S.), presiding, the following gentlemen were present:—Mr. W. Shipley, of Yarmouth, Mr. F. Low, of Norwich, and Mr. E. Barker, of St. Faith's (Vice-Presidents); C. Williams, Esq., F.R.C.S. (Norwich), Mr. J. K. Gooch (Holt), Mr. W. Ellis (Hempnall), Mr. J. Hammond (Bale), Mr. T. Augur (Wymondham), Mr. S. Smith (Lowestoft), Mr. H. Newson (Beccles), Mr. G. Whincop (Norwich), Mr. J. D. Overed (Blofield), Mr. Findley, V.S. (Inniskilling Dragoons), Mr. W. Bower, (East Rudham), Mr. L. Butters (Norwich), and Mr. Santy, jun.

The minutes of the last meeting having been passed, the President read letters from General Sir Frederick Fitzwygram, Bart., F.R.C.V.S., and other eminent members of the profession, stating their inability and regret at not being able to be present on this occasion, but who expressed their willingness and desire to attend at the next meeting of the association. Mr. G. A. Banham of the Brown Institution (London), wrote, suggesting that a paper upon the effects of lightning on animals would be very desirable in connection with this society; and subsequently it was resolved, on the motion of the Vice-Chairman, seconded by Mr. Bower, that Mr. Banham be thanked for his suggestion and that he be invited to read a paper on this important subject at the annual meeting to be held in January next, when it was anticipated there would be a large gathering.

The accounts of the present date were presented and showed a balance of £15 18s. On the motion of Mr. Hammond, seconded by the Chairman, Mr. J. Carter, M.R.C.V.S., of Litcham, was elected a member of the association, and Mr. G. A. Banham of the Brown Institution, London, was also elected.

The President then drew attention to the desirability of terminating the official year in December instead of July as heretofore, and the election of officers at the same period, and moved that this alteration be made forthwith. This was seconded by Mr. J. D. Overed, and agreed to unanimously, the opinion being expressed that the annual meeting should be held in January if possible, and not later than the first week in February.

The President, who was heartly received, in offering a few remarks to the meeting, congratulated the association on its position, and the manner in which it was recognised by the profession and by other veterinary medical societies. They had been called upon to assist in returning certain members to the veterinary Parliament; and he could not help feeling proud and gratified that not only had the chosen of their combined associations been elected, but that Mr. Geo. Fleming, F.R.C.V.S., their especial nominee, had been returned at the head of the poll, and had been unanimously chosen as the President of the Royal College of Veterinary Surgeons for the ensuing year. As President, Mr. Fleming had represented the profession at the Congress in Belgium. He (the President) was very pleased that the question of the penal Act, which was mooted in this society two years since, was now receiving attention from headquarters; and that three of the principal Veterinary Associa-

tions, the Yorkshire, Lancashire, and Liverpool, had forwarded letters in support of the above act. He hoped that the members of this association would authorise him to forward a similar letter giving the act their cordial support. It would doubtless be noticed by the members that their worthy president had moved in council that steps be immediately taken to obtain an Act of Parliament for the protection of the title of Veterinary Surgeon; and he (Mr. Santy) as the principal officer of this society had forwarded a letter of congratulation to the president on his election, to which he most courteously replied. He earnestly hoped that when they obtained the penal Act, that the members of the Council would strictly enforce the apprenticeship clause, as he was quite sure it was impossible to have good veterinary surgeons unless they learned in early life the numerous details and delicate manipulations required in general practice, and nothing could be more uncomfortable or detrimental to the advancement of the individual, or more derogatory to the profession generally, than seeing its members gradually educated by their own blunders at the expense of the public. (Hear, hear). The President then briefly alluded to the satisfactory character of the balance sheet, and to the alteration of the period for the official year; and in conclusion expressed the hope that each member would individually feel himself responsible for the welfare of the society and strictly adhere to its objects, by doing which he would not only assist in advancing his chosen profession, but would most assuredly rise in his professionaland social status. (Applause).

Mr. J. D. Overed, M.R.C.V.S. (of Blofield) the hon. secretary of the association was then called upon to read a paper entitled "Cases from my Note Book." He commenced his remarks by expressing the opinion that it was quite unnecessary, in the presence of gentlemen united as one man for the express purpose of promoting veterinary science, and who periodically meet together for open discussion and free interchange of ideas on important subjects in connection with veterinary medicine and surgery, to insist upon the necessity of each one being ready and willing, as opportunity offered, to respond to the call of duty, but, nevertheless, they must not forget that it was by individual effort, and by personal interest alone, that success could crown their exertions. Addison had said, "'Tis not in mortals to command success," but he significantly added, "We can do more; we can deserve it." Let them see in future, as those having the welfare of this association at heart, and desirous of seeing it established on broad, firm, and permanent basis, that their efforts and their motives should be such as to deserve success; and he believed the day was not far distant when they would be able to congratulate each other on having attained it. On this occasion he did not attempt to prove a pet theory, nor to illustrate a particular subject by the composition of an essay; but his object was rather to give this meeting a practical turn by relating a few cases which had been brought under his own observation in the ordinary routine of his practice as a country veterinary surgeon, which he trusted might be of interest. He hoped that the discussion and the opinions expressed would increase their knowledge and power in the exercise of their professional duties to assuage the sufferings, to mitigate the sorrows, and add to the happiness of those domesticated animals with which the well-being, the prosperity, and the pleasure of mankind were so closely identified. Mr. Overed then proceeded with his paper, which was of an interesting and gossipy character, including a variety of cases, among which were—injury to the superspinous cervical ligament (*ligamentum nuchæ*) in a colt; singular case of a horse falling through a railway bridge; two

cases of ruptured bladder in a mare and bullock; rupture of diaphragm in a colt, &c. &c.

There was considerable discussion on all the cases cited, the first one eliciting an hour's instructive conversation.

Mr. L. Butters, M.R.C.V.S., followed, giving a case of tumours in the ventricle of the brain of a horse, and describing the symptoms of the case up to the death of the animal. The diseased organ was submitted to the inspection of the members, and some discussion took place in regard to the progress and symptoms of this malady among horses.

The question was asked by *Mr. Williams* if the well-known disease of megrims in the horse had any connection with the incipient stage of these tumours.

The *President*, in reply, thought it very probable that such might be the case.

Mr. Charles Williams was requested by the Chairman to give the members the result of his examination of the animal's brain. He stated that the right ventricle contained a long oval tumour, half the size of a turkey's egg, having a smooth surface, being firm to the touch, and of a dark-brown colour, similar to the external surface of a human spleen. A smaller tumour existed in the opposite ventricle, attached to and springing from the choroid plexus. On making a section of the tumour, its inner aspect presented a number of yellowish spots of various sizes, most of them being of the size of a pea. They were soft, and had the appearance of tubercle in a state of caseification. The soft yellow material could be enucleated from the cysts, and when examined microscopically were seen to consist wholly of plates of cholesterine and oil globules. A portion of the tumour, when allowed to dry, shrivelled into small lumps of shining scales like minute plates of mica. Neither cancer nor tubercle were found in connection with these tumours.

At the close of the discussion the *Chairman* proposed a hearty vote of thanks to the hon. secretary for his paper, saying that it might teach some of them the lesson of not arriving at a conclusion in a case with too much haste. This was seconded by *Mr. Bower*, and carried unanimously. A similar compliment was paid to Mr. Williams on the motion of the *Chairman*, who alluded in terms of praise to the fact that Mr. Williams took an active interest in this society, and also to his kindness in giving information to the members on the present occasion. The *Vice-Chairman*, who seconded, expressed the hope that other medical men would pursue the same course with regard to this association.

A cordial vote of thanks was then accorded to the worthy president for the able manner in which he had discharged his duties; and subsequently a number of the members partook of tea, after which the proceedings terminated.

Veterinary Jurisprudence.

DISPUTED LIABILITY FOR LOSS OF SHEEP BY ROT.

SOMERSET ASSIZES. NISI PRIUS COURT. Before Mr. JUSTICE GROVE.

JONES *v.* BUTLER.

THE importance of this trial, both to agriculturists and members of the veterinary profession, has led to our republishing it *in extenso*.

Mr. J. F. Norris, and *Mr. G. Pitt-Lewis*, instructed by Messrs. Cruttwell and Co., of Frome, for plaintiff, a farmer of Upton Scudamore; and *Mr. A. Collins*, Q.C., with whom was *Mr. Prior Goldney*, instructed by Messrs. Keary, Stokes, and Goldney, of Chippenham, for defendant, who occupies Bromham House Farm.

Mr. Norris, in stating plaintiff's case, said that plaintiff attended Marlborough Fair on the 24th November last, and made a deal with defendant for 100 ewes at 33*s*. each. Defendant had at first asked 40*s*., but subsequently they agreed upon the former price, defendant warranting the soundness of the flock, and this fact was stated on the cheque by which payment was made.

The sheep went back the same night to defendant's farm, and on the following morning they were driven to Upton Scudamore, and pastured on down lands the same evening. On the road they were detained a short while until some lambs were separated from them, which had to go in another direction. This took place on the high road, and neither here nor during the whole journey had the sheep any opportunity of taking herbage that could have caused any mischief. The spot where they were pastured on plaintiff's farm was perfectly dry and healthy, situate about 1000 feet above sea level, and there they remained till the 16th or 17th of February, when lambing commenced, in charge of a shepherd named Carpenter. On the 14th February, one of the ewes had died, but plaintiff set it down to chill, and took no notice of the circumstance. On the 6th of March, however, two died, and on the 15th, three, and then one a day was lost on the 17th, 29th, 30th, 31st, two on the 2nd, April, and one on the 9th. Plaintiff was now convinced that something other than chill was carrying off the sheep, and on the 10th, of April, he wrote to Mr. Butler, informing him that about 20 out of the 100 ewes were dead, and he feared nearly the whole would die, and he asked defendant to come and see the sheep. Mr. Butler replied that "he was sorry to hear of the loss Mr. Jones had had with the ewes, but it was such a long time since he sold them. He knew several cases of sheep bought at Marlborough Fair from other sound flocks, and all of them had been dead some weeks, some in the neighbourhood of Seend." On the 15th April, plaintiff went to Devizes Market, and had some convervation with defendant about the sheep. At that time he had had one of the sheep examined by Mr. Day, veterinary surgeon of Warminster, who found the liver fluked. He told Mr. Butler at Devizes that he was willing to put the matter into the hands of two friends—one to be selected by each party, and he would accept their decision. Mr. Butler did not give an answer to that proposal at the moment, but on the 20th April, when at Devizes Fair, he told plaintiff that he had turned the matter over in his mind, and he did not see he could do anything at all, and

upon that plaintiff replied, "Then we must have a fair fight for it." Plaintiff subsequently instructed Messrs. Cruttwell and Co., Frome, who, writing to defendant, informed him that a sheep had been "opened and examined by two well-known veterinary surgeons, who find it to be a most fearful case of flukes in the liver, and pronounce that the disease must have existed long before the date of the sale by you to our client." Messrs. Cruttwell reminded him that he had warranted the sheep sound, which he no doubt believed to be the fact at the time, but "about the beginning of last month (February), the best of the sheep began to die off suddenly, and the probability was that their client would lose every-one of them." They asked him to go and see the sheep, and he did so, accompanied by Mr. Beasley, veterinary surgeon. One of the sheep was opened in the presence of Mr. Beasley and Mr. James of Frome, and he (the learned counsel) understood that some flukes were found in it one and a half inches long. No satisfactory arrangement, however, was come to between the parties, and plaintiff had been compelled to bring the present action. At the time it was entered 62 out of the 100 ewes had died, besides 70 of their lambs, and the remainder (38) were in a hope-lessly diseased condition, and were subsequently sold in Frome Market with seventeen lambs for £38, less £1 expenses. Plaintiff had also in-curred expenses in the shape of milk, extra food, and labour, amounting to £50,—two milch cows having had to be obtained purposely to provide extra nourishment. The full amount sued for was £177. His learned friend no doubt would contend that the sheep were sound at the time they were sold, and when the warranty was given, and that they had contracted the disease either upon plaintiff's farm or upon the way there. It seemed that after they were bought they were taken back to defendant's farm at Bromham the same night, by defendant's own man, along with thirty lambs, and that on the following day the remainder of the journey was completed, the flock having been detained for about half an hour in Bratton drove, while the lambs were picked out to go in another direction to Mr. Francis's, who had bought them. It probably would be contended that the disease was contracted by the sheep picking the herbage in the lane. But it was a hard stone road, and there was no place where the sheep could feed. The plaintiff's farm was a perfectly healthy one, and it was impossible that the sheep could have been baned after they arrived there. The veterinary surgeon would tell them that sheep were not known to become fluked after the month of October, and they would remember that the ewes were not bought till November the 24th. It seemed that when once the germs had been taken into the animal, though they could not be exterminated, their development might be retarded by careful treatment, and might not show itself for a long time. In the first stages of the disease the animals fattened very rapidly, and if they were wanted for the market, and were put into a wet meadow where they might pick up the germs, they soon considerably improved. Mr. Norris then called a large amount of evidence bearing on the purchase and subsequent movements of the sheep, and also as to the character of the fluke disease.

The plaintiff, *Ishmael Jones*, examined by *Mr. Pitt-Lewis*, said that on the 24th November, 1879, he attended Marlborough Market and made a deal with defendant for 100 ewes at 33s. a head. Defendant warranted them sound and he paid him by cheque. It was arranged that Edward Snelgrove should drive them back to Mr. Butler's, which was about fourteen miles from Marlborough, for the night, and that they should go the remaining twelve miles to Upton Scudamore on the following morning. His farm included one field of 308 acres right

on the downs, a portion of Salisbury Plain in fact. It was a thousand feet above the level of the sea, precisely on a level with Bratton Castle. It was on the chalk, and very dry indeed. No sheep that he had ever heard of had been fluked there. The sheep went on to that land the night they arrived, and remained there till the 15th or 16th of February, when they were taken away for lambing. They were then put into a standing pen pitched for the purpose, and they were bedded with wheat straw every day. That was also a very dry place. The first ewe died on the 14th February. He thought it was a mere chill, and paid very little attention to it, as they were supposed to lose six or seven per cent. in lambing. Two more died on the 6th March, and up to the 9th of June he had lost 62 out of the 160 and about 70 of their lambs. He sold the remainder in Frome Market, and they realised £38, from which £1 expenses had to be deducted. He was put to considerable expense owing to the ewes having no milk, and having to get two milch cows. Two extra men were also required, and with other expenses he had lost about £50, besides the difference between the £164 paid for the sheep and the £37 realised for the remainder in Frome Market. The best sheep in the flock died on the 9th April, and he had it opened and the liver sent to Mr. Day. On the 10th he wrote to Mr. Butler, and on the 15th he saw him in Devizes Market, and told him the sheep had the bane very bad.

Witness added that he told Mr. Butler that in the opinion of the veterinary surgeon all the sheep would die, and that if he (Mr. Butler) would appoint some person he would do the same, and they would settle it in that way. He advised him to think it over till the following Tuesday, which would be Devizes Green Fair day, and Mr. Butler said he would do so. He accordingly saw him at the fair, and he said, "He had made up his mind to do nothing; do as you like." Witness replied, "If that is your mind we must have a fair fight for it. It's useless for us to stand here and argue the matter ourselves." He then put the matter into his solicitor's hands, and the letters referred to by the learned counsel passed between them. On the 7th May Mr. Butler, accompanied by Mr. Beasley, veterinary surgeon, went to his farm, and he (witness) had Mr. James, veterinary surgeon, of Frome, waiting to meet them. Mr. Beasely removed a fluke one and a half inches long from one of the sheep that had died. There was any amount of them. Mr. Beasley then turned round to him and said, "I hope you and my friend will settle this matter." Defendant made no observation. He (plaintiff) had three other flocks on the farm. He had had them longer. He invited Mr. Butler and Mr. Beasley to look at them, and they saw one lot, which Mr. Beasley said were perfectly sound. They had all been kept on the same land within a few yards.

In the cross-examination by *Mr. Collins* he said he had been a farmer thirty years. He had also a farm at Swindon, on which he had lived sixteen years, but that was not a sheep farm. He had about 400 sheep altogether at Upton Scudamore, including 154 ewes, besides those bought of Mr. Butler. He had two lots of tegs, about a year old now, which were bought in September and October. He had lost thirteen ewes before he complained. They were fed on the best hay that he could obtain, and had as much as they could eat. He had not lost one animal from rot except those of the flock he bought at Marlborough. He was not a dealer in sheep, except as a farmer. He bought thirty lambs and sold some of them again to a person named Morris. He bought them at an agricultural repository auction at Frome, and he meant to take them home, but some of them never got there. Many

of them could not walk home. This was at the latter end of February or the beginning of March. He gave £12 15s. for them (8s. 6d. each), and sold them for about 6s. 6d. a piece.

His Lordship.—Had these got the rot?—No doubt about it.

Mr. Collins (to his Lordship).—They did not tell us this before.

Plaintiff.—I bade money and they were knocked down to me immediately.

Mr. Collins.—They were tegs?—You can call them lambs or tegs.

Witness remarked that he bought them because the price was tempting.

Mr. Collins.—Where did you put them?—In a little paddock.

Witness stated further that four or five of the ewes had been opened since the 10th of April, and every one had flukes in it. He had no marsh land on his farm. He had no land near the River Biss. He sold 124 out of the 154 ewes (one of the other flocks) to Mr. Smith, of Winterbourne Stoke.

Re-examined.—The paddock was two miles away from Mr. Butler's sheep. He had lost no other sheep from fluke. He had had one out of the 154 flock killed on the previous day, and the liver (which was in Court) was perfectly sound.

By his Lordship.—He had had three or four of Mr. Butler's sheep killed to see if the disease was latent, and though they showed no outward signs of disease they were as full of flukes as they could hold.

Edward Snelgrove, who drove the flock from Bromham, stated that he reached Bratton about six to a quarter past, and there met Carpenter, Mr. Jones's shepherd. He did not allow the sheep to stop on the road. He had also thirty lambs.

His Lordship.—Are those the thirty that were diseased?

Plaintiff was recalled and questioned on this point, as Mr. Collins suggested that for anything they knew they might be those which afterwards came into plaintiff's possession. Plaintiff explained that they were thirty that Mr. Francis had bought at Marlborough Fair. He did not know whether they had the rot or not, but he heard him say he sold them cheap. Mr. Francis was his brother-in-law.

Snelgrove then stated that he was in Bratton Drove separating the lambs from the sheep for about half an hour. He had never told anybody that the sheep were feeding by the side of the road while he was separating them. Of course he could not stop their mouths (laughter). They picked as they went along. He kept them moving all the time.

Mr. Francis said he bought thirty lambs at Marlbro' Fair in November at 16s. each. He scarcely thought that was the price of sound animals. He was passing through the fair, and the owner asked 25s. a piece, but he subsequently took 16s. They were driven home with plaintiff's sheep. One of the thirty died and the rest he sold. The farm they were put on lay very low, and was very wet indeed.

By Mr. Collins.—Bratton Drove was a hard stone road, not a grass lane. It was two miles from his farm. Last Christmas he said to Mr. Morris that he was to take the lambs and give him what he made of them.

Isaac Watkins, bailiff to plaintiff, said he had his doubts about the sheep in the early part of January.

His Lordship.—Is the fluke disease infectious?—No. If sound sheep were put on good dry wholesome ground with sheep that were diseased the sound ones would not take it.

Stephen Carpenter, shepherd to plaintiff, remembered the 100 ewes

being brought by Snelgrove. When on the down land they laid on pea haulm which had never been cut, and after they were brought down at lambing time to the lambing pen they laid on straw. Witness gave evidence as to the milk and additional labour.

Cross-examined.—It was very cold weather. The sheep were not very fat. Those of Mr. Butler's were "terrible thin." He took some sheep to Frome Market to sell, and somebody asked him "What sheep are those? You've got a rougish lot there, shepherd." He replied "Yes," but he never said "They have been put on the hill where there was nothing for them to eat." He did not know whether the person was Mr. Franks, of Rowde Farm.

Mr. Norris reminded Mr. Collins that it was not in the pleading that the sheep had been killed of starvation.

Mr. Collins replied that it was alleged there had been want of care on the part of the plaintiff in respect of the ewes.

Mr. Sydney James, M.R.C.V.S., Frome, said he had been in practice twenty years. Fluke disease was not contagious. One sheep did not get it from another.

His Lordship.—Not infectious in any way?—No, my lord.

Witness said he had examined one of the livers at Mr. Day's house.

His Lordship.—Is it disputed that they died of flukes?

Mr. Collins.—We don't know how many died of flukes or starvation.

Witness went on to say that the sheep had died from liver rot. He examined the liver on the 12th April, and on the 22nd he examined another at plaintiff's house in company with Mr. Day. They had one of the ewes killed, and he found the biliary ducts full of flukes. He said positively that the sheep which he had examined had had the disease previously to November. The germs were undoubtedly taken in before that time.

His Lordship.—What is the general period of incubation, if it may be so called?—The germ takes six or eight weeks to fully develop. After that certain changes take place in the liver from the presence of the fluke. The general structure of the liver is altered. I have no doubt the disease had existed four or five months. The disease passes through various stages of development. It may remain in a latent form if the sheep are carefully tended. The disease is taken on low marshy lands. Cold weather would not hasten the development. The disease is picked up from July and not later than November. I have heard of a few cases where lambs are said to have had flukes in their liver, but I have never seen any in lambs myself. I should say it was impossible to bane sheep on land where these had been kept. I was present on the 7th May when Mr. Beasley took out the fluke one and a half inches long. They very much resemble a sole in shape.

His Lordship.—That is the butterfly or imago state?

Witness.—They lay eggs in that state. Witness added that he took 120 flukes from one sheep's liver, and he believed the whole flock were contaminated. He did not believe there was one but what had flukes in its liver. If they had taken the flukes by the wayside one or two might have been contaminated, but not the whole flock.

His Lordship.—The eggs are laid by the flukes on the grass?

Witness.—They come from the dropping of sheep, and adhere to the grass near the ground, and as sheep nibble close they get them.

Cross-examined by Mr. Collins.—Certain flukes (in spirits) which were shown to witness were, he said, fairly developed. It was possible that they might have been taken from a lamb of this year. When he examined the sheep all the internal organs were in a state of

wasting arising from diseased liver. He did not think the sheep would be likely to pick up the germs in the ditches and hedges by the road-side. A road with herbage along the side would be a different thing. Before sheep could pick them up they must undergo a certain process of washing, and be scattered about amongst the grass. The fluke disease had been very general. If 50 or 100 sheep were taken from a flock of say double the number, he should not expect to find one part sound and the other portion diseased.

Re-examined.—A good many causes retarded or promoted the development of the disease when the germ was in the animal.

Mr. William Day, M.R.C.V.S., Warminster, said he received a sheep's liver from Mr. Jones on the 10th April. It was in a very far advanced stage of the disease. The biliary ducts contained numerous flukes fully developed. The coats of the ducts were much thickened and enlarged. The disease had existed five or six months. On the 12th April Mr. James and he examined a liver, and he agreed with what Mr. James had said. On the 22nd April a ewe was killed, and he examined it in company with Mr. James, and he agreed with what Mr. James had said with regard to it also. He had seen part of defendant's land; it was heavy and marshy, and likely to bane sheep.

Cross-examined.—All the pastures he saw were marshy, and the fallow ground adjoining was very heavy. The sheep were a mile or so off. There was no one to show him where the land was that the sheep were on last winter. Some women in some cottages told him to whom the land belonged. Mr. Jones and Mr. Harding were with him.

Mr. Thomas Dyke Broad, M.R.C.V.S., Bath, said he had examined twenty-three of the sheep alive, and he had one killed on the 22nd June. He agreed with the previous evidence. He knew the road over which the sheep were driven; it was an unlikely place for sheep to become baned.

By *Mr. Collins.*—It was difficult to know the exact time when germs were taken into the stomach. He never knew a case in which sheep had become affected after October, though he had had much experience in fluke disease. They began to take the disease in May, June, or July. He believed they might be bred in the animal, the same as worms in many other animals. The bile in the sheep was the natural food of the fluke.

Re-examined.—He had had fifty years experience in his profession.

Mr. Thomas Aubrey, M.R.C.V.S., Salisbury, saw twenty-two or twenty-three of the sheep about the 23rd June. They were in a very emaciated condition; nothing but skin and bone. They were suffering from rot. He made an independent *post-mortem* examination, and found the disease in a very bad stage. The germs must have been in the creature many months.

His Lordship.—What is the longest time of incubation?—That depends on the treatment they are subject to. I have known sheep live on two years and breed two lambs.

Mr. Collins asked how he knew they were baned at that time? but the question was not answered.

Mr. Thomas King Harding, farmer, of Maiden Bradley, said that on the 6th or 7th of this month he went to defendant's farm with plaintiff and another gentleman. They examined two pieces of pasture land. They were very flat, and very wet he should say in winter, and such land as he should be very sorry to have had sheep on during last season.

Mr. Collins complained that an attempt had been made to show that plaintiff had purposely kept out of the way, but this was not so, for when he returned home about an hour later he sought for the parties all over

the farm, but they had gone. In addressing the jury for the defence Mr. Collins admitted that some of the sheep had died from flukes. He did not deny it, but how they got them would be for the jury to decide. The sheep were warranted sound, and his case was that they *were* sound when sold to Mr. Jones. Defendant's land was light and sandy, with the exception of two fields, and the veterinary surgeons whom he should call would tell them that it was almost impossible for the sheep to have contracted the disease, before they were sent to Marlborough Market. But the strongest part of the case was this. That the sheep which died were affected with fluke was undoubted, but Mr. Butler would tell them that the remainder of the flock of 266, out of which the 100 were drawn, were perfectly sound, had bred lambs, and had been recently sold for the full price as sound sheep. All the sheep were folded together, not in the pastures, but upon dry sandy down land, and they had all exactly the same treatment. In November he picked out 100 ewes and sent them to Marlborough, and the question was how they got from the fair to Mr. Jones's farm. He assumed they did not contract the disease after they had got on to Mr. Jones's land, because it had been proved to be good and dry sheep land. But they would remember that they were driven along with the 30 lambs which were bought at 16*s*. a-piece, and which were all affected with rot, and afterwards sold for a nominal sum. Then it would be folly to expect the jury to believe that sheep could be driven so many miles without picking the grass by the road side, and he should call witnesses to prove that they passed through a most infected district. It also seemed rather hard on Mr. Butler, that though the sheep were sold in November, he should have had no complaint till April. After hearing the evidence which he should bring before them, he thought the only conclusion they could come to would be that in some way or other the sheep got the fluke after they left Mr. Butler's farm. The veterinary surgeons who had been called, and who had seen the sheep, had given the opinion, to the best of their knowledge, no doubt, that the sheep had been infected for at least six months, and if that were so it would be just about the time when the sheep were brought from Marlborough to plaintiff's farm. In conclusion, he said he did not for a moment deny that the sheep were warranted, but their defence was that at the time they were sold they were sound sheep.

James Butler, the defendant, examined by *Mr. Goldney*, said he succeeded his father on the farm at his death. His father occupied the farm about 40 years. It was a sandy soil, with a brash or light stony sub-soil. It was a healthy farm for sheep. The two pasture fields that had been referred to were not heavy, and he never saw any water there in his life. He knew nothing of the plaintiff and the other gentleman coming. He went in an hour after, and on hearing that some one had been he searched the farm but they had gone.

To His Lordship.—The farm was 460 acres.

Examination continued.—The flock numbered 266 originally. They had been folded on turnips, and feeding on dry pasture for three months previously. The turnips were at the top of the farm, and the pasture land was round the house. It was very light and very dry—clean healthy pasture. The biggest part of the flock were over four years, and some might be a year younger. The 100 ewes left the farm on the 23rd November, and were folded that night at Mr. Everett's, at Overton, near Marlboro', and the next morning they went on to the fair. He had no doubt as to their soundness. The sheep came back to Bromham the same night, and were put in a field beside the house. He bought 118 lambs at Marlborough Fair. His man came back with the ewes plaintiff bought, and also 30

lambs that Mr. Francis bought. He retained 166 out of the 266 ewes for lambing purposes, and had 156 lambs from them. He sold 155 out of the 166 ewes on the 10th June to Mr. Rawlins. Of the other 11 3 died before lambing (they were giddy and were killed—not fluked), 1 died from chill, 2 died in lambing, 2 were killed for the purposes of this action, and he had 3 still in his possession.

Cross-examined by Mr. Norris.—His father bred these sheep on the farm. The land was well drained. There were a few rushes.

Mr. Norris.—They are kept as a curiosity just to show that the land is light and sandy? (Laughter.)—There was a place called North-Hills. It was decidedly not damp. It was not the driest and not medium: more dry than wet. There were very few rushes.

Do rushes grow on light sandy soil?—They don't grow on the lightest.

Do they grow generally on light sandy soil?—They do not.

Then I may take it the soil is heavy?—Not heavy.

Is it light?—It is not light.

Is it medium?—It is not medium on my farm.

Can you explain how the rushes came there?—It is beyond my knowledge.

Witness said there was also a field called Grass Meads which was in clover stubble all last year. His brother was at Marlborough Fair with him. Mr. Rawlins, who brought the sheep was not now present, nor his brother.

Had your brother any interest in these sheep?—No.

Has he a farm near yours?—Three or four miles away.

Were these animals ever on his farm?—No.

Has he had many sheep baned?—All baned.

500 or 600?—No, I should say about 200.

Witness was asked a number of questions to show in how short a distance one farm could be reached from the other, and he explained that about three miles was the shortest.

Is Mr. Curnick's farm near yours?—It joins.

Has he had a great many baned sheep?—Never had one that I know of.

Don't you know that sheep have been baned there by scores?—They have not.

You will pledge your oath?—I will pledge my oath.

Have'nt they been killed and carried away in carts?—They never have.

Re-examined.—Mr. Curnick's house is half a mile from mine. He has lost some sheep this winter, but not by rot.

What did they die of?—Chill and other causes, but not rot.

Alfred Woodridge, Bromham, shepherd to Mr. Butler for three years, spoke to taking the ewes to the fair; and Mr. Everett, farmer of Overton, was also called, but very few questions were asked either witness; in fact, Mr. Everett was not examined at all.

Mr. Thomas Beasley, M.R.C.V.S., of Hilperton, said he was an inspector under the Cattle Diseases Act. He knew Mr. Butler's farm, and had had pointed out to him where the ewes were folded. He had heard defendant's evidence, and knew the two fields that grew the rushes. They both laid away from the farm. The farm was square, and these lay away from the rest on the lower part. They were not so dry as the other. The rest was perfectly healthy. On the 20th May he saw Mr. Butler's sheep looking very well; they were all perfectly healthy, and very good sheep indeed.

Cross-examined.—He had had a great deal of experience with regard to fluke disease. He examined a liver and found it perfectly healthy, and on killing another ewe he saw no sign of fluke whatever. In his judgment, if the 166 sheep were infected with flukes they could not have been in the condition in which he saw them. In the first week of May he went to Mr. Jones' farm and saw about seventy ewes in an orchard. They were in a very weak and low condition. He saw the livers of some of the dead ones, and they were fluked. He also saw a few tegs, which were in fair condition except one, which, in his opinion, was rotten.

The Court then adjourned till the following morning.

Mr. Beasley's evidence was then continued.—He said, I know Mr. Carter's farm and also Mr. Giddings'—they are immediately adjoining the plaintiff's, and the animals there I believe to be healthy. I consider all Mr. Butler's sheep to be perfectly sound, and I have seen many of them. As for flukes, it is my opinion they are to be observed at any month in the year. On a visit to Mr. Butler's farm I and some gentlemen that accompanied me killed two ewes, and a teg, for the purpose of examination. On one of the ewes we found very few young flukes; in the others we did not find any; they were perfectly sound. The liver was as sound as possible.

Cross-examined by Mr. Norris.—I have had eleven years professional experience; and I regard the work of Mr. Simonds as being very eminent and authoritative. He is the Principal of our College, and Professor of Cattle Pathology. I don't, however, agree with him when he says, as regarding this disease, that at the end of October the danger is really passed away, the cold weather and the frost removing the cause of mischief. Consequently, of course, I don't agree with the four gentlemen yesterday. I agree, however, with the opinion of Professor Simonds that a combination of unfavorable circumstances may give rise to the disease, whilst, on the contrary, the majority of influences being favorable, even months may pass before rot is suspected to exist. I don't agree with the other veterinarians examined, in the opinion that the germs of the disease must have been inoculated in the sheep they examined many months previously. It is probable that the flukes might not have existed more than a month or six weeks.

Mr. Norris.—These sheep must have been baned on Mr. Jones's farm then?—Witness—Or in the transfer there.

Mr. Norris.—Only six weeks, you know! If they existed only that time they must have been baned only that time?—Witness—I said, might have existed six weeks.

Mr. Norris.—Well, had they existed six months?—Witness—No certainly not. I could not give as a limit more than three months.

Mr. Norris.—You pledge your professional reputation they existed not more than three months?—Witness—I do.

Mr. Norris.—Then according to that they must have been baned on Mr. Jones' farm. The sheep, you know, came to Mr. Jones's farm on on the 25th of November, and were examined in May, so they must have been baned on Mr. Jones's farm? Witness—I think they might have been.

Mr. Norris.—They must have been according to your statement?—Witness—I can't say accurately as to the length of the existence of the disease.

Mr. Norris.—Then why do you pledge your professional reputation that it existed not more than three months?

His Lordship.—I presume you wish to speak generally?—Witness—Yes, my lord.

By Mr. Norris.—I know Mr. Curnick's farm; but it is not within my

knowledge that sheep have been baned there, I don't even know that a great many have died there. I have heard it, however. I gathered yesterday, too, that sheep had been baned on Mr. Butler's brother's farm. The sheep I examined at Mr. Jones's farm presented every appearance of being baned, but, of course, I can't say that they would have died up to this time. They might live a month or two or longer from hence.

His Lordship.—But the animal might recover?—Witness—Certainly, your lordship; it does not of necessity die.

Re-examined.—I have seen Mr. Jones' sheep, and they are in a very low condition. With regard to the period of the existence of fluke it is very difficult to speak.

John Rose, butcher, of Devizes, gave evidence as to killing the ewe in Mr. Beasley's presence. The teg he considered perfectly sound; and the liver of the ewe looked perfectly healthy.

Mr. C. H. Parry, Chilvester Hill, Calne, said he was an auctioneer and valuer, and had been in business about twenty years He had had considerable experience in the farms of Wiltshire and the neighbouring counties. He knew Mr. Butler's farm, and had valued the stock on it twice within the last four or five years. The farm itself he had known the last twenty-five years; and he should say it was one of the soundest farms in England. It was of a light, sandy soil, of high level, but running across a valley. In his judgment, as an experienced man, it was certainly not a likely farm to "rot" sheep.

Mr. Norris.—No part of it?—No.

Mr. Norris.—You say it is within six miles of Chippenham?—Yes.

Mr. Coleman, veterinary surgeon, of Salisbury, a member of the Royal College of Veterinary Surgeons, and who had been in practice for upwards of thirty years, said he had had considerable experience in sheep, and more especially as he was a farmer as well as a veterinary surgeon. The fluke disease in the last year or two had been extremely prevalent. On the 23rd of June he went to Mr. Jones's farm, accompanied by Mr. Beasley. He saw the flock of ewes there and a number of lambs, and, of course, the animals, or those remaining, in question. He saw no distinction as regards condition or disease between those formerly belonging to Mr. Butler and the remainder of the flock. All were in a low condition—very low indeed. He should say, as to the ewes, that they had been badly kept, and the majority of them suffered more or less from the fluke disease. Witness went over the road leading from the plaintiff's to the defendant's farm, and he should consider it most decidedly an unhealthy lane to drive sheep—it was absolutely dangerous for sheep to pass along that road when the fluke was prevalent. It would be very dangerous for sheep to stay there any time. The character of the land on either side would tend to produce the disease. He saw Mr. Butler's sheep, both the ewes and the tegs. The tegs were in a very good condition; and as to the ewes which remained from the flock that Mr. Butler had sold, he had one of them killed, and on examination he found it perfectly sound and free from disease. Witness went over some portions of Mr. Butler's farm, and found it perfectly healthy, dry land. The land that he saw was certainly not likely to rot sheep. He was in Court on the previous day, and with regard to the opinion then expressed that sheep did not take flukes in October, he was able to contradict it, and give a case in illustration. He sold thirty-four lambs at Yarnborough Castle Fair on the 4th of October. Six or seven weeks after, these animals commenced dying; and he was certain they never contained the germs of the disease previously. The

purchaser, at all events, made no claim upon him. Other cases he could give in illustration.

Mr. Norris.—Are the other cases similar to this? Witness.—They are (laughter). Mr. Norris somewhat facetiously cross-examined the witness on this point. "You sold thirty-four lambs in October, they have commenced dying almost immediately, and because you were not called upon for their value they were safe when you sold them. Excellent reasoning truly!"—said the learned counsel.

Witness, continuing, said he knew Mr. Simonds' book. Mr. Simonds was a very able man, and he respected him. He, indeed, was at the head of the profession. He certainly was a very valuable man, and witness agreed with him in some cases. Certainly, when he agreed with witness, witness agreed with him (laughter). He had as much right to an opinion as Mr. Simonds (laughter). He certainly could not agree with the statement—indeed, they had examples to the contrary—that at the end of October the danger to sheep was really passed away, the cold weather and the frost removing the cause of further mischief. Such an opinion was held many years ago, but more recent experience contradicted it.

Mr. Norris incidentally remarked that, at all events, the opinion had been held "subsequent to the year 1879."

Cross-examination continued.—He believed with Professor Simonds that a combination of unfavorable circumstances might originate the disease in five or six weeks. The ewes of Mr. Jones certainly appeared to have been badly kept. He would admit that what it was stated the animals were provided with was good and beneficial food. As to Mr. Butler's farm, he should say that no danger would accrue to sheep on any part that he saw.

His Lordship.—How is this fluke produced? Witness.—The animals pick it up with the fruit.

His Lordship.—How does it produce the new germ? Witness.—It passes to the stomach, and from the stomach into the liver.

His Lordship.—But the germs are something upon the plants which the animal receives. How does the germ in the stomach come upon the plant? Witness.—That is the question. It passes from the animal.

His Lordship.—Is there any particular season at which the germs develop themselves? Witness.—Yes, generally speaking, from June to the end of November. Last year, however, it should be remembered, was an exceptional year.

Mr. John Davis Barford, a member of the Royal College of Veterinary Surgeons, residing at Southampton, and who is Inspector to the Privy Council for the Port of Southampton, said he visited Mr. Butler's farm early in July, and made careful examination of the character of the greater part of the farm, and also examined the lambs and tegs. The animals were, as far as appearance went, in a sound, healthy condition, and he had no hesitation in saying the character of the soil—a red, sandy brashy loam—was the least calculated of any he had seen to produce this disease. He also visited the Bratton Drove, and from what he could glean this was originally an open common run; a considerable portion of it was enclosed, but the drove was really an open road with green sward each side. Consequent upon his observation, he had no hesitation in saying that it was eminently calculated to produce this disease. Witness came to the opinion, from a combination of circumstances—first, the character of Mr. Butler's soil; next, the condition of the existing animals, and other influences, that the ewes were sound at the time of the sale.

Cross-examined.—It was a very difficult question to answer—the length of the existence of flukes. He would not like to say those now exhibited to him had existed three months. Last season, however, was a very exceptional one, and the disease was developed in half the time of previous years. Still it would not be correct to say that the land which he had found incapable previously of producing it had been capable of producing the disease. It was probably a fact that farms which had been considered good previously last season baned sheep.

His Lordship suggested, at this point, that further evidence of this character should not be called, and Mr. Collins acquiesced.

James King, who had been a shepherd on Mr. Butler's farm for upwards of forty years, deposed that he had never had a baned sheep on the farm.

Mr. Charles Giddings, whose land adjoins the Bratton Drove, said he lost fifteen cows from fluke in the last season. The animals commenced dying in February, and were, when alive, constantly passing up and down the drove.

Mr. Edward Carter, who is occupying the House Croft Farm, said Bratton Drove led through his farm. He had unfortunately lost a great number of sheep from bane; and it was some of his sheep that Mr. Jones bought at the auction sale. It would be dangerous for sheep to stop in the Bratton Drove. He agreed with Mr. Barford's description of it.

Cross-examined.—He sold his thirty lambs in December.

Alfred Rawlings, a butcher, who had bought several of the same flock from which Mr. Jones's sheep were taken, was called, but did not respond. Mr. John Pound said he had personally that morning served him with a subpœna at Stockbridge Fair, but he told him that he should not attend.

Defendant was recalled to prove that he had sold the remainder of his flock to Rawling at 30s. a head.

Cross-examined.—Defendant swore that he considered 30s. a head a sound price, and that he did not consider that he sold the animals at an unusual season.

This concluded the evidence.

Mr. Collins then, in a long speech, addressed the jury for the defendant, and particularly called attention to the fact that the other animals of the flock from which Mr. Jones's hundred were taken were perfectly free from the disease, with the exception of one animal. He suggested that if the animals did not contract the disease on Mr. Jones's farm it must have been inoculated in Bratton Drove.

Mr. Norris replied in an effective speech. He called attention to the state of the two fields on the defendant's farm, which, from the fact of rushes growing there, must have been in a wet, marshy condition, and liable to originate the disease. Could not the germs of the disease have been caught there? Or, perhaps, they might have been caught from the adjoining farms, upon which it certainly prevailed. As to the suggestion that the animals contracted the disease in the drove, he pointed out that the animals did not remain there but a few minutes, and he characterised as absurd the suggestion that the animals could all have contracted it by the slight "nibbling" of the roadside.

His Lordship, in summing up, said that the sheep were warranted there was no doubt, and accordingly what the jury had to determine was whether at the time they were sold they had the germs of the disease, of which some of them ultimately died, or were killed because they were in such a state as to be no use keeping them any longer. The warranty

alluded simply up to the time of the purchase. If the sheep were sound at the time of the warranty the defendant was entitled to the verdict. He was pledged to that, whether he knew not of their condition or otherwise. The warranty being admitted, the plaintiff maintained that it was broken, the sheep warranted sound being, at the time of sale, unsound. The germs of the disease which ultimately proved fatal to a considerable number, and lessened the value of the rest, were, it was alleged, existing in the animals, and consequently considerable damages were claimed. No doubt, the question to decide was a very difficult one. It was a question on which veterinary surgeons on one side and veterinary surgeons on the other could not agree in their views—indeed, he was going to say in any of their views. As to the time this disease could be originated in the sheep they did not agree; as to the probability of sheep contracting it on land they were driven over after the purchase, they did not agree; but though doctors disagreed gentlemen of the jury were supposed to be able to come to a very careful and very accurate conclusion. Personally, he could not regret that they and not he had to decide it. Their twelve minds would unitedly arrive at an opinion which one mind would probably not. The sheep exhibited, they might take it, at the time of purchase, no sign of disease; had they, they would not have been bought. There was nothing, they may take it, in the nature of fraud alleged; no imputation was thrown upon the defendant; it was not said he knew the sheep had the disease when he sold them. If the defendant was liable he was liable from a likely result that was dependent upon his warranty. Perhaps it would have been better had these gentlemen met, after the disease had developed, and agreed to divide the damages; they would have been then, he was inclined to think, much wiser men. It would have saved one of them a great deal of money, and possibly would not have been injurious to the man who succeeded in this action. Important questions devolved upon the jury to consider. Really and substantially they had to determine what period was this disease likely to remain latent in the animal before it became perceptible. A sheep, however thin or ill, might have flukes or not. It was not before the symptoms were absolutely perceptible, that with absolute certainty they could ascertain the fact. Veterinary surgeons for the plaintiff said that this disease incubated for a considerable time before it became developed and fatal. The veterinary surgeons for the defendant generally said it was not a very long time, and one of them gave three months as the maximum period. A peculiarity in flukes in sheep, as in scarlatina and other diseases, was that it varied according to circumstances. But here, in the evidence, there was an eminent difference. One side would put the period of incubation at about six months; the other at about three months. The animals were bought on the 24th November, 1879, and the first sheep died on the 14th February following. That was somewhere about eleven weeks; that would be within the maximum time of the defendant's witness. On the other hand, they all agreed it might be developed in a much less time—in six weeks, or even less; so that there was no certainty that the disease existed at the time of sale. It might still have been contracted after the sale.

Mr. Collins.—It was not said the first sheep died of fluke; a chill was thought to be the cause.

Mr. Norris.—No *post-mortem* examination was made; the witness said it was chill, but afterwards maintained it had symptoms of flukes.

His Lordship, continuing, said other animals dying, an examination was made on the 7th of May, five and a half months after. Then, at once, was realised the importance of the question as to how long this disease might

remain dormant in the animal before it reached such a pitch as to cause death. To an ordinary observer, whether the disease was caught on the defendant's or plaintiff's land, or on land intervening, it would be thought probable the effect of the disease would be experienced at one time. But the reason why it was not was that it was not infectious. It might be contracted at different times. But if the disease was contracted anterior to the 24th of November, there was, indeed, a difference of from eleven weeks from the death of the first to five and a half months to the death of the last animal. But all this, of course, was not conclusive. If the disease had its origin in the animals before the sale, the plaintiff was certainly entitled to the verdict. It was stated by one counsel and admitted by the other that the plaintiff had to make out his case. Still, he had not to prove it by mathematical demonstration; but the jury ought to act upon the case if a reasonable character of evidence satisfied their minds that the plaintiff's suggestion was accurate. But was this so? Plaintiff maintained he had no sheep upon his farm similarly affected, that his land was calculated not to engender the disease, and that whilst these animals were dying from the disease his now still remained free. That, no doubt, looked strong for the plaintiff. But then came almost similar evidence for the defendant. Those hundred, he said, were taken out of a flock of 266 sheep; the remaining 166 he kept for a considerable time on his farm; and ultimately he sold them to a Mr. Rawlins. Then there were two observations which affected the case somewhat materially. As to the thirty sheep that were diseased, they were driven over the road, but they did not infect the others, as the disease was not contagious. But defendant maintained all his sheep afterwards were, with one exception, perfectly free. Three were examined: two were found perfectly sound, but in the third there were four small flukes discovered. This, too, the defendant added, was only an incipent form of the disease, and could not have been contracted earlier than the 24th of November. If Mr. Rawlins found the animals all sound, or indeed any unsound, it was important that he should have been present. Then all the veterinary surgeons agreed that this disease was fostered if not induced by low, marshy ground. Plaintiff said his was high, sandy land, where it could not exist. Defendant said the same. Still he had two fields, where, however, he did not keep the sheep, which were, as he said, "a little worse than the others." But even these fields, he said, were not bad. And he further gave strong and cogent evidence on the character of the farm, which was strengthened by the evidence of the old shepherd. Here, then, were almost parallel cases. There was only a third possibility. Defendant suggested that the sheep might have contracted the disease in the course of being driven to plaintiff's farm. The animals went through some narrow roads, and, it was suggested that in grazing—and he supposed sheep would graze when being driven—contracted the disease. The defendant maintained that this was the more likely, because there were two farms in which the disease had more or less prevailed. However important this question, come the argument—that though it might be possible a few sheep might have contracted the disease in this manner, it was not so with a large body. Another question—the veterinary surgeons for the plaintiff urgently pressed that the disease could not be contracted after October. Of course, rare instances, there would be; but they substantially maintained the germ of this disease existing low down in the grass, consequently the animals must bite close to the ground to contract it. From June to October was a propitious season for the contraction of the disease; afterwards it was of rare occurrence,

the frost and cold killing the germs. On the other hand, again, defendant's witness said it might exist later, and then one gave what he called an illustration of the fact, in which he supposed it must have been contracted after October, because certain sheep exhibited it after that month and others did not, Then that same witness said as with the whole animal and vegetable life so with the disease, the reproductive system went on and was developed at certain seasons of the year. Animals — or many classes — were not artificially treated, as were human beings. There generally were seasons at which — in both animals and vegetables—they vegetated and germinated. There was, however, practically speaking, a limited time, as the witness had stated. These were, practically, the whole points in this case. He was sorry he could give them but little assistance. This was preeminently a case on which much could be said on either side. Many points had been enunciated, but they could not escape from the one fact underlying the whole case, and which they had been unable definitely to obtain. That was the period of incubation of this disease, and when the full development of the fluke was arrived at. If the plaintiff was entitled to a verdict they would consider damages. Sixty-two died, and the others were sold for £37, which brought the amount lost, in the first place, to £127. Then the plaintiff said, the amount of milk required by the lambs, and which was lost, necessitating the procuring of two cows for the purpose, with the attendance of two men, entitled him to £50 as expenses. Probably they would not be inclined to give this amount. The cows were still useful and valuable, and they might consider that claim as requiring reduction. However, that was secondary to the absolute verdict. Before they found for the plaintiff, the jury must be fairly satisfied the sheep were diseased before the 24th of November, and then they would consider the question of damages.

After a deliberation of about a quarter of an hour, the jury found for the defendant, and on Mr. Goldney applying for costs they were granted. —*Devizes and Wiltshire Gazette.*

GROSS CRUELTY TO A COLT.

A CORRESPONDENT sends the following paragraph, cut from the *Birmingham Daily Post* of Thursday, August 19th. It is scarcely to be believed that in these days any man could have been found so ignorant as to have recourse to such a cruel proceeding as therein recorded. We had hoped that the time had passed when such men could find support from agriculturists or owners of animals. They evidently want educating as much as the illiterate "Farrier and Cowleech."

AT THE OLD HALL POLICE COURT, James Colley, farrier, Great Bridge, was charged with cruelly ill-treating and torturing a colt, the property of William Cox, farmer, Tividale.

On the 24th July defendant performed an operation (castration) on the colt, and the animal's intestines protruded; and being unable to replace them, he cut away two yards from the intestines. The animal died shortly afterwards. The defence was that the cruelty was not intentional, and that the operation was performed in ignorance of the consequences.

Mr. Bassano (chairman of the magistrates) said the Bench were quite satisfied that the offence was proved. The defendant appeared to be brutally ignorant, and being so committed a brutal act on the animal.

The magistrates considered it a very bad case indeed, and should therefore inflict the full penalty of £5 and costs, or in default, one month's hard labour.

PARLIAMENTARY INTELLIGENCE.

AMERICAN CATTLE IMPORTATION.

HOUSE OF COMMONS, *August 6th.*

AT the Evening Sitting, on going into Supply,

Mr. Arnold called attention to the restrictions upon the import of foreign animals and the action of the Privy Council under the Act of 1878. Addressing himself specially to the supply of animals from the Western States of America, he contended that no contagious disease existed there to justify the requirement of compulsory slaughter at the port of landing, and he moved a resolution calling for the modification or removal of the restrictions.

Mr. J. Howard opposed any such relaxation, at least until the United States Government had adopted effectual measures to prevent the spread of disease, and pointed to the increase in the trade as a proof that the restrictions had not injured it. He ridiculed the suggestion that the removal of them would increase the breeding of cattle in the United States, and he read from the recently-published Blue Book numerous extracts proving the existence of disease in the States.

Sir W. Barttelot referred to the ravages of the rinderpest as an illustration of the necessity of restrictions; while *Mr. Jacob Bright* insisted that these restrictions increased the price of the food of the people.

Colonel Harcourt showed from the reports of our Consuls that disease abounded in the States, from which he said our cattle could only obtain immunity by restrictions.

Mr. J. Barclay pointed out that there was one class of farmers who bred cattle while another class bought store cattle for the purpose of fattening them. The interests of these two classes were in some respects very distinct indeed. The breeders desired that very few cattle should be imported into this country, whereas the farmers who fattened store cattle wanted a good supply of them, so that they might purchase them cheap and make a good profit by the fattening of them. He had himself visited the Western States of America, and his inquiries went to show that disease was practically unknown among the cattle there. Those States were better adapted for breeding than for fattening cattle, and he believed that, were all vexatious and unnecessary restrictions on transport removed, animals could be imported into this country and fattened by the English farmer at a profit. This was a vital question, not only for the farmer, but for the consumer, and he hoped it would not be allowed to rest. No doubt there was a considerable amount of pleuro-pneumonia in the Eastern States, but to say that no cattle should be imported from any part of America because disease existed in certain States was like saying that no cattle should be imported from Denmark because disease existed in Spain. The truth was that cattle would be brought hither from the West without coming within 500 miles of any infected State. He believed sufficient evidence had been adduced to justify the Privy Council in, at all events, making inquiry into the propriety of removing the restrictions to which he had referred. It was far from his intention to relax those restrictions to any dangerous extent, but it was very important, alike to the farmer and consumer in this

country, that they should not be maintained with greater severity than was absolutely necessary. The agricultural interest had, he thought, great reason to complain that the Privy Council did not take the necessary steps to make inquiries in different parts of the world as to the existence of disease, and as to where store cattle of the best quality might be obtained.

Mr. Chaplin regarded the motion as a wanton attack on the agricultural interest, and in the face of the facts disclosed in the recent Blue Book it was a waste of time to discuss it.

Colonel Kingscote maintained that the Blue Books left no doubt as to the existence of disease in the States, and that great uneasiness existed there on the subject. Until the States could show a clean bill of health he was strongly opposed to any relaxation of the restrictions. The farmers, he said, were ready to meet dead meat competition, but they objected to having disease introduced into their flocks and herds by the unrestricted importation of live cattle.

Mr. Duckham said that it would be a national evil if cattle were allowed to come into the country without restriction. The disease was of recent growth, and until 1835 was unknown. It was first introduced in this conntry in 1839, whence it found its way into Australia, and had ultimately travelled almost all over the world. He maintained that, when free trade in importation was allowed, disease spread with fatal rapidity. The increase in the importations from America in recent years showed conclusively that no real loss was sustained by the nation in consequence of the existence of the regulations on the subject of importation. In nine months last year 76,117 head of cattle and 192,370 sheep were imported into this country from the United States. He held that considerable risk of contagion was run by animals in passing from the west to the east coast of America and in the journey to England.

Mr. Mundella remarked that there was much misunderstanding with regard to the working of the Act of 1878, which he held to be a most satisfactory and valuable compromise. The existence of pleuro-pneumonia could not be doubted, but merely to slaughter the animals affected would not destroy the possibilities of infection. The restrictions complained of had enabled the Government in a great measure to keep the disease under control, and, with regard to foot-and-mouth disease, to stamp it out. Regarding this as a question of protection, not for the farmer so much as the consumer, he said it was quite impossible to relax the present restrictions.

Sir S. Northcote thanked the Vice-President for his speech, and expressed satisfaction that the Act of 1878 would now be judged on its merits.

Mr. R. Paget contrasted Mr. Mundella's present attitude with his opposition to the Act of 1878, while passing to which *Mr. Forster* replied that it was the Act as amended by the opposition of the day of which Mr. Mundella approved.

On a division, the motion was negatived by 194 to 20.

THE TEXAN CATTLE FEVER.

August 13th

In reply to *Mr. Barclay* (on behalf of Mr. J. Howard) and *Mr. Arnold*,

Mr. Mundella said that thirteen animals of the American cattle imported in the "Iowa" were reported to have been affected by Texan fever. There were 804 head of cattle came by this vessel but only those that came from one consigner had been affected. Their inspectors were remaining on the spot in order to see that everything

which had been in contact with the animals was destroyed, and to conduct a *post-mortem* examination. As to the question of contagion, he had made inquiries of Professor Brown, who said there was no question that pure Texan fever would communicate disease. He could not say whether the cattle had come from Portland or Boston.

THE CARCASES OF SLAUGHTERED CATTLE AND THE "IOWA" CARGO.

August 17th.

Mr. Mundella, interrogated by *Mr. Arnold* with respect to the number of carcases of animals which found their way to the markets undistinguished from healthy meat, pointed out that the function of the Privy Council was to prevent the introduction of cattle disease, and that the duty of preventing the sale of unwholesome food to the people devolved exclusively on the local sanitary authorities.

Subsequently, in reply to *Mr. Whitley.*

Mr. Mundella, said he had made the statement that some of the cattle landed from the "Iowa" were suffering from the Texan fever upon the authority of Professor Brown. A *post-mortem* examination had shown the ordinary indications of splenic apoplexy. It must be borne in mind, however, that all the animals that died belonged to one consigner, and it was an undoubted fact that Texan fever was taking a stronger hold northward every year, and required to be watched with very great care and anxiety, as it was a very dangerous and contagious disease. (Hear, hear).

THE TEXAN CATTLE DISEASE AT LIVERPOOL.

In answer to *Mr. Barclay.* *August 19th.*

Mr. Mundella said,—Mr. Moore, the Privy Council inspector at Liverpool, is an experienced member of the Royal College of Veterinary Surgeons, and the department have entire confidence in his professional skill. This is warranted by the fact that, his reports on disease have in every instance when an inquiry has been held been confirmed by the departmental inspector. He devotes the whole of his time to the duties of his office, and is assisted by the central staff in cases of emergency. The department is not of opinion that the services of a second inspector are at present required.

THE IMPORTED AMERICAN CATTLE DISEASE.

August 26th.

Mr. Gurdon asked the Vice-President of the Council whether he was able to communicate to the House Mr. Duguid's report on the diseased cattle "ex Iowa," and whether he had received any further communications from America on the subject of cattle disease.

Mr. Arnold asked, with reference to that important communication from America—he meant the report of Messrs. Read and Pell—whether the attention of the Privy Council had been directed to the opinion of these distinguished Commissioners that it was questionable whether Texas fever was contagious; to their statement that there were no traces of pleuro-pneumonia or of foot-and-mouth diseases in the Middle and Western States; and to their recommendation of "some reasonable quarantine." He wished to know whether the Privy Council would consider in the recess the best means of giving effect to this recommendation of "some reasonable quarantine" in place of the existing restrictions.

Mr. Mundella said he should answer the question of the hon. member

for Norfolk first. He should be very happy indeed to communicate the report referred to to the House. He had received further communications with respect to this question, and among others one from Mr. Victor Drummond, who was acting as the representative of England at Washington. He would read the letter:

"Rye Beach, *August* 10*th*.

"My Lord,—With reference to questions lately asked in the House of Commons respecting the desired modifications of cattle quarantine regulations, I have the honour to enclose herewith an extract from the *Boston Herald*, giving a very succinct account of what has been gathered respecting pleuro-pneumonia in this country, and of the remarks made by Dr. Lyman, sent specially by the United States Department of Agriculture to the United Kingdom to examine cattle imported from America reported to be infected with pleuro-pneumonia, and to endeavour to obtain some modifications of the restrictions imposed by England on the importation of cattle. He was, it appears, also instructed to represent to the Privy Council and to persons of influence that cattle embarked at Boston were entirely free from infection, and to show that a modification of restrictions in favour of Boston would work no injury to English herds. On Saturday last, the 7th inst., however, the Agricultural Department at Washington received a letter from Dr. Lyman, declaring that he could ask no more for Boston than for other ports, as he found that three fourths of the cases of pleuro-pneumonia among cattle landed in England from America came from Western cattle exported from Boston. Thus, Dr. Lyman corroborates a danger which Mr. Mundella showed still to exist from the infection of imported American cattle without the present restrictions.

"I have the honour to be, my Lord, with the highest respect, &c.,

"Victor Drummond."

He had received a report stating that ninety-five cattle landed from America had been slaughtered, and, without any wish to alarm the House, this case appeared to him to be much worse than former cases. In this instance prompt measures had been taken to destroy everything connected with the cattle. (Hear, hear.) He was glad to find that the Americans recognised that they were doing right in this country in providing that American cattle at present shall be slaughtered on board.

ARMY APPOINTMENTS.

War Office, *Aug.* 24*th*.

Veterinary Department.—First-class Veterinary Surgeon John James Channan is granted retired pay.

The under-mentioned Veterinary Surgeons on Probation to be Veterinary Surgeons: Frederick J. Short and Harry A. Woodroffe.

MISCELLANEA.

CHECK TO THE FLIES.

We republish a statement made a year ago that flies may be kept from windows, mirrors, glass cases, &c., by washing the glass with water in which an onion has been soaked long enough to give the water a slight onion smell. A writer in a horticultural journal says that green fly and other insects may be kept from plants by washing them with an infusion of quassia 1 lb. to 1 gallon.—*Chemist and Druggist.*

THE

VETERINARIAN.

VOL. LIII. No. 634. OCTOBER, 1880. Fourth Series, No. 310.

Communications and Cases.

POLYDACTYLISM IN THE CAT.

By T. Spencer Cobbold, M.D., F.R.S., Professor in the Royal Veterinary College.

Twenty-six years back, when occupying the post of Curator of the Edinburgh University Anatomical Museum, I published in the *Edinburgh New Philosophical Journal* some remarks illustrative of an apparent law of deterioration affecting the axial skeleton of fishes, the paper being chiefly based on facts observed in the dissection of a remarkably deformed trout captured in the river Jed, near Jedburgh.

The slight development of the appendicular skeleton in fishes renders the study of malformations of their extremities less striking than obtains in the case of the higher vertebrates. To be sure, as references given in the paper alluded to were designed to show, distorted and otherwise malformed fins are extremely common in the salmon and trout family, and we all know how readily such abnormal characters are propagated in goldfishes reared for ornamental purposes.

Teratology has generally been regarded as an unprofitable study, at least, it was conspicuously so considered until the publication of Mr. Darwin's well-known work, in which he demonstrated its value and significance in relation to questions of heredity. The facts I now place on record will,

at least, furnish an instructive example of the variation of animals under domestication.

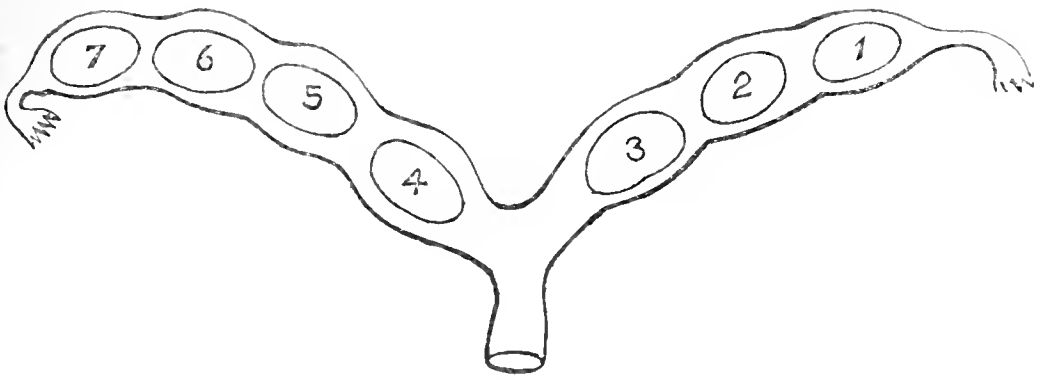
A few years back I became possessed of a female cat whose feet were all abnormal as regards the number of digits. I understood, but could not obtain an accurate statement of facts, that she herself was one of a litter of five or six, two or three of which were malformed in the feet; and from this circumstance I concluded that either the male or female progenitor of them all (marked A in the table, p. 672) was possessed of a similar deformity. My surmise was correct. I may remark that the experiments of Brown-Séquard long ago showed that the propagation of a defective number of toes is just as possible as that of an excessive number. At the Liverpool Meeting of the British Association in 1871, that distinguished *savant* exhibited a number of living guinea-pigs with digital deficiences, the defects in question having been propagated from parents some of whose toes had been removed by operation. Thus it became obvious that artificially prepared malformations might, under certain circumstances, descend from generation to generation, affording apparent proof that the law of redundancy in heredity is not necessarily more liable to manifestation than the law of deterioration. According to the late Professor Goodsir, the manifestation of these laws is sometimes reciprocal in the same individual, as he showed to be the case in goldfishes.

The cat, whose case I am now referring to, in place of being pentadactylous in front and tetradactylous behind, possessed seven toes on each of her fore feet, and six toes on each of her hind feet. It was, therefore, a somewhat extreme instance of multiple digitation or polydactylism.

On the 3rd of May, 1879, I caused her to be destroyed. As she was in an advanced stage of pregnancy I fully expected that a *post-mortem* examination might reveal something of scientific interest, and in this I was not disappointed. I may mention that no other cat seen in the neighbourhood was similarly malformed, and from other evidences I feel quite sure that the father of the yet unborn kittens had perfectly normal feet.

The result of the dissection was very curious, and to make it more clear I have constructed a simple diagram, which is reduced from a sketch of the parts made at the time.

Commencing at the extreme end of the right horn of the uterus, the fœtus marked No. 1 was a female, and had exactly the same deformities as the mother. I regret to say that I have lost the record of the sexes of the other fœtuses.



Reduced outline of the uterus, showing the position of the fœtuses. Viewed from above.

Fœtus No. 2 had the ordinary number of digits.

Fœtus No. 3 was also normal.

Fœtus No. 4, the first of those occuping left uterine horn, was also normal.

Fœtus No. 5 possessed six digits on each of the fore feet, being normal or tetradactylous behind.

Fœtus No. 6 in like manner possessed six toes to each fore foot, and four to each hind foot.

Fœtus No. 7 was perfectly normal.

It thus appears that of the seven unborn kittens, one only exactly corresponded with its multidactylous mother, four being normal like their father, and two being slightly abnormal in the fore extremity and normal behind.

To add to the interest of the above facts, I may mention that in a previous breeding the mother had two kittens, doubtless also begotten by a normal father. These two kittens were both slightly abnormal. Both were females, and both had six toes to each of their fore feet, and five to each of their hind feet. One was considerably larger than the other. In this larger one all the digits were pretty well developed, but in the smaller kitten the right fore foot had the second toe very large, whilst the first or innermost toe was merely rudimentary. On the left fore foot these peculiarities were exactly reversed.

The larger of these two kittens having been retained by me (the other was given away) she in her turn became pregnant by another normal tom cat.

As obtained in her parent's case, her first prègnancy resulted in the birth of two kittens only. These were both hexadactylous in front and normal or tetradactylous behind. Both were females. The mother was exceedingly wild. She and one of her offspring were destroyed before I had completed my observations. The other kitten was given away, and I have since ascertained that up to the present

time she has not become pregnant. The female of the generation marked A is still living, and has had several litters. Such of the kittens as have become polydactylous have always been in great request. Notwithstanding the fragmentary character of this record, its publication may have interest for teratologists, and the facts will be the better available for comparison if the principal features are tabulated.

Generation.	Father.	Mother.	Remarks.
A.—One of the later pregnancies. Mother still living	Digits probably normal	Digits 7 on each fore foot and 6 on each hind foot	Said to have had 5 or 6 kittens, some being polydactylous. One of the progeny is represented by B. One of males was similarly malformed.
B. — First pregnancy. Mother under observation	Digits normal	Digits 7 on each foot in front and 6 on each behind	Had 2 kittens, both of them being malformed. One of these is the mother in generation C.
Second pregnancy. Mother since destroyed	Digits normal	...	The uterus contained 7 fœtuses, of which three were polydactylous.
C. — First pregnancy. Mother since destroyed	Digits normal	Digits 6 on each fore foot and 5 on each hind foot	Had 2 kittens, both of which were hexadactylous in front and normal behind.

But for other occupations I should have prevented the destruction of any of the members of the last generation, and thus have pushed the investigation further. Teratologically speaking, the anatomical facts can hardly fail to present points of interest. To add completeness, therefore, to the record of the results of the *post-mortem* I requested my colleague, Mr. Steel, to dissect out the muscles and tendons. This he obligingly consented to do and also supplied me with the following important "notes" of the facts observed.

It will be understood that the details here added refer to the female cat of the generation marked B in the table above given. Her malformed fœtuses have been handed over to a practical microscopist, Mr. J. J. Hunter, who is skilful in mounting anatomical sections.

Anatomical Notes by Mr. Steel.

Fore foot.

Each fore foot has six well-developed digits, and one rudimentary one. We shall designate these numerically from within outwards, thus:—1, 2, 2*a*, 3, 4, 5, 6. 2*a* is very small, and attached by ligament against the outer side of the distal phalangeal articulation of 2; it has a rudimentary claw and a small digital pad, and consists of a single small unequal phalanx. Two palmar pads are present, one common to 1 and 2; the other, the larger, common to 3, 4, 5, and 6. Each digit has a well-developed digital pad (except 1, which bears a very small pad). Each digit bears a well-developed claw, and of these 1 is the largest.

Muscles.

Oblique extensor of the metacarpus sends an extra extensor band, which runs to the ungual phalanx of 1.

Extensor communis digitorum sends main extensor tendons to 3, 4, 5, and 6.

Extensor digitorum lateralis sends a tendon to 3, as well as to 4, 5, and 6, which it usually supplies.

Flexor metacarpi obliquus gains the supero-posterior part of metacarpal 5, after being attached to trapezium.

Flexor digitorum perforatus inferiorly divides into five tendons, and of these one passes to each of 1 and 2, none to 6.

Flexor digitorum perforans gives off *short palmares*, which run to sesamoids of 2, 3, 4, and 5. The terminal tendon is attached by its divisions to 2, 3, 4, 5, and 6.

Extensor proprius pollicis et indicis is attached only to 2.

Analysis of muscular variations.

No. 1 seems to be the superadded digit for:—(*a*) Perforans; is generally attached to *all* the digits, and is *not* to this. (β) Extensor communis digitorum runs to 3, 4, 5, and 6, but not to 2, which thus seems the pollex, 1 being accessory to it. (γ) The special median extensor tendon of extensor metacarpi obliquus runs to 1, and seems something quite superadded. (δ) The anterior extensor of the metacarpus is attached to the metacarpals 3 and 4. (ε) Also extensor proprius pollicis runs to 2.

6 seems to be the superadded digit, for:—(*a*) Extensor digitorum lateralis; has an extra division to 3, but this is mall comparatively. (β) Perforatus sends no tendon

directly to 6, the place of its usual division being occupied by a special small muscle.

Thus, it seems from the myology of the region that 1 is the extra digit, and results from proliferation of the pollex (2), a tendency of which in this direction is proved by the presence of the above-mentioned rudimentary digit. No. 1 is the smallest of the developed digits; its metacarpal is very slight, but superiorly enters into the formation of the carpo-metacarpal joint, and is united to metacarpal (2). The joint between the first and second phalanx is anchylosed, and the union between the latter and the ungual phalanx is incomplete. Altogether the general rudimentary condition of this digit confirms the above opinion. Thus, we must consider as correlated variations those characters, which we have above noted, as seeming to indicate that 6 is the superadded digit.

Hind foot.

Each hind foot has six well-developed digits, which may be designated, from within outwards, 1, 2, 3, 4, 5, and 6; of these 6 is small, but 1 is smaller. The palmar pad is composed of several lobes arranged in series, increasing in size from within outwards to the largest, opposite Nos. 4 and 5, externally to which is a medium-sized lobe. Each digit bears a digital pad corresponding directly with its size; also each bears a well-developed claw.

Muscles.

Tibialis anticus consists of two parts:—*a*, with short, stout tendon, terminating at supero-anterior part of metatarsals 1 and 2 (of which the division to 2 is much the smaller); *β* forms the main extensor tendons passing to ungual phalanges of 1 and 2.

Extensor longus communis digitorum is attached by its terminal tendons to 3, 4, 5, and 6.

Flexor digitorum perforatus runs by its terminal tendons to all the digits, except 1.

Flexor digitorum perforans terminates inferiorly by six stout divisions, one running to each digit; it receives the well-developed tendon of one of the divisions of flexor accessorius below and behind the tarsus.

Tarso-prephalangeus has four tendons passing to act as accessory extensors to digits 2, 3, 4, and 5.

Analysis of muscular variations.

Nos. 1 and 2 seem to represent a double hallux. Thus,

tibialis anticus is double to give attachment to each of these digits by both of its portions. Also extensor communis digitorum sends a division to all the digits but these. The correlated variations thus are—

Perforatus has a tendon passing to	2, one division of hallux.
Perforans	1 and 2
Tarso-prephalangeus . .	2

We observe that the distal phalangeal articulation of 1 is not thoroughly developed.

SYNOPSIS OF CONTINENTAL VETERINARY JOURNALS.

By John Henry Steel, M.R.C.V.S., F.Z.S., Demonstrator of Anatomy at the Royal Veterinary College.

(*Continued from p.* 536.)

The National Congress of Veterinary Surgeons, organised under the august patronage of His Majesty the King and the honorary Presidency of the Minister of the Interior, has just terminated. Inaugurated on the 8th July by *Director General Romberg*, who was elected by the Minister of the Interior, since he was himself unable to attend on account of indisposition, the Congress, after the preliminary announcement and vote, was addressed by *M. Moreau*, in place of the *Burgomaster Van Lint*, who, also, was detained by sickness. After this welcome, the history of the organisation of the Assembly was explained by M. Wehenkel, a member of the committee. The Congress next proceeded to the nomination of its officers, who were selected by acclamation, as follows:

President, M. Thiernesse, Director of the School of Veterinary Medicine.

Vice-presidents, M. Aerts, Veterinary Inspector of the Army, and M. Jacobs, of Termonde, President of the Veterinary Medical Federation.

General Secretary, Professor Wehenkel, of Brussels.

Treasurer, M. Crevecœur, of Louvain.

Adjunct Secretaries, Messrs. Reul, of Brussels; Stubbe, of Louvain; Hughes, of Tournai; Bastin, of Burdinne.

The programme of the proceedings had been arranged as follows:

1. Inspection of alimentary matters of animal origin.

2. Legislation on the questions of soundness and unsoundness (*vices rédhibitories.*)

3. The moral aspects (Déontolgie) of veterinary science.

4. Organisation of the civil veterinary service.

Although the Congress was an essentially national assembly, representatives of the neighbouring countries assisted at it. *Alsace-Lorraine* was represented by its Senior Veterinary Surgeon, M. A. ZUNDEL; *England,* by Mr. FLEMING, Veterinary Inspector of the English Army; *Germany,* by M. VOGEL, Professor at Stuttgard; *France,* by Messrs. DELALANDE, of Bourges, formerly a pupil at the Belgian School, and ROSSIGNOL, of Mélun; *Holland,* by M. THOMASSEN; the *Grand Duchy of Luxemburg,* by Messrs. BUFFETT, FISCHER, and SIEGEN, formerly pupils at the Belgian School.

The delegate of the Minister, *M. Romberg,* invited M. THIERNESSE to replace him in the President's chair and declared the Congress opened. On taking in hand the duties which devolved upon him, M. THIERNESSE thanked the meeting for the honour done to him in his being called upon to direct its proceedings, and stated that he would endeavour, as much as possible, to show that their confidence in him had not been misplaced. He then stated the aim of the meeting of this Congress, and that it had begun its work under good auspices. He showed that His Majesty the King had designed to extend to it his patronage, and that the Minister of the Interior, in accepting the presidency, and in charging the Director-General of Agriculture and Industry to inaugurate it in his name, had acknowledged all the importance which is to be attributed to its deliberations on the subjects of the programme. He then expressed the sincere thanks of the assembly for these marks of approval, and finished by proposing a vote of thanks; first, to the honorable delegate of the Minister, M. Romberg, for this fresh mark of interest in the veterinary profession exhibited by him, and second, to the organising committee of the Congress for the zeal and intelligence exhibited by it in the performance of its work (loud applause).

After the correspondence had been dealt with by the secretary, the discussion was opened successively, from two points of view, by *M. Van Hertsen* and *Professor Laho* on *the Inspection of Alimentary Matters of Animal Origin.* This important question gave rise to an animated debate, at the end of which the Congress voted:—1. That inspection of all meat destined for food should be rigorously carried out on an organised system. 2. That inspection offices for

all meat coming from abroad should be organised. 3. That slaughter-houses especially should undergo inspection. As for milk, the Congress is of opinion that the administrative bodies of large centres of population would do well if they entrusted to a special committee the preparation of sanitary police regulations based on the transmissibility of certain diseases from animals to man. The Congress also voted on the necessity for establishment and working of laboratories for the analysis of all provisions, milk included; similar to those which are at present in agricultural places for the examination of manure, &c.

The *second sitting* was devoted to the much debated question of legislation in reference to defects sanctioning return of a purchased animal. After a profound discussion on this question, treated in the lines indicated by *Professors Hardy* and *Lorge*, the Congress was appealed to for a statement whether there is reason for maintaining the present law in full vigour. This remained undecided, as the voting was evenly balanced for and against. Considering the maintenance of the law as settled, the Congress then voted as follows:

1. That in a case of exportation of a recently sold animal, the warranty ought to cease, in so far as contagious diseases are concerned, as soon as the animal has crossed the frontier; that it ought also to cease for other defects, at any rate when the buyer brings the animal again into Belgium, where the examination ought always to be made.

2. That the minimum of price, enabling the buyer to return in case of defect, should be raised to, for horses, 300 francs, and for animals of the bovine species, 150 francs.

3. That the delay for commencement of the action ought to receive some moderate limit, such as the time of incubation allowed for contagious disorders.

4. That the delay for periodical ophthalmia should be, as now, thirty days.

5. That thick wind (*? pousse*) should be erased from the list of returnable defects.

The Congress next considered the *Deontology of the Veterinary Practitioner*, on which question, *M. Hugues*, military veterinary surgeon of the first class, of Tournai, made a report. *Messrs. Stubbe* (Louvain) and *Eraers* (Lean) also made interesting communications on this subject. On the *third day*, the sitting was devoted solely to the question of the *Organisation of a Veterinary Civil Service*, which was introduced by a report contributed by *M. Eraers*. In the discussion raised on this question the meeting insisted—(1). On the urgent necessity for the law of sanitary police, a

project of which has long been before the Chamber of Representatives. (2). On the desirability of appointment of a consulting committee on veterinary affairs, similar to that which exists in other countries. (3). On the necessity for the nomination of a certain number of veterinary practitioners as sanitary inspectors, with a suitable salary and without permission to practise privately. (4). On the suitability of according, in the absence of such inspectors, similar advantages and duties to all duly qualified Belgian practitioners. (5). On the advantages, both from the point of view of agricultural interests and public hygiene, which would result from organisation of a veterinary civil service as above indicated. After an exchange of observations on some points of secondary importance, the programme having been completed, the Congress voted, by lively acclamations, thanks to the Corporation of Anderlecht, for the splendid hospitality which had been accorded to it, and the PRESIDENT declared the meeting closed amidst cries of "Vive le Roi," enthusiastically reiterated by every member of the assembly. During the Congress the members were entertained with great splendour by the municipal authorities of Anderlecht-Cureghem, and by other notabilities. Altogether this National Veterinary Congress seems to have been a grand success, and must have proved in every way satisfactory to its promoters. We are glad to see that the editors of the *Annales de Médecine Vétérinaire* (from which Journal we extract the above), promise us more full accounts of the matter discussed at the sittings. Thus, each continental country in turn shows us how union among members of the veterinary profession is conducive to professional progress. France, Germany, Italy, assemble their veterinary practitioners, and their voice is heard by governments and the public; and, as France shows us, the Governments listen to them and gladly utilise their suggestions on veterinary subjects. In Italy and Belgium we see that their meetings receive *royal* recognition. It must be with satisfaction that every medical man (human or veterinary) hears that in the former country, amidst rumours of wars and other political complications, KING HUMBERT finds time to preside in person, and to deliver addresses at the Congress of Hygiene at Turin.* In the *Annales* for

* The Royal Veterinary College of Dresden announces its Centenary Anniversary Celebration for the 7th October of the present year, which will also be under official patronage; the Minister of the Interior undertaking the duties of President. *Professor Leisering*, of the Dresden School, will perform all professional duties of this post. The proceedings will terminate with a "*Fest commens*" for students at 8 p.m.

August, 1880, is the first part of *Dr. Willems'* (of Hasselt) communication, "New researches on Exudative Pleuro-pneumonia of the Bovine Species, and on preventive Inoculation for that Disease," as read before the Royal Academy of Medicine of Belgium. He shows how the question of inoculation as a preventive for this disease is "now more urgent than ever, interesting from the highest scientific point of view, and as concerning the agricultural industry of all nations." He then recalls how, in 1855, the Academy adjourned the discussion of this subject for further experimentation and practical observation, and in 1864 it was again discussed but not decided. "Since then time and experience have spoken on this subject, and facts observed during more than a quarter of a century prove the correctness of the conclusions of the Belgian Official Commission as expressed in its seventh and last report to the Minister of the Interior :" — "Inoculation possesses evidently a true prophylactic value. And in infected places the number of beasts inoculated with success and subsequently have been attacked by this plague is insignificant as compared with those of beasts not inoculated, especially if we remember the prolonged period of incubation of the disorder. We must, therefore, recommend to breeders and graziers the practice of inoculation." These conclusions were arrived at after thirteen years' observation and seven successive reports submitted to the Belgian Government by men of high standing in science, agriculture, and commerce. They are the same conclusions as in 1866 were very eloquently defended before you by two of our honorable colleagues, MM. Crocq and Thiernesse, the former president, and the latter secretary, of the Government Commission. And I must not neglect to accord my public thanks, so well deserved, to those honorable members who previously received the discovery of inoculation with a certain amount of defiance and doubted its value for many years, but after experimenting on a large scale, after having availed themselves of every means for ascertaining the truth, have proclaimed 'the prophylactic value of inoculation.' Now, I have undertaken the task of proving to the Academy that the doctrine which I proclaimed in 1852 has been verified in all countries, that the evident facts on which it is based are allowed, and have been confirmed by the most competent men and the most rigorous experimenters." "A considerable movement in favour of inoculation has taken place in France, Belgium, Italy, Germany, England, America, Africa. Australia, and especially in Holland, and from all these

results the conclusion that inoculation has a preservative virtue sure to fortify the organism of the ox against that formidable scourge—pleuro-pneumonia.

Before recounting the number of facts observed in different parts of the world, I feel I ought to answer one objection always advanced by the opponents of inoculation. "The disappearance of pleuro-pneumonia from sheds must not be attributed to inoculation, for we often see that the disease suddenly becomes arrested as well in establishments where inoculation has been performed as in those where it has not, after making one, two, or three victims only. Besides, pleuro-pneumonia has not the same virulence as formerly, being now on the decrease." All observation shows us that this objection is baseless. When once pleuro-pneumonia has been introduced into a herd by contact with a sick animal, it does not lose its intensity, and, instead of stopping after it has attacked two or three beasts, destroys 25 to 30 per cent. of them, and still more, according to the French Official Scientific Commission, which rates at 80 per cent. the loss of animals exposed to contagion. "When the disease ceases, after having made two or three victims, we may well ask whether we really have to do with pleuro-pneumonia contagiosa." "All the brewers of Hasselt have proved this. If sometimes, for some reason, any of them has ceased the practice of inoculation pleuro-pneumonia has returned with the same intensity as formerly, and the number of its victims has been very considerable." "The disappearance of pleuro-pneumonia depends so little upon chance, on a caprice of nature, that in sheds where inoculated animals are mixed with uninoculated, and placed in absolutely the same conditions, the contagion having been once introduced amongst them, we can prove a constant relation of cause with effect, that is to say, that the inoculated resist the contagion, but the uninoculated succumb."

M. Willems next proceeds to the enumeration of his "facts." As far as France is concerned, he quotes the views of the Governmental Commission of that country, "Inoculation with the liquid obtained from the lungs of an animal affected with pleuro-pneumonia has a prophylactic value. It endows the organism of the majority of the animals thus operated on with an immunity from the contagion of lung disease, which lasts for an indefinite time." And strengthens his position by the opinions of MM. Bouley, Sanson, Prince, Saint-Cyr, Mathieu, Viseur, Senglen, Boulay d'Avesnes, and many others. His paper then continues as follows:

"*Italy.*—In no country of the world has inoculation been more appreciated than here. Since 1852 different official commissions have been appointed, in the different provinces, to study and test the question of inoculation as a preventive means against pleuro-pneumonia. The new method especially made way in Upper Italy, where agriculture is most intimately concerned with live stock. Multiplied experiments were everywhere made, and the conclusions of the official commissioners were all favorable to the practice of inoculation, which gradually and unobtrusively at length became an established custom with stock owners. In 1856 the Society of Agriculture of the Sardinian States adjudged to a *savant,* who had honored me with his precious friendship, and who shall never be forgotten by me, Dr. Ponza, Chief Physician of the Foreigners' Hospital at Alexandria, a gold medal, 'as having been the promoter of the Willems' method in Italy.' The Official Commissioners of the Society of Agriculture of the Sardinian States and of the Pavia Chamber of Commerce and Industry have always spoken well of the process, but the Academy will excuse lengthy extracts from their reports. Though I am diffident in putting my personal proceedings on record I must do so now, since I do not better know how to give proof of the true favour which the discovery of inoculation enjoys in Italy than by giving some details of the reception accorded to the inventor of the process during a visit in 1872. The agriculturists of Lommelline, where before 1852 pleuro-pneumonia raged with the greatest intensity, and regularly devastated the herds of their rich and well-kept farms, causing incalculable losses, tried inoculation, and at the end of some time their cattle were freed from this epizootic scourge. These agriculturists and cattle owners, having learned that I was about to visit their country, spontaneously and eagerly seized the opportunity thus afforded them to personally testify their thanks. They prepared a brilliant fête, and invited me to Mortara, the chief town of the country, and there the Agricultural Society, the Medical Committee, and the Municipality, gave me a most brilliant reception. I was truly confused with the honours accorded to so humble a person. Senators, deputies, many members of the medical body, of the corporation of veterinary surgeons, collected from all parts of the country, together with rich proprietors and smaller agriculturists, had met together to take part in my fête and shake my hand. At the banquet, which took place in the hall at the railway station, *M. Deputy Passavini,* in delivering to me the address of the Communal Council, said :

'That his native town had deemed it a duty and an honour to give faithful interpretation to the feelings of all the communes in Lommelline, who to-day salute, in the person of Dr. Willems, the benefactor of Italian agricultural industry, freed from the ravages of pleuro-pneumonia, thanks to the discovery of inoculation,' &c. Shortly after, *M. Senator Plezza,* President of the Agricultural Society, rose and spoke as follows:—'When a man, by his studies, his labours, and his intellect, succeeds in wresting from nature a useful secret, when a man has the good fortune to discover a new application of science, valuable to all mankind, from that time that man no longer belongs only to the nation which gave him birth, but he becomes a citizen of the world, to which he belongs as a benefactor of humanity. It is as such a benefactor that to-day I have the honour to present to Dr. Willems this diploma of *Perpetual Honorary President of the Agricultural Society of Lommelline.* It is as such I take his hand, as a friend, in the name of all agriculturists.' Next, *M. Strada,* President of the Medical Committee, and then *Professor Papa,* spoke in the name of human and veterinary medical practitioners respectively."

Germany.—I can with regard to this country truly repeat what I have said concerning the last mentioned, that the system of inoculation has received much experimental investigation, and has given good results in Prussia, Wurtemberg, Hanover, Saxony, Bohemia, and in all the other states. This is shown in many writings of a large number of veterinary surgeons, and especially in the different official reports of the Governmental Commission of Ober-Baruiss, six in number, prepared by MM. Ulrich, Bretsch, Christanni, Héring, Schmidt, Thäer, Vater, &c.

England and America.—Pleuro-pneumonia was introduced into England in 1842 by cattle from Holland, and into America in 1843 by a German cow directly imported from Europe, and later (in 1847) animals from England originated other centres of infection in that country. "Preventive inoculation has been tried here as in most other places. All cattle owners of London have their beasts inoculated. The same practice is carried out on many farms, especially in Ireland. If inoculation has become a general practice with the English, who are people keenly alive to their own interests, we may be sure they have proved the matter experimentally, and that it has given them definite and decidedly beneficial results." The opinions of Gamgee, and Bradshaw (*Veterinary Journal,* December, 1875) are then quoted.

Australia.—Pleuro-pneumonia is now the most predominant disease, not only in New South Wales, but also in all the other Australian colonies. It was introduced into this remote corner of the world, so rich in pastures, in 1858, by an English cow disembarked at Melbourne. She died of pleuro-pneumonia six weeks after arrival, which proves the extreme length of incubation of this disorder, for the journey from England to Australia by a sailing-vessel takes about three months. A similar fact was shown when this disease was introduced into the Cape of Good Hope by a Dutch cow. Mr. Bruce's researches on the prevalence of this disorder in the colonies, and the value of inoculation, are then given. Thus, the first part of Dr. Willems' paper is of considerable interest, giving us an admirable one-sided view of the important question it treats of. His information with regard to England, as given above, is evidently second-hand, and open to question; nevertheless, we may look forward with interest to the other part of his paper, which contains something new to science. This we will endeavour to place before our readers in the next synopsis.

ON PLANTS IN RELATION TO ANIMALS.

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

(*Continued from p.* 540.)

Continuing our history of the agricultural Clovers, we come now to the consideration of two species, as follows:

Trifolium incarnatum.—Carnation Clover. Flowers a bright carnation pink (sometimes white), in spicate heads. Leaflets inclining to spathulate. Stipules with pink blotches.

" *hybridum.*—Alsike Clover. Flowers pinkish white, in rounded heads; older heads brown by reason of the dried persistent corolla. Leaflets ovate.

These two plants are both considered of foreign origin, though there is reason to think that they are derivatives from the cultivation of native sorts. The crimson clover has for many years been cultivated on the Continent, and there

is reason to believe that its cultivation is extending with us, as it is found to be a most useful soiling plant, coming at a time when it is especially useful for sheep feed, and as an early alterative green food for horses.

We find the following account of its economy by Mrs. Lankester:

"1. Crimson Clover.

"French, *Trèfle incarnat;* German, *Inkarnat Klee.*

"Of late years this species of clover has been much grown in England, and has long been cultivated in Southern Europe as a fodder plant. It can be sown in the early autumn as soon as the corn is off the land, the latter being simply harrowed, so as to loosen the surface.

"It grows with great rapidity, and yields a good crop early in the spring when other green fodder is scarce, and it may be removed in time to sow corn. Sometimes it is sown in February and March, and can then be fed off, and ploughed in time for sowing the turnip seed. This rapid growth renders it very valuable to the farmer under certain circumstances, when he requires to raise a good supply of fodder between the regular rotation crops. All cattle are fond of it when young and green; but when in flower its stems become hard, and it is not well adapted for hay. Like other similar plants, it is often sown with Italian rye-grass. It ripens seed readily, but, when left for this purpose, exhausts the ground considerably."

It would, however, appear to be best adapted for drier seasons than have prevailed in this country for the last three years, during which period we have been most unfortunate in the growth of the carnation clover, for, though we have put in the seed as early as possible, and watched it come up excellently well, yet in a few nights, before the plants had developed their secondary leaflets, they gradually disappeared.

On searching for the cause of this mischief, we soon discovered that it was partly, if not wholly, due to slugs, the recent wet seasons having caused these creatures to abound to an extraordinary extent, so much so that even at the present moment, after a month of very dry weather, if we take up a bit of stone-brash, we shall surely find several examples of these slimy molluscs adhering to the under surface of the stones, where they lie in ambush ready to come forth in the evening to eat any tender springing plant within reach.

We have found that turning pigs, geese, and ducks into the fields prior to its being sown soon gets rid of very many

of the pests, the former animal, indeed, literally ploughing up the stubbles to get at such dainty food as slugs and worms, whilst the birds are no less industrious, like the pigs, in picking up, not only the animals, but any corn that may be scattered about; and as they all fatten readily on such treatment, it may be considered a profitable way of growing bacon or of fattening a stubble goose, and more especially if it tends to preserve a desired crop.

"2. ALSIKE CLOVER.

"French, *Trèfle hybride;* German, *Bastard Klee.*

"Stem 9 inches to 2 feet high, branched, flexuous. Leaves of the radical tufts and base of the stem on petioles, often 3 or 4 inches long. Leaflets $\frac{3}{4}$ to $1\frac{1}{4}$ inch long, with the lateral veins excurrent, forming more or less projecting teeth. Stipules herbaceous towards the apex, but white, with green veins, towards the base. Peduncles from the axils of the upper leaves commonly 2 to 4 inches long. Flower-heads $\frac{3}{4}$ to 1 inch across, becoming much flattened on the upper side by the bending down of the flowers after flowering, when the elongate arched pedicles become visible at the apex of the head. Flowers about $\frac{3}{8}$ inch long, whitish, tinged with pale rose. Calyx somewhat membranous, whitish, with the teeth green; the upper teeth a little longer than the others. Corolla with the standard folded down over the fruit, retaining its shape, but turning brown and membranous, striated. Pods ovoid, obtuse at the apex, compresssed, not bossulated. Seeds flattened and notched at the hilum.

"Plant bright green, with the leaflets having often a white mark in the centre. Stems and peduncles with a few adpressed hairs, but otherwise the plant is glabrous."

Such is the botanical description of this interesting clover as given by Dr. Syme.*

Its agriculture is highly important, as it supplies a plant which was much wanted as a variation to our rotations of crops.

It appears that land in which the common red clovers are made to take their rotations for two or three series becomes what is called "clover-sick," that is, it is made incapable of growing a plant of the ordinary red clover; in this position there does not appear to be the same objection to Alsike clover, as it will grow where red clover has failed. This side of the question is well wrought out in the following extract:

* 'English Botany,' vol. iii, page 53.

"*T. hybridum* (Hybrid or Alsike clover), although a native of Southern or Central Europe, the field-culture of this clover seems to have been primarily practised in Sweden, from which country it was first introduced into Britain, in 1834, by the late Mr. George Stephens, land drainer, Edinburgh, under the name of Alsike clover, for which that of hybrid clover is now by general consent substituted, not, however, from its being actually a hybridal production—a theory confuted by its botanical characteristics—although to the mere casual observer its appearance is such as to favour the opinion of its being a cross or hybrid between the white clover (*T. repens*) and red clover (*T. pratense*), for it has much resemblance to the former in the colour and size of its flower-heads, while it approximates more closely to the latter in its habit of growth, and the stems all rise from one crown, without spreading or rooting at their joints, as in the white clover. Its seeds are also much smaller than even those of *T. repens*, and they further differ from those of both the forenamed species in colour, which may be described as a dull olive green, while that of the flowers varies from white to pale red. *T. hybridum* is strictly perennial, the writer having it now growing as vigorous as ever on a field of well-grown medium soil, which was sown out with a mixture of clovers and grass seeds seven years since, and from which the so-termed 'perennial red clover,' or cow-grass, has entirely disappeared. Of late years various communications relative to *T. hybridum* have appeared in agricultural periodicals, in the shape of prize essays, &c., from which the following particulars are deducible, namely:

"1. That it is more permanent in duration than *T. pratense* or any of its varieties.

"2. That from having more fibrous or less deeply penetrating roots, it is not so well fitted as the last-named species for withstanding extreme droughts.

"3. That 'clover-tired' soils are by no means inimical to its growth.

"4. That on lands which are not 'clover-tired' it will not yield such a weight of produce as *T. pratense*.

"5. That it invariably far surpasses *T. repens* in weight and bulk of produce.

"6. That, compared with the last-named species, it is more keenly sought after and eaten by cattle, sheep, and horses; hence it may be inferred to be superior to it in nutritive or feeding properties.

"Some years since the seeds of *T. hybridum* could not be procured under 5s. per pound, and 1s. 6d. may be quoted as

the lowest price at which they have yet been generally attainable; as, however, they are produced in abundance, and ripen freely, they may be expected soon to assimilate in cost with those of the more common clovers. The present comparatively high price is, however, more apparent than real, seeing that a given weight will produce about a third more plants than *T. repens*, and nearly three times as many as the same weight of seeds of *T. pratense*."*

We have, then, in the two clovers some important crop plants. The *Carnation clover*, which is an annual, is fed off in time to admit of the succession of a crop of turnips, so that two soiling crops are possible in one year, and these become an excellent preparation for barley; it, however, makes but poor hay. The Alsike clover is more or less perennial, and with a mixture of hay grass yields a good crop for two seasons, when, as a soiling crop, it is often valuable, while it is no less so as a crop for the rick. We know of no better hay than may be made from the Alsike mixture. Wheat follows it very satisfactorily, and hence we have in this latter a variety of clover nearly, if not quite, as good as the red sorts, and yet it can be grown when these would fail.

PUNCTURING AND EXERCISE IN THE TREATMENT OF PURPURA HÆMORRHAGICA.

By Thomas Greaves, F.R.C.V.S., Knott Mill, Manchester.

The physiology and pathology of this septic disease were most clearly and ably reviewed in a scientific and luminous manner before the Liverpool Veterinary Medical Association, at their last meeting, by Professor Williams. The discussion which followed was most interesting. It referred chiefly to the treatment of the disease; and since my method of treatment, the result of close careful observation during a tolerably long experience, seems to be at variance with that of some of the other members, I feel a desire to state my case more clearly and more at length. It is not my intention to discuss the cause or the nature of the disease, but simply confine myself to treatment. The medical part of the treatment advocated seemed to be nearly the same by the various speakers, viz. aperient medicine, spirit of turpentine, and chlorate of potass; but puncturing the swell-

* See Morton's 'Cyclopædia of Agriculture,' p. 998.

ings and giving the patient exercise was condemned by several members as objectionable, condemned, as it appeared to me at the time, on insufficient grounds, if not in the absence of any ground whatever. Several cases were related where extensive and deep sloughing, had taken place in cases where no puncturing had been resorted to. It has been my good fortune to have listened to several very interesting papers read on this disease and discussed at the Midland and other veterinary medical associations, and I have listened to the views propounded by gentlemen who differed from me at the time, but whose opinions, nevertheless, always demand the greatest attention. I have endeavoured most earnestly to gain whatever knowledge I could on each and every occasion, and I fully admit that I have often gained information which has been of great benefit to me in practice. It has been my custom to receive facts or any new method of treatment which seemed to possess within itself sound principles, especially if the results of that treatment showed a percentage of recoveries exceeding those of my own. It is at these meetings a man finds his level; any fad or hobby he may have is examined, exposed, and exploded. It was quite immaterial to me whether the new views were advanced by a very intelligent young practitioner, or by one who had been a close observer for a long series of years; even the best methods of the shrewd non-qualified man have not been repugnant to me. I have always felt a sincere thankfulness for such information; but when I listen to opinions expressed by an intelligent and close observer, one who does his own thinking, one who has borne the heat and burden of the day during a long life in the daily practice of his profession, I feel I am specially bound to respect and honour those opinions, even though they may be new to me, and at first do not commend themselves to my mind, or impress me very favorably; nay, they may not seem strictly in accordance with scientific principles, still I feel they must have something of worth in them or they would not be uttered by such a man, for do we not find practical experience simply to be the proving of different methods, those methods which are not successful when fairly tried are cast aside, and those which are successful are retained. It is thus facts are accumulated in our individual life, but prejudice always hinders the reception of truth. There are those who seem not to be cognizant, or else they are unbelievers in these truths; they condemn and deride all methods of treatment of which they know nothing. Prejudices have yet to be overcome, and

conflicting opinions reconciled. My opportunities of observing and treating cases of this disease are perhaps not quite so extensive as those of some of my fellow-practitioners, still for over forty-six years in continuous practice, in which have occurred probably eight to twelve or more cases in a year, I have witnessed the disease in its varied forms, some acute, carrying off its victims in three hours, when the disease attacks vital organs, others in periods varying from three hours to three or four weeks. I have carefully employed various methods of treatment at different periods of my life and with dissimilar results. I have a distinct recollection at one period of my life, about twenty to twenty-five years ago, of being sorely perplexed. I had three valuable cases of this disease on hand at one time; they were, in spite of my most anxious and careful attention, doing unfavorably. At that moment my assistant, a shrewd Scotchman, the genuine article I believe, intimated to me he thought that he could make an improvement upon my method of treatment, he did this pleasantly and respectfully, which took the sting out of the idea of a servant teaching his master. I consented to his taking one of the cases, "the worst of the three," into his own care. He at once punctured all the most prominent swellings in the legs, belly, breast, and head, in many places. He used a broad-shouldered lancet, and each incision was half an inch or three quarter inch deep; he also had the horse exercised. The horse was so stiff that he had to lift the legs, one by one; locomotion could only be effected by this means. He spent an hour at a time most industriously with the case three and four times a day; day after day he busied himself in puncturing, fomenting, and exercising the animal, the medical treatment the same as the other two cases. This case made a fine recovery, the swellings subsided entirely, and health became completely restored; the other two animals died from breaking up of the lungs, &c. I remember his saying, if you puncture freely early in the complaint you will never have any sloughing of the integument. "I find this is not invariably the case." It was his custom to puncture freely, and always give exercise in the early stage of all these cases, and also in those of "common humour or weed." I have seen bad cases of "weed," acute cases, where the limb was enormously swollen, make good recoveries, the affected leg becoming fine and sound as before the attack through this mode of treatment. These cases made impressions on my mind that nothing can efface. Since then I have adopted this system of treatment. It is often surprising the large quantity of

straw-coloured serum that will escape from the punctures; this lymph-like fluid would have become coagulated and organised. I am free to admit that this method of treatment is attended with a percentage of recoveries far greater than resulted from my former mode of treatment, and, as far as I can ascertain, than that of any other practitioner I have had the opportunity of comparing notes with.

INORDINATE EXCITATION OF FACIAL NERVE; IMPLICATION OF CHORDA TYMPANI, ATTENDED WITH EXCESSIVE SALIVARY SECRETION.

By W. Hastie Kennedy, M.R.C.V.S., Wrexham.

It gives me much pleasure to be able to communicate the following interesting case of extreme inordinate excitation of the facial nerve. There are anatomical and physiological points to be noticed of considerable value, and which appear of much worth and critical note. I only wish the details of the communication had been placed in hands more competent to do it the justice it appears to me to deserve. Permit me simply to narrate the conditions presented, and to give, as assisting the particular inferences to be drawn therefrom, certain opinions bearing upon these; I shall then be able finally to leave the reader to form his own more perfect judgment upon the apparent conclusions which it seems to me are to be elicited from a perusal of its history.

Cases of extreme general excitation of the facial nerve are occasionally, but, I believe, rarely met with; they are invariably characterised by the production of severe and continuous spasmodic muscular contractions and excitations of the parts implicated. A limited portion only of structure may be affected, such as the muscles of a lip singly, or those of the nose, or the muscles of the eyelids, but at other times we may find the whole of the muscular and other important structures which receive their nervous energy from the facial to be completely under such abnormal influence.

The following is the history of a case where the whole nervous track and the structures under its immediate influence were simultaneously involved. The subject of the affection was an aged chestnut horse, which had regularly been used for daily carting and shunting purposes, had always been a healthy horse, and had never evinced any

predisposition to symptoms of this nature. A week or two prior to the general implication, a simple involvement of the lip muscles presented itself, but this twitching, which I am told was tolerably continuous, had been taken little notice of, until suddenly there was presented a most aggravated implication of the whole muscular and other structures under facial control, producing excessive and continuous spasmodic jerkings and twitchings of the lip, nasal and other facial muscles, involving both sides of the head simultaneously. There was no very appreciable exaltation of excitement noticed as affecting the one side of the head over that of the other; all *en masse* were under similar circumstantial conditions. Particularly, may I notice the involvement of the labii muscles and that of the dilatatores and compressores of the nasal orifices, and I was careful to note the negative implication of the masseters, giving us distinctive evidence—although these masses of structure are largely traversed by the facial—of the non-supply of facial nerve-fibres. The buccinators were implicated, and the orbicularis palpebræ muscles were very severely under influence, as evidenced by the marked continuous twitching of both eyelids. The muscles also of the ears were similarly implicated; sometimes the anterior were more largely affected than those of the posterior, and *vice versâ*. The sense of hearing, I need hardly mention, was much interfered with, so that the perception of sounds generally could be distinctly noticed to be very faultily acknowledged. The cervico-facial subcutaneous muscles (Chauveau) were similarly under influence, these excitations and twitchings extending as far posteriorly as the lower point of the shoulder.

There was no very favorable opportunity given of minutely inspecting the interior of the mouth or fauces, yet, I think, it may be reasonably concluded that there must have been excitations of structure here also; there was an almost complete inability to masticate and deglutate food; even pultaceous or watery nutrients could only be partaken of with extreme difficulty. The masticatory muscles were not immediately implicated; they are not recipients of facial distribution, but their contiguous tissues of the lips, cheeks, and soft palate, and submucous tissues of the tongue are such recipients, and we may thus reasonably conclude how the normal masticatory action could be seriously involved, and, doubtless, largely to be attributed to this internal implication of these structures. Finally, I may mention the salivary glands as being largely under influence, and it is to this particularly that I would further direct attention.

The generally aggravated conditions remained continuously so affected for about three days, the more severe under palliative treatment gradually disappeared, and food eventually could be freely taken in; the ordinary health of the animal, which had been much affected during the severity of the attack, gradually also regained its ordinary status, and we were much pleased at the time that so favorable a termination was being brought about; but the recovery has not been a complete one, inasmuch as there still remains a small, yet apparently uncontrollable, twitching of some lower facial muscles. Some weeks have now elapsed, and no further change in this condition has taken place.

During the three days of severe excitation, when apparently the whole facial nerve seemed under excitation, the animal was troubled with a very excessive flow of salivary secretion, occasionally completely flooding the floor of the manger, and, concomitant with this, the submaxillary glands, particularly the near side gland, increased in size, and as a further result of this vascular excitation and increase of gland structure, there was slight involvement of contiguous tissue, and a small abscess presented itself. I must notice that this excessive salivary secretion gradually abated prior to the third day, and I may particularly state that these conditions did not show any appearance during the early slight muscular contractions of the lips, which were continuously noticed, more or less, for a week or two, but only presented themselves along with the exaggerated symptoms. It may be concluded from these conditions that we have had a striking instance of implication of the chorda tympani, this nerve in the main being the producer of the increased vascularity and tissue change noticed in the submaxillary glandular structure, and the excessive salivary secretions doubtless were largely due to the influence of the inordinate excitation of this nerve. There is no reason to doubt but that the parotid and other salivary secreting glands were also more or less similarly influenced, as the parotid, through the medium of the auriculo-temporal (lesser superficial petrosal, as stated by Ludwig and Bernard) is in receipt of facial supply, and so likewise is the sublingual (Heidenhain).

Can we, therefore, accept from these conditions, with regard particularly to the involvement of the submaxillary glands, that it directly gives proof to the generally acknowledged doctrine that the chorda is a branch distinctively of the facial, and that through excitation of the latter it became similarly implicated? It is pretty generally conceded by neuro-physiologists, *i.e.* by such men as Bernard,

Ludwig, Kölliker, Müller, &c., that the chorda is distinctively a branch of the facial, but this position has been recently disputed by Dr. Bigelow, who, we are told, in a communication to the April number of 'Brain,' after careful and extended experimental research into the origin and function of the chorda, affirms as a result "that *the chorda is not a branch of the facial*, but that it has origin from the intermediary nerve of Wrisberg, which *itself*, he states, has an *independent origin* from the medulla." He is also corroborated in these statements by Dr. Spitzka, another eminent American physiologist.

That this is entirely antagonistic to the ordinary received physiological views, I may point your attention to the following:—Burdon Sanderson, in his 'Syllabus of Lectures on Physiology,' p. 94, states "That the centre which governs the reflex process of salivary secretion has its root in the medulla oblongata, and transmits its influence to the submaxillary gland by the chorda tympani, and to the parotid by a nerve which springs directly from the auriculo-temporal, ultimately like the chorda from the facial; the submaxillary may be excited by direct faradization of the chorda, in which case it pours out its secretion in abundance, and in addition this excitation of the chorda produces dilatation of the arteries of the gland, in consequence of which its supply of blood is largely increased."

Foster, in his 'Handbook of Physiology' (p. 598) states: "The facial is the secretory nerve of the submaxillary and parietal glands." "In all cases where a flow of salivary secretion is brought about the chorda is the sole efferent nerve; stimulation of the chorda (p. 244) brings about two events—dilatation of the blood-vessels of the gland and a flow of saliva."

Frey, in his 'Histology of Man' (p. 464), states: "Irritation of the chorda gives rise to secretion of a large quantity of saliva; together with this, the gland becomes filled with a large quantity of blood." "The submaxillary receives branches from the facial nerve—the continuation of the chorda." "The sublingual is presided over by the same nerves as the submaxillary, *i. e.* the facial and sympathetic; stimulation of the chorda here also produces a flow of salivary secretion" (Heidenhain).

The foregoing are the ordinarily accepted views concerning the origin of the chorda, and will also show its distinctive action upon salivary secretion. In determining, however, a question of this importance from the illustrations given in the foregoing case, there are fine anatomical conditions

concerning the origin in question which deserve some attention. "Anatomists generally note the close contiguity of the facial with the auditory nerve; they lie side by side, are often grooved by contact, and a third nerve, of smaller size —the portio-intermediary of Wrisberg—is brought into view by separating these two, and further," says Wilson, "the results of Morgandi render it probable that the portio-intermediary is connected at its origin in the corpus restiforme with the auditory nerve, that it is the posterior (sensitive) root of the facial, that the intumesencia gangliaformis of the facial is the ganglion of this root, that it bestows the principal part of its sensitive function on the facial, and that the chorda is partly derived from the intumescencia gangliaformis." We must notice here some general connection between the nerve-fibres of facial and portio-intermediary of Wrisberg, and chorda tympani, excitation of one might probably, under conditions, produce excitation of the other. And Chauveau, in speaking of the nerve of Wrisberg, says: "This ramuscule in the horse is extremely attenuated, and can scarcely, if at all, be distinguished at its origin from the filaments of the lateral roots of the auditory nerve; it is seen to enter the aqueduct of Fallopius, and divides on the bend of the facial into several gradually diminishing filaments, which are confounded with the proper fibres of this nerve or ganglion geniculare;" likewise confirming the closeness of contiguity of fibres of facial and nerve of Wrisberg. The following are Dr. Bigelow's conclusions:— 1. The chorda tympani is distinct and integral throughout its entire length. 2. It is derived from the nerve of Wrisberg, and not from the facial.

In further corroboration, Dr. Spitzka states: "It is well known that the nervus intermedius of Wrisberg is entirely distinct from the facial at the origin from the medulla;" and further, "I have found that the fibres of the nervus intermedius have no connection with the facial nerve nuclei." Can this case which I have narrated be taken as supporting the general view, that the chorda is a distinct and inseparable branch of the facial? We have noticed the specific action upon the glandular secretions and glands and the excessive excitation of every fibrous distribution of the facial, and we might be led, from this very conclusive evidence, to answer confidently in the affirmative; do not, however, let us cast aside the closeness of origin and continuity of the facial and nerve of Wrisberg, and do not let us forget that the cause of excitation had apparently a central origin.

Dr. Bigelow well remarks: "If we are to study the func-

tions of the chorda from its action in those morbid conditions affecting it, the nature of the shock as well as the resulting influence engendered by continuity of structure or by actual contact, must never be lost sight of; nerves, themselves uninjured, may suffer in their action by transmitted influence." I feel it is absolutely essential that we should give full justice and appreciation to the careful experimental researches of Dr. Bigelow, and, should these receive the further corroboration of scientists, the only rational supposition and conclusion which we might be able to arrive at from a study of the case before us would be that dependent upon and through the intimate contiguity of structures, the nerve of Wrisberg must have been alike involved with the facial, and thus the production of the pathological conditions presented to us. This case appears to me to be one of considerable importance, and on this plea I have been led to trespass so lengthily upon your valuable space.

VACCINE AND CALF VACCINATION.

By George Lewis, M.R.C.V.S., Monmouth.

I have read with much interest the letters and remarks upon the above in the *Veterinarian*, especially those by Mr. Ceeley, in which he relates some of his experiments with the contents of vesicles on the udders of cows.

I have observed that the udder of the cow is affected by *two* kinds of varioloid eruptions, which, under certain circumstances, rather closely resemble each other in appearance. One of these is benign, the other not so, but often very virulent in its nature, sometimes producing alarming symptoms and even death, its virulent effects being greater in animals suffering from disease, hereditary or otherwise.

Both of these diseases would seem to be communicable to man, but not to be equally severe. The effects of the malady, which is most closely allied to true vaccine, if not identical therewith, are not injurious; rather otherwise. But those of the spurious kind are highly injurious, producing both local and constitutional disturbances. I have also noticed that persons partaking of the milk from animals so affected, become ill in consequence.

From these observations, illustrated by the following cases, selected from a large number of others, it is evident that the greatest caution and skill should be exercised in selecting the vaccine lymph for vaccination in the human subject. That it is the peculiar province of the veterinary

surgeon to do this, no one will, I think, attempt to deny. It is for him to select the animals which are free from hereditary diseases, and those are not always of the purest or highest breed.

The sister profession should join hand-in-hand in this matter, as thereby much human suffering, and ultimate disease may be prevented.

Cases.

In May, 1874, I was requested to attend some cows belonging to a farmer; one had died a few days prior to my visit, and another was then seriously ill. Upon examination of this cow, I found the respiration quickened, and accompanied with a low moan; pulse much accelerated and weak; the respiratory murmur of both lungs, below their middle third, decreased in amount, seemingly due to slight congestion; extremities cold; secretion of milk lessened; and the udder literally covered with small red pimples in their last stage. I informed the owner that the animal would die, which she did in two days afterwards.

On inquiring if any of the other cows were similarly affected, I was informed that most of them had had "cow-pox;" but that it was dying away as on this cow's udder. Upon examination I found them all, six in number, to be suffering in different stages of spurious variola. Some of the animals were still unwell, and in all there was a decrease in the quantity of milk. The weather being cold, I had them "to house, and treated them" *secundem artem*, and they all soon recovered.

In May, 1878, I was requested to visit two cows, the one a Hereford, the other a shorthorn, said to be suffering badly from "cow-pox," the others of the herd having recovered.

The Hereford I found in the second stage, and progressing favorably.

The udder of the shorthorn was covered was confluent sores. There was only a small secretion of milk, and this was being entirely used for an infant then ill and under medical treatment. I presumed to state the danger of allowing the child to partake of the milk, and advised that it should not have any more of it. My advice was at once adopted, and the infant became soon convalescent.

But what of the cow? The man—whose duty it was to attend upon the animals and milk them—had a slight scratch upon one of his fingers, inoculation took place, and abcesses formed in various parts of the hand; the arm swelled to a fearful size, and the man was seriously ill for several months. On recovery, his usual strength did not return for some time.

Such is the brief outline of two cases illustrative of the diseases in question.

Pathological Contributions.

CATTLE PLAGUE.

From recent information it would appear that cattle plague still continues to prevail in several governments bordering on Austria and Germany, and in those adjoining the Black and Baltic Seas. The disease is also reported to have broken out in the neighbourhood of Warsaw.

In Turkey, cattle plague is prevalent in five districts of Moldavia, and an outbreak of this disease is also reported in the Vilayet of Salonica.

In Austria, this disease has lately broken out in the District of Borszcyower, in Galicia; also in the Commune of Somogzer, in Hungary.

Several of the Russian papers state that cattle plague of the most virulent description has appeared in the Province of Volhynia, the principal cattle district of Russia. In one village alone 200 head of cattle died in a few days, and in many parts of the province not a cow remains alive. The losses sustained by the peasants depending upon cattle rearing for their livelihood have reduced them to beggary. The Russian authorities are making no effort to check the disease.

PLEURO-PNEUMONIA.

In the Netherlands during the four weeks from the 11th of July to 7th August, no case of this disease is said to have occurred.

In Great Britain there were, during the month of August, 91 fresh outbreaks and 220 cattle attacked with pleuro-pneumonia.

In Lancashire pleuro-pneumonia has again manifested itself at the farm of Mr. Tomlinson, Higher Booths, near Rawtenstall. Altogether, nine animals have been slaughtered at this farm. The disease has also appeared at the farm of Mr. Dixon, Henheads, near Haslingden. The diseased cattle have been slaughtered.

SWINE FEVER.

In Great Britain there were, during the month of August, 183 fresh outbreaks and 857 swine attacked with this disease.

FOOT-AND-MOUTH DISEASE.

THERE have been several reported outbreaks of foot-and-mouth disease, which, on inquiry, have been found to be aphthous maladies of a non-contagious character. It is worthy of remark that many cases of aphthæ have also been met with recently in swine. The eruption has been found on the outside of the mouth as well as in the mouth. These cases have hitherto only appeared among sheep and lambs.

Facts and Observations.

CATTLE DISEASES.—The *British Medical Journal* says that M. Poincaré has met with, in condemned meat at the *abbattoir* at Nancy, elements which seemed to him to be parasites not as yet described. In consequence of the analogy they showed to gregarines, he was led to consider whether he had not met with one of the phases or metamorphoses of the tænioïds, and if it is not by this means that raw beef gives tænia to so many sufferers. M. Poincaré also (*Revue Scientifique*, July 31st) records the death from charbon of more than twenty cattle, caused by pasture covered with marsh-water containing bacteria. He verified the fact by inoculating with this water two guinea-pigs, which died in a very few days.

PLEURO-PNEUMONIA, HOW SPREAD.—Mr. Hugh Riding, a farmer at Rishton, was recently mulcted in penalties amounting to about £15 by the Blackburn magistrates. The offender, who had pleuro-pneumonia among his cattle, yet caused one of the animals to be driven to the market at Preston and placed there among healthy beasts.

LOSS OF AMERICAN CATTLE IN TRANSIT.—The Liverpool steamer "Thanemore" was passed off Crookhaven on September 7th, throwing overboard carcases of cattle. A telegram received in Liverpool says, the "Thanemore" lost 225 cattle. The remainder of the animals were reported healthy. The steamer was *en route* from Baltimore to the Mersey.

WHOLSALE POISONING OF SHEEP.—It is reported that Mr. J. Housley, a farmer of Wellow, near Ollerton, has just lost 200 lambs. They were poisoned inadvertently through the administration of some mixture which a shepherd had prepared by a chemist at Mansfield, and which he declared he had used freely amongst flocks for many years. Shortly after the exhibition of the medicine the sheep were found lying dead all over the field. Mr. Housley estimates his loss at £250.

THE VETERINARIAN, OCTOBER 1, 1880.

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

AMERICAN CATTLE DISEASE.

THE editor of the *Live Stock Journal* deals with the questions which are involved in the trade in animals between England and America in a manner so reasonable that we venture to reprint some of the observations in preference to treating the matter from our professional point of view.

In referring to the part taken by the American press, the writer says:

"We exceedingly regret to see the tone of personal animosity with which certain American journals continue to discuss the fate of Mr. Arthur Arnold's attempt to re-establish free trade in cattle disease. The matter is not one for feeling or for tall writing; it has long passed that; and as we know that our columns are, as is natural, constantly referred to, and not seldom quoted, on the other side, we would beg our American contemporaries of their courtesy to calmly consider the following phases of this matter, in relation to the complaints we shall quote from them.

"1. The *New York World* observes that, 'The man is an idiot who believes that cattle shipped from Canadian ports are less likely to be affected with disease than cattle shipped from United States ports.' Now, this is simply beside the mark. It is no matter of what is 'likely,' or what anybody ought to 'believe' about it. It is the *fact* that diseased cattle are constantly found in American cargoes, and are not found in Canadian cargoes. As soon as Canada is found affected she will be scheduled, as sure as fate.

"2. Heaps of papers observe that 'Western' cattle are free from disease, and that they constitute the exports for England. It was always reply enough to this, that whatever the exports were *there* were diseased cattle. But Americans will, we trust, ere this, have been convinced by the report of their own commissioner, Dr. Lyman, referred to in Parlia-

ment a fortnight ago. It is established, and is now admitted by him, that three fourths of the cases '*are from the Western States,*' by way of Boston. The last Blue-book, it must be remembered, bristles with evidence that information of cases is deliberately suppressed in America, from mercenary motives; it is felt how much is at stake. There is too much reason to fear that even the West has already received a guest she may find it hard to get rid of, and may have to fight a serious question for herself, instead of quarrelling about it with England. We trust not, but Dr. Lyman's report home is terribly significant, and would not be made on light grounds; and a letter we published last week, which, if we could give the name of the writer, would appeal with special force to the breeders of America, is another proof that even Americans who can study the question fairly in England are amongst those most convinced of the gravity of the case.

"3. Stress is laid on the 'few' cases—only 137, it is said, all last year. It is forgotten that virtually the entire cargoes were infected in which these came, amounting to many thousands; and, still more, it is forgotten that there were more cases in *six months* this year then in *twelve months* last year. In plain words, the disease of pleuro-pneumonia in America, so far as can be judged from imported cargoes, has *more than doubled* since twelve months ago. This has a significance for us, of course; but we really think it has a far deeper meaning for our American friends. It is they who are most concerned, as they will ere long find. But we are concerned also. This week again we hear of three fresh outbreaks in Lancashire; and that this county remains the chief hot-bed and centre of disease is too plainly connected with its proximity to the great American depôt, even protected as it is by the present orders. As soon as we get nearly rid of pleuro, from Lancashire again the contagion spreads, tending to show that even yet we hardly understand how to be strict enough in guarding against infection.

"4. Lastly, however, strong complaints are made that America is 'nearly' free from the disease, but that England

is 'full' of it, while yet our cattle are allowed import under quarantine into the States. We have shown reason for fearing America has made a serious mistake on the first matter. Here, too, we have every case rigidly reported; there it is very different. That is not, however, the main point, which is, that we are earnestly doing our best to *get rid* of the plague. We are submitting to many restrictions, losses, and grievances ourselves. Government and people are working hard together, and we have attained already very gratifying success. America has yet to take the first step in this path, and till she has, it will be wise not to draw any comparisons. But, as to her own imports, she has, of course, a perfect right to exclude them if she chooses. Her regulations are entirely her own affair, as ours belong to us; and we can assure our contemporaries that no one expects her to frame them upon any basis whatever except her own supposed advantage. She does not import on our account, but on her own, and we do not frame her rules.

"It is not in justification of British measures that we pen these lines. They need none, and, childish as it seems for the press of a great nation to go on treating this question as if it were some petty matter of international jealousy, that would not be our affair either. As for the spectacle of a country which maintains the American tariff lecturing England about 'Protection,' and New York editors unable to rest for thinking of the food denied to 'England's toiling millions'—well, Englishmen *have* some sense of humour, and American humour is not bad. But this is, after putting all that aside, a very grave question, lying at America's own doors; and if she treats it much longer in this spirit we fear America will find out for herself that it is so. What experience teaches she teaches pretty thoroughly, but usually at some expense, and often not a small one."

We need hardly remark that the idea suggested in the latter part of paragraph 3, that outbreaks of pleuro-pneumonia in Lancashire have anything to do with imports of American animals into the port of Liverpool, is purely chimerical. The notion, however, seems to be gaining

ground that the sale of the timber which is used for fitting up the ships in which cattle are brought from the United States is to be looked upon as a cause of disease.

If we can succeed in guarding against the ordinary source of infection—the *living diseased animal*—we shall not have much trouble in dealing with outbreaks which arise from mediate contagion, especially of such a remote order as those to which we have referred.

Extracts from British and Foreign Journals.

OBSERVATIONS ON THE LUNG PLAGUE OF CATTLE (PLEURO-PNEUMONIA CONTAGIOSA BOVINA).*

By Professor James Law.

Continued from p. 622.

Causes Influencing the Spread of the Lung Plague Southward.—A glance at the connections of New York southward will show why the plague should have extended in this direction rather than west or north. In the first place the cities of Newark, Elizabeth, New Brunswick, Trenton, Easton, Reading, Burlington, Germantown, Camden, Philadelphia, Wilmington, Baltimore, Washington, Alexandria, &c., drew their supplies of fresh dairy cows from the great marts to which western cattle were sent. From the comparatively close proximity of these cities they respectively drew their supplies from New York, Philadelphia, or Baltimore, according to which market was at any moment overstocked, so as to depreciate the value of the stock. Thus Philadelphia and Baltimore were early infected from New York and Jersey City, and once infected they reciprocated freely by furnishing contaminated cattle to the market of New York, whenever that market was poorly supplied, or they themselves glutted. Thus, too, it soon came about that all the lesser cities drew constant supplies of infection from these three great plague-stricken centres. All of the cities named were growing places with much unfenced land laid out for building, or held by soeculators in waiting for purchasers, and upon these the herds of different owners pastured in common, and infected each other,

* Extracted from the 'First Annual Report of the Cornell University Experiment Station, 1879—80.'

so that once introduced the infection became permanent, and each city became an independent pestilential centre, from which the plague extended in different directions at varying intervals.

If we trace the Erie Railroad westward, we shall find that beyond New Jersey there is no city for the space of 200 miles, and this, together with the fact that cattle could be drawn so much more cheaply from the west, has hitherto prevented the extension of pestilence westward. What few infected cattle have found their way west along the line of the Erie Railroad have gone upon enclosed farms, where the plague reached its limit and died out, in place of finding the malign conditions of unfenced grounds and pasturage in common, which would inevitably have perpetuated it. The non-infection of the west we owe not alone to the immense cattle traffic from the west, and the fact that comparatively few cattle follow a contrary course, but also to the barrier of the Alleghany Mountains, and the entire absence of large and growing towns and cities over a long stretch of country.

If we follow the New York Central Railroad we find a similar comparative absence of large cities, but we find besides that the east bank of the Hudson is well fenced, so that though the Lung Plague had been introduced, it would have had less opportunity for permanence than in the district south of New York. North of Yonkers, where the open pasturages end, the plague has never gained a permanent footing on the east bank of the Hudson.

On the Harlem Railroad there is a similar absence of large cities and common open pasturages, and although the plague has extended on this line as far north as the borders of Dutchess Co., it has been more easy to deal with it than where there was a common grazing ground for different herds. From Mt. Vernon southward, however, the common pasturage was more or less in vogue, and with it the prevalence of the plague and the difficulty of dealing with it.

Along the New Haven Railroad the condition of things was more favorable to the propagation of the plague, and it would have been certainly perpetuated in some of the cities of Connecticut, but that the State Cattle Disease Commission repeatedly interposed to stamp it out.

Extinction of the Lung Plague in Massachusetts.—Into Massachusetts the Lung Plague was introduced in 1859 in the bodies of four Dutch cows imported from Rotterdam by Mr. Chenery, of Belmont. All four suffered from the disease, two having been very ill on arrival. Three died, the fourth recovered, and the plague spread into nineteen towns in five counties, and was only crushed out after five years of uninter-

rupted effort on the part of a Cattle Commission. This work cost the State $67,511.07, and the different towns $10,000 more, but this was a cheap investment, as the plague has never since made its appearance in the commonwealth.

Evidence of the Non-existence of Lung Plague in the West.—The fact that the Lung Plague has been unknown in Massachusetts for the past fifteen years, as it was unknown prior to the introduction of the four diseased Dutch cows in 1859, speaks volumes for the freedom from the infection of the great cattle raising States of the west. At the one cattle market at Brighton thousands of cattle arrive weekly from the west, yet for fifteen years not only has no cow nor lean beast brought this pestilence to the Massachusetts herds, but no ox has shown the characteristic disease of the lungs when slaughtered. The same remark may be made of Central and Western New York, and of all the New England States north of Massachusetts. In a twelve years' residence at "Cornell," and with the widest acquaintance of the herds of the State, I have never seen a case of Lung Plague west of the Hudson excepting in one herd in the vicinity of Newburg, to which the infection was brought by a cow from New York City. Yet all over the State are to be found cattle drawn from the west, and filling up the dairy and fattening herds of the Empire State. And although these herds are frequently decimated, and sometimes all but exterminated, by other diseases (Texas fever, malignant anthrax, tuberculosis, &c.), no such thing as Lung Plague has ever appeared amongst them. The same remarks apply to Western Pennsylvania, West Virginia, and, indeed, all parts west of the Alleghany Mountains. Though all supplied by the cattle from the west, all alike have hitherto kept clear of the plague. The same is true of our Gulf Coast States and Pacific States. No such plague has appeared in any of these, though their cattle are multiplying by the million.

Non-existence of the Lung Plague in other States of America.—No Lung Plague has ever been found in any other American State. Mexico, Central America, the West Indian Islands, the South American Republics, Brazil, and even Canada, have failed to import this Old World pestilence, and all of them maintain to-day a perfect immunity.

Lung Plague not Indigenous to America.—From far-reaching facts like the above it becomes certain that American soil has no such sad fecundity as to produce the germs of the Lung Plague, for this affection has appeared at no point of the Continent where the descendants of the imported European germs have not been first carried, and the disease is to-day confined to a narrow area on the Atlantic coast, where the imported germs were planted, and where the conditions favoured its preservation and

propagation. The presence of the disease where the malign European infection has been implanted, and its persistence and spread there for thirty-seven years, when contrasted with the fact of its entire absence from all other parts of the New World, shows, beyond dispute, that the disease is the result of imported virus, and of this alone. Cattle exist and have long existed from Labrador to Brazil, and from Brazil to Patagonia, in the most trying climates—arctic and torrid—and under all conditions of life, and every form of abuse and neglect, but in no one instance has this fatal plague been generated on the Western Continent and propagated from a new point independent of importation. Like the Canada thistle (*Cirsium arvense*), the Lung Plague is an exotic, dependent altogether upon the foreign seed for its existence, and it could be as easily and permanently eradicated as the thistle has been from Winsconsin and certain other States.

Lung Plague not Spontaneous in Africa and Australia.—For many centuries the nations of Africa have owned herds of cattle, being dependent on them for labour, as well as for meat and milk, in those districts where the "tsetse" proves so fatal to solipeds. Since the colonisation of South Africa by Europeans the settlers have imported many herds from Europe, but until 1854 the Lung Plague was utterly unknown. In that year, as testified by Rev. Mr. Lindley, a missionary, a Dutch bull, imported by a gentleman of Cape Town, manifested the plague six weeks after his arrival, and fourteen weeks after his shipment from Holland, and from him the pestilence has since spread over the whole unfenced ranges of Cape Colony, Orange Free State, Natal, Zululand, Transvaal, &c. Here no such plague was known in all antecedent time, but once introduced in the body of a single infected animal it has desolated the whole southern part of the Continent.

When discovered, Australia was destitute of cattle. The whole bovine stock is, therefore, the progeny of those introduced by the colonists. On the rich native grasses, and in the exceptionally salubrious climate, the cattle throve and multiplied until the name of Australian "squatter" became a synonym for a man of wealth and influence. But in 1859 Mr. Boodle, of Melbourne, imported from England a shorthorn cow, which, fourteen days after its arrival from its three months' voyage, manifested the symptoms of Lung Plague. The whole herd was slaughtered and paid for by public subscription, and his lands were enclosed and proscribed, but a teamster turned his oxen into the enclosures under cover of night, the disease spread through their means, and on the unfenced pastures it was found to be impossible to control it. No conditions produced the disease until

the importation of the infected English cow, but after the entrance of the infection it received no check from the healthful climate, nor from the enforced slaughter of tens of thousands of animals, and to-day the rich pastures of Australia are ravaged by the pestilence.

Lung Plague not Spontaneous in the British Isles.—In Great Britain the pestilence was unknown in modern times until in 1839, when it was imported into Cork, Ireland, in the bodies of Dutch cattle sent to a friend by the British Consul at the Hague. It spread rapidly over Ireland, and entered England and Scotland before 1842. From this time it has been kept up by constant accessions of disease from the Continent, brought in the cattle then for the first freely admitted to the English markets.

Yet the striking fact remains that for the forty years during which the plague has prevailed on the British isles the Highlands of Scotland have kept clear of the infection. The explanation is found in the fact that native cattle are bred in the Highlands and shipped thence to market, but no strange cattle are ever introduced. The Highlands are the coldest, bleakest, and most exposed parts of the island, the places where lung diseases are above all to be expected, and their exemption, while the more genial plains are ravaged by the plague, shows plainly that the affection is no product of Britain, but an exotic that has spread wherever the foreign cattle and their infected victims have come.

No Evidence of Spontaneous Lung Plague in Western Europe.

The Channel Islands.—These, lying directly between the infected shores of France and England, and famed in all times for the abundance and excellence of their cattle, have never suffered from the lung plague, for the very sufficient reasons that no strange cattle are allowed on the islands.

Spain and Portugal.—These countries lying out of the line of cattle traffic from Eastern Europe, and accustomed to breed and export cattle, but to import none, have hitherto kept free from this as from other cattle plagues.

Norway, Sweden, Denmark, Schleswig-Holstein, Oldenburg, Mecklenburg-Schwerin and Switzerland.—These are countries into which the lung plague has been introduced at different times, but from which it has been completely expelled by well-directed suppressive measures.

Extinction of Lung Plague a National Duty.—From all that has been said it follows with certainty that this plague has never been known to arise spontaneously in Western Europe, and that

out of the centre of the Eastern Continent, to use the words of the immortal Haller, "the disease never appears but as the result of the introduction into a country or district of an animal from an infected place." This being granted, it must be allowed that it is quite possible to eradicate from the United States the deadly virus which has been introduced from the Old World and maintained by continuous descent in the bodies of our home herds. The disease being produced by infection, and by infection only, it results of necessity that if we can limit that infection we shall in the same ratio limit the ravages of the plague, and if we can render infection impossible, we render impossible the continued existence of the pestilence in our midst.

Mortality.—In estimating the mortality from this plague, we will meet with the most varied results according to the conditions of life and as to whether we take the ratio of deaths in infected herds, or in the whole cattle of a district or country. Loiset states the losses for the entire bovine population of the *département du Nord*, France, at 40 per cent. per annum, divided as follows: in city dairies 26 per cent., in distillery and sugar factory stables 12 per cent., and on farms 2 per cent. Here the deaths are in exact ratio with the frequent changes of stock, and the exposure of new and susceptible animals to infection. In the Nord in nineteen years it had killed 212,800 beasts of a total value of 52,000,000 francs (over 10,000,000 dollars).

Yvart gives the losses in infected herds only, in Avignon, Cantal and Lozère at 30, 40, 50, 60, and even 77 per cent. (average 35 per cent.).

Gamgee gives the losses in the City of Edinburgh in 1861-2 at over 58 per cent., and the money loss at £14,512 (70,000 dollars). Finlay Dun shows from the English Cattle Insurance Company statistics that the losses from this plague from 1863 to 1866 were 50 to 63 per cent. per annum. The losses for the British Isles, computed from agricultural statistics, the records of insurance companies, &c., were close upon £2,000,000 (10,000,000 dollars) per annum.

In Holland, Sauberg reports a yearly loss of 49,661 head, while in Würtemberg it amounted to 39 per cent.

Mortality Greater in Warm Climates and Seasons.—Mr. Lindley reports that in the hot climate of South Africa it is no uncommon thing to find a whole herd of 100 or 200 cattle perish without exception, and other colonists have furnished me personally with accounts precisely similar. With these agree our experiences with the disease in the summer season in New York. When we entered on our work in February, 1879, it was loudly claimed by a party of obstructionists that the affection was the simple result of exposure to the changeable

weather, and to the transitions from the hot, close, reeking stable to the chilly blasts out of doors. But from June onward, so long as the really hot weather lasted, the number of victims in a herd was greatly increased, the cases succeeded each other with a hitherto unexampled rapidity, and nearly every case proved severe and rapid in its course, so that death frequently resulted in two or three days after the animal was noticed to be ill. In our cool, dry winters the course of the disease is mild, so that the patients survive for weeks, and even months, often becoming frightfully emaciated, and present the spectacle of walking skeletons, whereas in the burning summer and autumn death often comes so speedily that the carcase may present the round, plump, fat appearance of an animal that has died suddenly by accident. Of this high summer mortality the cases of Meakim and Albertson (pages 620 and 621) are illustrative examples. As further illustrating this point: Joseph Schwab, One-hundred and Forty-ninth Street and Southern Boulevard, New York, bought a cow, which soon sickened and infected his herd, so that he lost twenty-three head in two months, and but seven recovered. In autumn, 1878, Bischoff, Long Island City, bought four cows of a dealer, all of which sickened, and only one was saved. Mr. Valentine, of Jamaica, L. I., bought some infected cows from two Brooklyn dealers, and by August, 1879, his herd was so badly diseased that we were compelled to slaughter the whole. Patrick McCabe bought five cows from a dealer; sickness appeared among them six weeks later. He lost the whole five, and within two months thereafter four more that he had laid in later.

The Losses must Increase as the Plague Reaches the Warmer States.—It is needless to multiply instances such as those given above. A mortality of seventy, eighty, or ninety per cent. in South Africa, and in the warm season in New York, implies that we would suffer an equal mortality in the Southern States throughout the greater part of the year, and in the hot summers of the Mississippi Valley, so that no estimate of losses deduced from the statistics of England or Western Europe will furnish fair data for estimating our own in case of a general infection of the United States. England with 6,000,000 head of cattle has lost 10,000,000 dollars a year for forty years past. We with 37,000,000 head should therefore lose 60,000,000 dollars, plus the extra losses consequent on the spread of the plague in the semi-tropical summers of Texas, the Mississippi Valley and the Plains, where the great bulk of our cattle is kept.

Present Losses from the Lung Plague in the United States.—Of the present losses from the lung plague in the United States two items may be quoted as being more tangible than such

incidental ones as the losses of pasture, fodder, buildings, current business, and prospective increase of stock. The items referred to are the depreciation of our beef in the English market, and the losses by deaths in our home herds. The difference in value of American cattle, when, as at present, compulsorily slaughtered at the port of debarkation, and when they can be moved inland and held for a market, is variously stated at seven dollars to ten dollars per head in favour of the latter. From the port of New York alone the shipments during 1879 amounted to 95,380 head, which are therefore depreciated in value to the extent of 800,000 dollars. If we add the exports from Portland, Boston, Philadelphia, and Baltimore there must be a gross depreciation of no less than 1,500,000 dollars per annum. The yearly losses from deaths in our herds cannot be less than 500,000 dollars more, so that in these two items alone we are probably losing 2,000,000 dollars per annum, though the plague has invaded but the merest fragment of our immense territory.

Mediate Contagion.—As our observations throw some light on this disputed question, a few illustrations may be given to show that direct contact is not essential to infection.

Infection through the Air.—It has long been noticed that successive victims in the same buildings are not attacked in the order in which they stand, but that the plague usually passes over two or three cattle to strike down a more susceptible subject at a greater distance. We have also noticed repeatedly that when the cattle of different owners stood under the same roof, but separated by a board partition, that infection spread quickly from the one to the other, though it was impossible for them to come in contact.

And yet a free dilution in the air seems to destroy the contagium in a very short distance. At Ridgewood, Queens Co., in the spring and summer of 1879, the herd of T. Ryan was almost exterminated by the lung plague, as many as twenty head having perished, while over the fence in a building not over forty feet distant, the herd of George Van Size kept healthy throughout. Röll quotes instances of infection at fifty and 100 feet, and others at 200 and even 300, but in such cases there is always the possibility of the conveyance of the virus on light objects like paper, hay, straw, &c., blown by the wind, or on the surface of men or animals.

Contagion through the Clothes of Attendants.—1. In February, 1879, Ditmas Jewell, of East New York, interested himself in the cause of the suffering milkmen, and daily visited several of the worst infected stables in the locality. He also paid a good deal of attention to a favourite Jersey cow of his own, which

was kept in a stable surrounded by spacious grounds, and was never allowed to go out. In the end of March she sickened and died of lung plague.

2. Joseph Hyde, Seventieth Street and North River, New York, had lost twenty cows in four months in the spring and summer of 1879, and was allowed to put up a new stable for fresh cows two lots distant from his former one, on condition that separate attendants should be furnished for the two stables. The fresh cows were all from healthy country districts, and the stable was built of new wood, yet a month later the plague showed itself in that as well. It was then found that the attendants in the different stables had helped each other in the owner's absence. As showing that the infection was not conveyed through the air, the lot between Hyde's two stables was occupied by the house and cow stable of a different party, whose stock kept sound throughout.

3. George Youngblood, Little Britain, Orange Co., sent a cow to New York by the Newburg boat, May 29th. She never left the pier, nor came in contact with other cattle, except those coming by the boats from healthy country districts, but like others was handled by milkmen and dealers. She was taken back by the Newburg boat the same day she arrived (May 30th), and two weeks later she sickened with lung plague, and conveyed it to Youngblood's herd. The cow was sent back to New York for sale, September 30, when she was killed as a diseased animal, and nearly a third of one lung was found to be necrosed and encysted. (For other cases see my report to General Patrick, presented to the Legislature.)

To deny the spread of the disease by this channel as has been done, and to act upon this, is but to offer facilities for the plague to extend its ravages, and to render doubtful or impossible its final extinction.

Contagion through Infected Buildings. — Beside the fact, notorious in all countries where lung plague prevails, that dealers' stables are the grand foci of infection, and that animals sold by dealers are the most prolific causes of its spread, it may be well to name one or two instances in which empty infected stables serve to propagate the pestilence.

1. John Müller, Farmingdale, L. I., on January 1st, 1879, got from a dealer a cow, which soon sickened and died. Soon after he bought another cow, which speedily died in her turn. Later he got a calf from the healthy stock of a neighbour, but it too sickened and died, and the stable was left tenantless.

2. Messrs. Niedlinger, Schmidt & Co., 406, East Twenty-seventh Street, New York, lost a cow from lung plague August, 1878. Three months later another cow was placed in the same

stable, soon began to do poorly, and after a whole year (August 18th, 1879) died of lung plague.

3. Patrick Green, West Farms, N. Y., entered the Bleach in April, 1879, and stocked it with thirty-two cows fresh from a healthy district. About May 1st sickness appeared in his herd, and then he learned that the tenant of the previous year had lost heavily with lung plague. Eleven of the stock had to be sacrificed before the disease was finally arrested.

4. Mr. John H. Cheever purchased of Mr. Odell a farm at Yonkers on which a cow had died of lung plague one month before. In the end of September, 1879, he moved on fifteen favourite Jerseys, from the Tilly Foster Mine farm near Brewsters, placing them in the infected stables. Soon the plague attacked the Jerseys, and all died or were slaughtered.

Such cases could be adduced in great number, but these must suffice to show the urgent necessity for the thorough disinfection of stables, yards, cars, boats of all kinds, loading-banks, piers, &c., where infected cattle have been, in order to a permanent extinction of this plague. This disinfection should, of course, be the more thorough the closer the infected building, and the greater the accumulation of rubbish, fodder, &c., in which the virus may find a resting place. With free exposure to the open air disinfection takes place naturally and early.

Contagion through the Food.—1. Contagion through pastures is exceedingly rare. In the open air, and in climates with frequent alternations of rain and sunshine, at seasons when the virus, like other organic matter, is not locked up in frost, a spontaneous disinfection takes place in a very short period. But with continuous frost, or with a very dry, rainless climate, the infection may be preserved for an indefinite length of time. A striking instance of the conveyance of the infection through pastures in a dry climate is furnished in the infection of Australia (p. 705). The working oxen put upon the pastures where the sick cattle had been were themselves infected, and became the means of infecting the entire country.

The same is unquestionably often re-enacted during the dry seasons of our infected states on the common or unfenced pasturages on which the herds of different owners graze successively. It has been a common practice for boys to watch such herds in order to keep them apart and prevent infection, but as they are allowed to browse successively on the same soil the virus is transmitted, and the disease spreads in spite of this precaution, precisely as it did at the start of the plague in Australia.

The significance of such results cannot be overestimated. It has been shown above (p. 702) that the one great cause of

the perpetuation of the plague on this continent has been the mingling of cattle on unfenced grounds, and it is now clear that it is not the mingling alone, but also the pasturage on the same place successively that is particularly dangerous. The contrast in results, as seen on a large scale, is sufficiently important to be quoted. In New Jersey and Pennsylvania, where the use of common unfenced pasturages was allowed, the lung plague is still very widely prevalent after a year's work for its extermination. In New York, wherever it was possible to prevent such common pasturage the plague was definitely exterminated, though for half of the year lack of means prevented the prosecution of the work of extinction so vigorously as could be wished. Six out of eight infected counties were virtually cleared, and the seventh (Queens Co.) was also purified except on its border adjoining Brooklyn (Kings Co., the eighth). In Brooklyn alone did the plague continue with little mitigation, for in Brooklyn the aldermen passed an ordinance authorising pasturage in common on unfenced lots, in defiance of the State law, and abolished the cattle pounds, and in Brooklyn the police magistrates dismissed delinquents brought before them for violation of the State law, and reprimanded the officers who arrested them. The future may be predicted from the past. If the other infected states continued to allow the propagation of the plague by the common use of unfenced pasturages, and to allow cattle of all kinds to mingle and infect each other in their markets, they may spend hundreds of thousands on suppressive measures, but the plague will survive and the nation will continue to lose its millions annually, whereas the loss now sustained in a single year, if faithfully and intelligently applied, would for ever rid the country of the pestilence. If the Brooklyn city officials are to be allowed to defy the law in the future as in the past, the splendid success of the first year's work outside that plague-spot will not be consummated for the entire commonwealth, but appropriations will be demanded, and an expensive guardianship must be maintained year after year with the greatest uncertainty as to the final extinction of the virus.

2. "*Swill.*" That "swill" is not the cause of lung plague is well enough known to all who have made a study of the affection. Distillers' and brewers' "swill" is fed in all the large western cities where the lung plague is absolutely unknown. The same is true of swill-fed cattle kept in infected districts, but which have never been exposed to contagion. For three months in the end of 1879, and three more in the beginning of 1880, over 700 western steers were kept in the Blissville distillery stables that had proved so fatal in the spring of 1879.

The stables had meanwhile been thoroughly disinfected, and the greatest precautions were taken to shut up all channels of infection, and not one of these steers contracted lung plague. Yet the popular prejudice against swill is not devoid of foundation. To the distillery stables gravitate cattle from all regions for fattening. If lung plague exists in the district, such stables therefore become early infected, just as dealers' stables do in the same localities. In the swill stables the warmth and close reeking atmosphere greatly favour the preservation of the virus and its conveyance from beast to beast. But it is further to be noted that in these stables the stock is arranged in rows, and a whole row of fifteen to twenty cattle is fed from the same trough. The trough is gently inclined from end to end, and the liquid swill runs into the trough from a pipe at the one end and slowly passes in front of each animal in succession to the other. If a sick beast stands in such a row the infected breath blows on the passing liquid, and the virulent expectorations drop into the feed to be carried on to be inhaled and swallowed by all susceptible animals farther on in the same row. It may be that the virus introduced into the stomach is harmless, as implied in a solitary experiment at the Alfort Veterinary College, yet as cattle breathe on their food, there cannot be a doubt that the virulent matter in the swill as in other fodder makes its way to the lungs in the breath, and that infection from this food takes place in the ordinary way.

The Lung Plague peculiar to Bovine Animals.—While cattle of all kinds are susceptible to the virus of lung plague, this susceptibility is limited to the bovine family. In the zoological gardens of Europe buffaloes and yaks, &c., have fallen victims to it, but in no instance has it been shown to extend to the smaller ruminants (sheep, goats, deer). This is the more remarkable that the small ruminants have often mingled freely in pastures, and even in close buildings with cattle suffering from this complaint. In this respect, therefore, the lung plague differs essentially from the other great scourges of cattle—rinderpest, aphthous fever, anthrax, tuberculosis, and milk-sickness.

Incubation, its Limits.—The occasionally prolonged period of incubation, during which the virus remains dormant in the system of an infected animal, is one of the most redoubtable features of this disease, and demands from the official sanitarian a series of precautions which are not required in other cattle plagues. While incubation may be as short as six days in hot weather, it may none the less be extended to sixty days (Delafond, Verheyen), sixty-seven days (French Commission), ninety days (Reynal), or 104 (Röll, Gamgee).

In support of the last-named period three remarkable instances of the infection of new countries may be named.

Norway.—In 1860 some Ayrshire cattle were imported to the Agricultural College of Aas, direct from Scotland. Three months later some of them were noticed sick, and the country was only saved by the slaughter of all native stock with which they had come in contact, and the long seclusion of the surviving Ayrshires, so that danger of infection from them might be obviated.

Australia.—In 1858 a short-horn cow that had been three months at sea was landed at Melbourne, and a fortnight later she manifested the lung plague. This was 104 days after shipment from England, and the nature of the disease is only too sadly certified by the steady extension of the plague over Australia from the date in question.

South Africa.—In 1854 a Dutch bull was landed at Cape Town after having passed two months at sea. Six weeks after his arrival he showed signs of lung plague, and from him the pestilence spread to the whole of South Africa, and still prevails. Here again was an interval of 104 days from the time of shipment in Holland to the first manifestation of the disease in Cape Colony.

To these may be added some instances that happened under our own observation, and the first two of which are as clear and unequivocal as the instances above mentioned.

In East Lothian, Scotland, in 1855, a farmer who had had his stock clear of disease for years, purchased a cow, which for three months after purchase kept in low condition, and occasionally knuckled over at the fetlock as if rheumatic, but fed and milked well. At the end of ninety days she was taken with lung plague, and conveyed it to all the cattle on the farm. There was no other lung plague in the neighbourhood, nor had there been for a length of time.

Josiah Rogers, of Sag Harbour, Suffolk Co., N. Y., whose herd had been exposed by contact with a cow from an infected herd, but which did not herself show sickness, turned a cow out on the grounds of Montauk, April 28th, 1879. On August 10th she was found suffering from the lung plague, and was slaughtered in consequence. This was 104 days after she had left the home herd, and probably 110 or more after she had taken in the germs of the plague. The cow would not have been left to sicken on Montauk, but that she was entered in the name of Mr. Rogers' son, and her connection with an exposed herd thus failed to be recognised. Four more of Mr. Rogers' herd suffered at home, and one after it had been sold and removed to Old Westburg, Queens Co., the sale having been made before we had any

knowledge of disease in Suffolk Co. This cow sickened forty-nine days after she had left Rogers' place.

Messrs. Niedlinger, Schmidt and Co., 406, East Twenty-seventh Street, New York, had a cow die of lung plague, August, 1878. Three months later a fresh cow was put in the same stable (without disinfection). She did poorly since, and, August 18th, 1879, was found to have lung plague, and was sacrificed. A case like this is inconclusive, as we cannot tell the date of infection from the contaminated stable, but in the continued unthriftiness, it bears a striking resemblance to the Scotch case quoted above, and if it cannot be advanced as an incubation of nine months, it shows the great danger of passing as sound animals that have been in an infected and uncleansed building, though no active disease may have been shown there for many months.

John McGuigan, One Hundred and Seventy-third Street and Central Avenue, New York, purchased in July, 1879, a fresh cow which milked well but looked unthrifty for five months. He had had no lung plague before, and purchased no new cows in the interval, yet in the end of November, 1879, she sickened and died a most characteristic case of the plague.

These two last cases are not advanced as proof of such protracted incubation, for in an infected city it is possible that the virus was conveyed to them by visitors. Yet their continued unthriftiness, so like what appears in certain other cases of prolonged incubation or delayed development of the plague, makes them specially suggestive, and should make observers watchful for other cases in which the incubation may possibly have exceeded the present certified limit of 104 days.

Official Action in View of such Prolonged Incubation.—Seeing that the germs may be carried in the system of the infected animal unseen and undetectable for 104 days (fifteen weeks), it follows that to secure stock against danger from a single animal coming from an infected district, such animal should be secluded in quarantine under special attendants for this period of time. In the case of a single animal arriving from a foreign country he should be detained at the port or landing until the expiry of fifteen weeks from the date of shipment from the foreign port. With herds more latitude may be given, for if infection should be present, it is almost certain that the incubation will be shorter in some, and thus symptoms will be shown at an earlier date. Yet a period of detention of ninety days cannot be safely abridged. In case of the transportation of cattle from infected states and districts a quarantime for at least the same length of time is essential,

while in the case of single animals it cannot be considered as protective unless it has been extended to 104 days.

As the different states have not recognised the need of veterinary sanitary specialists to direct their suppressive measures, the most egregious blunders in this respect have been committed in practice.

In the autumn of 1879 two herds of cattle from infected Holland were entered at the port of New York, examined by the New Jersey officials, and at once sent on to Illinois to mingle with herds from which sales were being constantly made, and even to be carried around and exhibited at various state fairs.

The same New Jersey authorities kept on their frontier inspectors with instructions to examine all cattle coming from the infected regions of Pennsylvania, Delaware and Maryland, to turn back all the diseased, but to allow the sound to enter. It was well, truly, to shut out the actually sick, but where was the protection when cattle from infected herds, and bearing diseased germs which would not manifest themselves for one to three months to come, were allowed free entrance?

In Pennsylvania the attention of the officials seems to have been confined to the quarantining of infected herds, and the slaughter of the incurably sick, and there is reason to believe that in many cases the quarantine was raised at far too early a date. In Pennsylvania as in New Jersey, store and fat cattle from all quarters — infected and otherwise — were admitted together, or successively into the same stock-yard for sale. In short, suppressive measures were largely restricted to the dealing with herds after they had become infected, while the main sources of the pestilence, the cattle coming from infected districts and those sold in infected markets, were left free to carry disease into new herds.

To crown this series of blunders the present officials of New Jersey threaten those of New York with litigation in the Supreme Court of the United States, with the view of forcing the latter to admit New Jersey store cattle into the New York markets. Had these officials had an intimate acquaintance with every herd in New Jersey for six months past, there would have been a shadow of reason in their course, but having just come into control of the veterinary sanitary work, the best construction that can be put upon their course is that they are wofully ignorant of the subject, and are judging this disease from some supposed, but unreal, analogy with certain plagues of men in which incubation does not extend over a few days.

Some of the officials in question claim special credit for husbanding the country's money, and it is claimed that Pennsylvania has expended less than 3000 dollars in indemnities for

slaughtered cattle. No reflection could be more condemnatory of their system. In place of a vigorous plan of extinction founded on an intimate knowledge of the plague, and which bars all channels for its further diffusion, while the infection that is already in existence is being remorselessly *stamped out*, they adopt measures that are defective at every step, and while they restrict the pestilence at one point, they actually favour its spread to other parts of their territory and that of their neighbours. They cut down a few shoots that have already grown up into plants, but pay no attention to the incessant sowing of the same noxious seed going on all around them. They save a few thousand dollars to the treasuries of their respective States, but in doing so they are perpetuating the lung plague on the Continent at a present cost of 2,000,000 dollars per annum to the nation, and they are every day endangering the spread of the plague to our Southern and Western cattle ranges at a prospective loss of 60,000,000 dollars per annum. An economy which puts men who are unacquainted with a plague in charge of the measures to be carried out for its extermination is the most reprehensible misappropriation of public money, since it leads the people to believe that all necessary precautions are being taken, while in fact it is but maintaining a heavy expense with no adequate result.

(*To be continued.*)

PRELIMINARY NOTES ON INDIVIDUAL VARIATION IN *EQUUS ASINUS*.*

By John Henry Steel, M.R.C.V.S., F.Z.S., Demonstrator of Anatomy at the Royal Veterinary College.

The remarkable uniformity in external characteristics which ages of neglect and degradation have conferred upon the Ass of this country contrasts so forcibly with the amount of variation presented by certain of our domesticated animals that some have based upon it conclusions of a general nature tending to the admission of essential differences between the effects of natural selection and those resulting from artificial influences. For proof that these views are untenable we need simple refer to the fact that on the Continent, in the East, and even through quite recent artificial selection in America external variation in the Ass is very marked. With regard to modification of internal structures, we believed the following are worthy of note as the

* From the *Proceedings of the Zoological Society of London*.

outcome of the large number of dissections made by ourselves and by students under our supervision. We were hardly prepared to observe so much variation, and were struck by many Ruminant affinities of *Equus asinus*. Our observations are not arranged in a satistical form; nor have we occupied our time with minute variations in bulk, length, and capacity; we have selected those characters which are most striking and at the same time most instructive.

Osteology.

Vertebræ, Cervical.—Atlas and *Dentata:* imperfect condition of foramina for spinal nerves, due to arrested development.

Seventh vetebra prominens: vertebral foramen may occur in one or both transverse processes.

Transverse process with costiform prolongation. This condition is remarkable as showing a tendency to increase in the number of the ribs. The process is invariably autogenous, and not unfrequently sends a styloid prolongation downwards in the adult; but this is generally short, although we have seen it long and connected with the first rib below the upper head of scalenus by an elastic band; and in a specimen now before the transverse processes are asymmetrical, several inches in length, prolonged by well-marked elastic bands to cartilaginous nodules appended to the præsternum in front of the first sterno-costal articulations.

Dorsal and *lumbar.*—The dorsal intervertebral gaps are sometimes truly intervertebral; often each is wholly pierced through the pedicle of one vertebra. The degree of separation of the costo-transverse articulation from that for the head of the rib varies much in the posterior dorsal vertebræ of different individuals. The last ribs also vary much in length, size, and degree of curvature. The presence of a so-called "floating rib," making the series nineteen in number, is frequently observable. This "*floating rib*" is generally present only on one side. It is not a vertebral rib, but a sternal rib; for it is appended to the extremity of one or two lumbar transverse processes, the homotypes of the vertebral costæ of the dorsal region. Often, when not represented by bone, it occurs as a portion of cartilage or a band of white fibrous tissue, embedded in the abdominal muscles in such a manner as to remind us of the homotypical concordance of the intercostals and the abdominal muscles.

In the *sacral region* it is often difficult to define the extent of the "false sacrum" backwards; for coccygeal vertebræ become appended by ankylosis, increasing apparently the ordinary number of five sacral bones. The last lumbar, too, sometimes

assists in the support of os innominatum; and in other respects the "true sacral bones" are not always the same.

Coccygeal.—Vary in number, especially with age.

The peculiar modifications which we have noted in the seventh cervical, the uncertainty observable in the anterior and posterior parts of the lumbar and sacral regions, and the variation in the number of ribs prominently bring to our mind the question "How is the vertebral column becoming modified in the present day?" and also, "Will an examination of these points throw any light on the remarkable preponderance of dorso-lumbar vertebræ and costæ in Perissodactyla ungulata?"

Skull.—Exhibits many minor variations, most of them probably sexual or due to age.

Limbs, fore.—Scapula: differences in figure, thickness, &c. Often, instead of the gradual disappearance of the spine inferiorly, it terminates in a slightly prolonged process, a rudimentary acromion similar to that seen in the ox, but smaller. Medullary foramen varies in position; also glenoid cavity rounded or oval.

Humerus: synovial fossettes vary in size and form, as do those in upper part of *radius* and *ulna*. The *ulna* generally extends downwards only two thirds of the length of the radius; but in the fœtus it is much longer in proportion, and in the adult we occasionally find it passing downwards to the supero-external part of the knee to articulate with os cuneiforme. If we examine the inferior extremity of the radius of the fœtal colt, we may note that at its external part is a small ossific centre. Our cases of variation show us that we must describe this *as the inferior extremity of the ulna*. The value of this observation as illustrating the similarity of the forearm of the ass to that of the ox is evident.

Carpus: os trapezium v. *pisiforme* generally present, but sometimes absent.

Metacarpus and *phalanges:* major variations do not come under our notice (in the ass).

Hind.—Os innominatum: form, size, and relations of auricular facet of ilium vary.

Fibula varies similarly to ulna in fore limb. Often extends to tarsus, occupying whole length of outer part of tibia. In other cases, and generally, consists superiorly of a small button-shaped appendage externally placed to upper part of tibia, tapering to a point inferiorly, from which a white fibrous band extends downwards, becoming continuous with the inferior extremity of the tibia, the external part of which is developed from a distinct ossific centre, the representative of the tarsal fibula of ruminants.

Tibia and *astragalus:* synovial fossettes vary in development.

Smaller tarsal bones very frequently united by ankylosis into a single mass, without any external indication of disease. This is the condition known to veterinary surgeons as "occult spavin." We are not yet prepared to attribute to it any morphological importance.

Cuneiforme parvum composed of one or of two portions.

Splanchnoskeleton.

Ossification or calcification of the posterior portion of the sclerotic occurs in ald asses.

Os hyoides presents between cerato- and stylo-hyal on each side a bony nodule representing the epihyals, which are well developed in the ox.

An *os cordis* has been observed in the ass; it is always present in the ox.

Myology.

Head.—We generally observe muscular fibres which run from the antero-external angle of orbicularis palpebrans beneath zygomaticus to the outer surface of buccinator. These represent *lachrymolabialis* of the ox, and are seldom seen in the horse. They are deficient in some asses.

Retractor labii superioris sometimes has a supplementary portion which runs from the common point of origin of the muscle to the tendon of the nasalis longus labii superioris, which it draws downwards, and also to spread out by some of its fibres over the superior part of the "false nostril."

The "false nostril," the peculiar nasal pouch of Equidæ, undergoes considerable variation at its extremity, sometimes presenting a slight tendency to bifidity of its cul-de-sac. In the ass it is seldom used; for the animals are never driven to such extremes of rapid progression as the horse. Hence we often find these sacs distended with masses of laminæ of epithelial débris. The *dilatatores naris* vary in their arrangement in relation to this pouch; thus, ordinarily a continuous series of fibres extends to it from above, behind, and below, being the superior and inferior dilators. But we have seen excessive development of the band against the cul-de-sac of the pouch and deficiency of the other parts of the series. The posterior extremity of *retractor labii superioris* has sometimes a muscular addendum connecting it with the zygomatic ridge.

Mylohyoideus varies somewhat in being divided generally at its anterior part into two distinct planes.

Geniohyoideus sometimes sends a small distinct band to genioglossus at about the centre of the intermaxillary space.

Hyopharyngeus, in addition to its usual attachment to the

inferior part of internal surface of superior third of stylohyal, has often another one, quite distinct from the inferior third. We more frequently see the latter in the horse.

Hyoideus parvus sometimes absent.

Hyoglossus brevis sometimes attached to stylohyoid, generally not.

Arytænopharyngeus is occasionally well marked.

Retractor oculi may form a complete investment of the optic nerve, or consist of four bands corresponding with the recti.

The *middle oblique muscle* of the eye, as described by Strangeways, occasionally occurs in the ass.

The inferior opening of the lachrymal ductus ad nasum varies in position; generally it opens at the upper part of the anterior naris, thus differing remarkably from the same structure in the horse.

Neck.—Levator humeri never shows the fibrous band indicative of the seat of the clavicle, which this muscle has in the ox, pig, and other ungulates; but this information is conveyed in some subjects, in which we have seen a small muscle running from levator humeri around the anterior part of pectoralis anticus to the inner side of that muscle, where it disappears.

Serratus magnus has sometimes a distinct rudimentary division passing to second cervical transverse process, generally only extends as far forwards as the third (see arrangement in ox).

Scalenus: instead of terminating by each head at the first rib as in the horse, the superior division may be prolonged to the third rib or even further back, (see arrangement in ox) over serratus magnus.

Longus colli we have seen attached only beneath the five anterior instead of the six anterior dorsal vertebræ.

Back.—Transversalis costarum posteriorly in some cases is large and muscular and blended with longissimus dorsi in the lumbar region; in others it is tendinous and inserted into first umbar transverse process.

Serratus posticus minor varies considerably in its development and attachments.

Latissimus dorsi just before its insertion into the humerus varies in its relations with scapulo-ulnaris. Sometimes serial muscular bands beneath the arches of the ribs run from one rib to another, crossing two or three; these *subcostales* vary in number, are sometimes continuous posteriorly with the psoæ, and are covered by the pleuro-costalis.

Transversalis abdominis varies in the degree of extension of its tendon towards the internal abdominal ring. The *rectus abdominis* has a variable number of transverse tendinous markings.

Limbs.

Hind.—*Sartorius* superiorly is attached to the tendon of psoas parvus, to the os innominatum with psoas parvus, or only to the lumbar fascia, sometimes to two or even three of these points.

Flexor pedis perforans sometimes presents a distinct muscular belly and tendon, probably a representative of the flexor longus hallucis found in man.

Variations of pedal muscles less marked than in fore limb.

Fore.—*Scapulo-humeralis posticus* sometimes almost obsolete.

Teres externus sometimes divisible into teres proper and acromio-humeralis, as in ox.

Flexor brachii.—Superior tendon has a remarkable piece of red muscular structure on its anterior part, which varies considerably in size. Also the band which runs from this muscle to extensor metacarpi magnus may often be separated nearly to the knee; careful dissection shows that the inferior extremity of this muscle is somewhat divided into two parts similar to those seen in dog, &c.

Pronator teres is of frequent occurrence inside the elbow-joint, arising from the internal inferior prominence of humerus, inserted just below internal lateral ligament, crosses radial artery, vein, and nerve. Generally this muscle is represented only by a small white fibrous band.

Extensor pedis.—Thiernesse's and Phillip's muscles sometimes distinct, often imperceptible.

Lumbrici vary in number and size. The *interossei* of the large metacarpal, which in the Equidæ form the superior sesamoideal ligament, vary in their amount of muscular structure and in their bulk.

Neurology.

Nerves remarkably uniform; sometimes the transverse metacarpal branch is not immediately subcutaneous, but separated from the skin by a longitudinal band of fibrous tissue.

Splanchnology.

Sometimes a third rudimentary circumvallate papilla a little behind the two usually present. Position of parotid opening varies to a slight degree.

Teeth.—*Incisors:* sometimes only four present in each series, corner permanent incisors having never appeared. Occasionally the upper incisor series has quite become lost—either a result of wear or fracture. The superficial resemblances of this condition

to that which occurs in the ox is, of course, of no morphological value.

Canines long or short, sexual variation.

Premolars: small "wolves' teeth" occasionally present in front of four anterior molars.

Stomach often presents a very marked central transverse constriction where cuticular mucous joins the villous.

Cæcum sometimes retains the forms it presents in eight months' fœtus; its apex sometimes very elongated and pointed.

Colon.—Longitudinal muscular bands vary in size and in number at different part of the bowel.

Liver.—Lobes vary in form and much in size. Ligaments differ in degree of development, especially falciform ligament, which sometimes runs as far backwards as umbilicus, containing a pervious vein in its thin free margin.

Parovarium.—On outer surface of broad uterine ligament, sometimes large, often obsolete.

Male mammæ often extremely large.

Thyroid body varies much in form, especially in the size of the band connecting its lateral masses. *Conchial cartilages* prolonged downwards by small rounded band to lateral part of guttural pouch and to posterior angle of stylohyal. A remarkable peritoneal band sometimes runs from the cæcum to the omentum major, reminding us of a condition we have noted in one form of *Macacus*.

Angiology.

Anterior aorta often entirely absent. Sometimes a larger anterior mediastinal branch passes downwards from this vessel. The dorsal and posterior cervical vary in their relations to each other. Generally these vessels are united on the right side and distinct on the left; but this condition may be reversed. The cervical may become united by a well developed subcostal with the sixth costal as given off from the posterior aorta; but this is not constant. The vetebral passes through or below the seventh cervical transverse process. The submaxillary may arise directly from the carotid instead of from the external carotid. External pectoral arises from internal pectoral, or axillary.

Posterior aorta.—Bronchial and œsophageal often arise by common root, or are distinct. Renal may supply suprarenal capsules and kidney; or the former may be supplied directly by a branch from the posterior aorta. Spermatics—one sometimes considerably more anteriorly placed than the other, even given off by posterior mesenteric. Between internal iliacs occasionally a small middle sacral arises. The obturator, epigastric, and inguinal sometimes arise from external iliac. The origins of the profunda and of the artery of the cord often vary.

The medullary artery of the femur is sometimes given off through the foramen at the anterior part of the bone instead of at the internal surface of the bone. The artery of the humerus is similarly variable. The circumflex of the toe is variously formed in different cases.

Thus from these examples we see the arteries are the most frequent subject of variation. The veins also are not regular. These differences are as numerous and as marked as those in man.

Our observations point to important affinities, and, we have reason to believe, may direct attention to conclusions by no means as yet generally received. So we are in hopes that we have not over-estimated the importance of our subject. Investigation of varietal modification of domesticated animals should teach us the general laws and methods of modification, and thus bear fruit in advancement of the science of anthropology, in promoting the scientific management of our animal servants, and in rendering our knowledge more exact with regard to those forms which inhabited the earth in by-gone ages.

THE DANGER OF MILK FROM PHTHISICAL COWS.

Dr. Vallin, in the *Revue d'Hygiène*, briefly referring to recent contributions on this subject, including the writings of Fleming, and especially Dr. Creighton's recent paper in *The Lancet*, on an infective variety of tuberculosis in man identical with bovine tuberculosis, urges the attention of scientific bodies to the subject. These bodies, he says, have at different times instituted commissions for the study of cow-pox, rabies, glanders, &c.; should they not institute a commission for an investigation such as this? He especially urges the question upon the attention of the Institute or the Academy of Medicine. Here is a subject which specially concerns the medical department of the Local Government Board, and which we should be glad to see included in the scientific medical research carried on by that department in continuation of Dr. Burdon Sanderson's investigations, made for the department, on the inoculation and development of tuberculosis. Meanwhile, asks Dr. Vallin, pending the experimental determination of the question at issue, is it not a matter of common prudence, in giving milk of which the source is doubtful to infants and invalids, that it should first be thoroughly boiled? Unless we are mistaken, it has been alleged that boiling does not offer a sufficient protection?—*Lancet*.

A FEW HINTS ON EAR MARKING OF CATTLE.

To the Editor of "The Live Stock Journal."

Sir,—Will you allow me, through the medium of the *Journal*, to call the attention of agriculturists to a simple process of ear marking to which even the Royal Society for the Prevention of Cruelty to Animals could take no exception? First, let me say that the ear is the most available and desirable place for a mark. Of course, the epidermic tissues (the hair, hoof, and horns) are too frail to receive permanent marks. The hair, as every one knows, is constantly being shed and rubbed off; the hoofs grow too fast when out at pasture for marks to be read any length of time, let alone the difficulty or impossibility of seeing marks on the hoofs of cattle at a distance, rendering them quite unavailable in a herd at grass; and horns must be there before they are marked.

Herdsmen, therefore, have been driven to the ear as the most conspicious and least sensitive structure. To what extent it is cruel to mark the ear by piercing it? That part of the ear vulgarly termed the ear, but which is the sound-catcher, and technically termed the *pinna* or *auricle*, is made up of an almost insensible base, called cartilage, with skin upon it, like a glove on a finger. This cartilage when in health, as it is when the marker's knife attacks it, is, I repeat almost without any feeling whatever. It follows, therefore, that the "cruelty" consists in piercing or cutting two thicknesses of skin.

The cruelty of ear marking, as at present conducted, I do not admit. The momentary pain is as nothing in comparison to the severe smart inflicted on my lady's carriage-horse with a foot of whipcord, as she drives to attend the annual meeting of the Royal Anti-cruelty Society. If, however, the wound remains open, especially in fly time, there will be a ten days' annoyance to the animal; and, looking at it in the light of utility, there is by it so much flesh lost.

As one used to surgical proceedings, I beg to offer the following advice to all whom it may concern:—First, it is well known that organic substances, such as silk-thread, catgut, string of all descriptions, absorb the serum and other moisture from the wound, and this putrefies, and becomes irritating to any raw surface to which it is applied; and so long as this irritation lasts, there is either inflammation, or something as bed. On the other hand, metallic substances, such as lead and silver wire, are tolerated by the tissues, and healing goes on around them, the healed surfaces surrounding the silver

or gold wire in a lady's ear, for instance, shortly after being pierced. All the agriculturist need do therefore is to insert metal studs in the "ears" of his oxen. Distinguishing marks could be made by the position occupied in the ear by the stud. Thus, one set might all be at the tip or extreme point; another set at the bottom of the lower edge; another at the middle of the lower edge; another in the centre of the "ear;" and so forth. If still more distinguishing marks were needed, the head of the stud at the outer aspect could be varied in shape, such as the round, the square, the oblong, the triangle, &c. The variety of distinguishing marks by position and shape of stud might be very great with a little ingenuity; and if still more were required, letters or numbers could be engraved on the stud.

To insert studs even in a restless cow, held by the nose, would be quite easy with a cobbler's punch, an instrument like a pair of pinchers carrying a punch, made the size of the shaft of the stud. I would recommend that the end of the stud be a male screw, and that the female screw be broad enough so as to run no risk of the hole in the ear admitting it. The only expense would be one punch and the studs (which could be made of tinned iron and sold by the gross). The shafts of the stud and, therefore, the hole punched for its reception, need not be thicker than the shaft of an ordidary pen-holder. The punch should be kept free from rust and putrid organic matter from previous use, and dipped in carbolic acid (olive oil 20 parts, carbolic acid 1 part) before each puncture. Clean studs so inserted would cause hardly any sore, especially with the carbolic oil precaution, and very likely there would be no objection raised to it.—W. F.

THE COLOUR OF ANIMALS.

Are *white animals* more delicate in constitution than those of other colours? In a meeting of the Ayrshire Breeders' Association one of the speakers quoted Agassiz in the affirmative, and added for himself that "consanguinity carried too far in breeding is likely to develop too much white in the colour of the stock." A correspondent in the *New York Tribune* says, he never met with a proof of this assertion; on the contrary, so far as his experience is concerned, red or brown, rather than white, most often followed close breeding. But as for white animals being more delicate than other colours, look at horses, and especially sheep, white shorthorn cattle, and, above all, the pure white breed of Charolais in France. A

hardier race of cattle does not exist, and the same may be said of some other quite light coloured cattle in Europe. Is the white Polar bear a delicate animal? Naturalists assert that several other hardy kinds of animals in the Arctic regions are white, and although some may change to other colours in the summer, as winter approaches they resume the white. Would nature allow this if it made them more delicate in the season that requires the utmost hardness to pass through it in good health and safety?—*Live Stock Journal.*

EARTH-WORMS.

To the Editor of The 'Live Stock Journal.'

Sir,—The new and startling fact revealed by the recent researches of M. Pasteur—noticed recently in the *Live Stock Journal*—is calculated at first sight to entirely upset the farmer's preconceived notions as to the utility of the common earth-worm. But discoveries of the nature alluded to are often mere myths; and the agency of the earth-worm in spreading disease, even admitting it is a fact, may not be so very dreadful after all. At any rate, if a farmer chooses to take the most ordinary precautions in the matter, he may rest assured that his flocks, his herds, and even himself and his family, have nothing to fear from contagion-bearing annelides. It is suggested that animals which have died of anthrax, and allied diseases, should not be buried in fields devoted to crops or pasturage, and only in poor dry sandy or calcareous soils, where worms do not congregate. But there would be little possibility of effectually guarding against the danger in that way. The only safe plan would be to burn the bodies of all animals that had died from such diseases.

Fortifying myself with the belief that the latter preventive would be effectual against the danger which M. Pasteur warns of, I, for one, shall continue to look upon the earth-worm as one of the best friends to the farmer which he could possibly have. In the one matter of forming soils, the earth-worm does far more for the farmer than counterbalances its mischief-working powers, even if the latter were ten times greater than they really are. The amount of fresh soil which earth-worms annually bring to the surface has been estimated by Darwin at 161 tons of dry earth over an area of ten acres. Stones have been observed to sink into the soil three inches in fifteen years, and fifteen inches in eighty years; but in reality the stones were not sinking—the earth was being raised at that rate by the action of earth-

worms. On a grass surface, the rain carries off a great deal of matter which could never be reached but for the action of the earth-worm; so that while the grass protects the surface to some extent, the earth-worm neutralises this protective effect, and enables the rain to be constantly washing particles of soil from off the surface. The vegetable soil which is often found to have accumulated in hollows, almost entirely results from this. Apparently, nothing could be so permanent as a grass-covered surface; yet it is being continually raised by worms, plants, &c., and lowered by the washing effects of the rain. Indeed, any soil, if it is to continue fertile, must be constantly changing, for on the process of decay and renewal fertility depends.—J. H.

THE MICROSCOPIC EXAMINATION OF WATER.

The chemical examination of water leaves, as is well known, much to be desired from a sanitary point of view. It informs us of the condition with which organisms may be associated, but gives no information as to the presence of organisms. The microscope, as at present used, reveals only the coarser forms of animal life, and those only with uncertainty. M. Certes has endeavoured to ascertain how far it can be made to yield information of more direct value. The discovery of the microscopic organisms has hitherto been very much a matter of chance. Patience and skill are even of slight help. Fortunately, however, certain chemical reagents kill these organisms without changing their appearance; osmic acid is of especial value for this purpose. Once destroyed, they sink to the bottom, and, if enough of the liquid has been employed, they may thus be collected in appreciable quantity. The value of this method is shown by the following experiment:—If a test tube be broken, and the water it contained is contaminated by dipping in it the extremity of a rod which has been placed in an infusorial liquid, and it is then treated with osmic acid, the organisms will be found intact, and with readiness, by the aid of the microscope.

In the examination of water M. Certes employs a one and a half per cent. solution of osmic acid. One cubic centimétre of this solution will suffice for thirty or forty cubic centimètres of water, all animal and vegetable organisms being by it rapidly killed and fixed. In a few minutes, in order to lessen the blackening action of the osmic acid, as much pure water as the test tube will hold is added. In

certain waters rich in organisms the microscopical examination may be made in a few hours. If the water is comparatively pure, twenty-four or forty-eight hours must be allowed to pass. The liquid, with the exception of the last one or two centimètres, may then be decanted. The detection of the organisms in the residue is facilitated by the employment of colouring agents, such as Ranvier's picrocarminate, methyl violet, logwood, &c. It is always well to introduce the colouring agent mixed with glycerine; the organisms are thus better tinted, and can, if desired, be better preserved.—*The Lancet.*

AIR AS A GERM-CARRIER.*

After a long and very unfavorable review of the labours of previous aeroscopists, including Pasteur, Lewis, and Douglas Cunningham, Dr. Wernich describes certain experiments on the action of air-currents upon germs. His apparatus is essentially a modification of that previously employed by Nägeli. Filtered air is drawn through or over the germ-containing material, and thence into a vessel containing pabulum, sterilized by boiling.

He finds (*a*) that thoroughly dried compact masses containing germs, *e.g.* slices of potato bearing crusts of *Micrococci* and similar incrustations on glass, wire, &c., yield no germs, even to the strongest air-current; (*b*) that coarse and fine dust is easily carried over in the stream of air, and the germs it may contain develop all the more surely if they are accompanied by a small quantity of their former pabulum; (*c*) that porous bodies of different kinds saturated with putrefying fluids and then carefully dried, yield germs to the air-stream, but slight moistening of the porous body is sufficient to prevent this; (*d*) that slimy surfaces bearing germs may be slightly dried by the current of air and germs then taken up; (*e*) that germs are not taken up from a fluid through which air passes if the formation of spray and foam be guarded against.

The author then discusses the bearing of these results upon the ventilation of hospitals, and concludes that while it is doubtless important as much as possible to avoid stirring up the dust of sick rooms, and to ventilate them by as regular and gentle a stream of air as possible, the importance of the air as a vehicle of infectious germs has been much exaggerated.—*Journ. of Roy. Micro. Society.*

* 'Arch. path. Anat. u. Physiol.' (Virchow), lxxix, 1880) p. 424.

PRODUCTION OF SEX.*

REFERRING to an article contributed by himself to a Venetian journal, in which he attributes the determination of the sexes to the number of spermatozoa which enter the ovum, M. Canestrini considers that experiments are needed in order to ascertain what amount of sperm is necessary for the production of each sex. M. Thury's theory, that the lateness or earliness of the period of fertilisation is the determining cause, though not an exact theory, is yet favorable to that of the author; for the reason why fertilisation early in the period of heat of the female produces female offspring appears to be the distance at which the ovum then is from the source of the sperm, and the consequently small number of spermatozoa which penetrate so far up the Fallopian tube as to reach it.

In some cases the sex may be said to be determined by accident, as when, of many sperm-cells produced, but few meet the ovum owing to a combination of unnoticed causes, and so a female offspring is the result. But given that the circumstances generally are favorable in both parents, and that the fertilisation takes place towards the end of the period of heat of the female, a male may be expected to be generated. On the other hand, a morbid condition or malformation of the female generative organs, or a scantiness of sperm in the male, should result in the production of a female. Among actual facts which bear out these theoretical considerations are cited twenty experiments made by Dr. Heitzmann; of these, twelve bore out the prediction previously made as to the sex to be expected. It is a known fact, confirmed by experiments made with poultry, that an old male generates more males than females, and *vice versâ* with a young one. This may be explained, in accordance with the hypothesis, either on the assumption that the semen is more concentrated as a rule in an old male, or that copulations being less frequent in such cases, the spermatozoa would be more abundant.

The ovum may develop without contact of semen, *i. e.* partheno-genetically, in which case the sex of the offspring will be always the same for the same species, or if receiving a minimum amount, will go through merely the primary stages of development, and will abort; or it may receive a greater amount and produce a female, or a still greater amount and a male will be the result.—*Journ. Roy. Mic. Soc.*

* *Bull. Soc. Ven.-Trent. Sci. Nat.*, i (1879), p. 18.

CENTRAL VETERINARY MEDICAL SOCIETY.

At an ordinary meeting of the above Society, held at No. 10, Red Lion Square, W.C., on Thursday, August 5th, in the absence of the President, Mr. F. W. Wragg took the chair.

Mr. Samson exhibited a specimen of diseased heart, taken from a very fine cow that had always been remarkably healthy. She was taken ill on the 22nd July last with a common shivering fit. As the bowels did not act, he administered a saline draught with benefit. On the 23rd was sent for again; found the temperature 103½°; pulse extraordinary quick, and very weak. On auscultation, could hear a thumping noise on the right side, but on the left could scarcely hear the heart beat at all. It appeared to him to be a case of severe heart disease, and he gave very little hopes of the animal's recovery, but the owner wishing it to be treated he ordered small doses of aconite, with gruel and beer. The animal became worse, lost her supply of milk, and her appetite failed. She died on the 2nd August. The temperature was on that day 105½°. He made a *post-mortem* and slit up the pericardium to let out the fluid, of which there was as much as from twelve to fourteen quarts (sample shown), exceedingly offensive and thick. All the other organs of the body appeared healthy. The diseased heart was affected from its apex to its base, and all round one side. Four days before the animal's death he heard the heart beating in the fluid. There was no swelling under the jaw.

Mr. Gerrard had known a similar case arising from a pin penetrating the heart.

Mr. Steel remarked that the disease was usually preceded by attacks of indigestion. The lesions appeared to have existed some time.

The *Chairman* thought it must have been a case of pericarditis.

Mr. Shaw observed that it was no uncommon thing to find a diseased heart in a bullock; he frequently saw it. Quite recently a case came under his notice which was condemned as one of pleuro-pneumonia; there was an immense quantity of water in the pericardium. He had never seen a case like the present, and should think the disease must have been present months before death. Many similar cases arose from a nail, piece of wire, or pin passing into the heart, and such was not discovered until after the animal was killed; numbers of beasts went to market in such condition.

Mr. Steel said, as a rule, upon making a *post-mortem* examination there was not such a condition of the pericardium and heart's surface and its general structure as found in this case. He generally found the fluid in the pericardiac sac of a milky or yellowish-white colour, sometimes reddish (but that was the exception), and he was inclined to believe it was seldom, if ever, found except with some communication with the heart cavity before death.

With regard to the nature of the deposit on the heart, in ordinary cases it had not that leathery characteristic seen here; more often it appears as a thick, tough membrane. The deposit is of a brighter colour. In ordinary cases it undergoes calcareous change, and is somewhat gritty, and its feeling to the knife is different to that of the specimen exhibited, which he saw required careful examination, and might probably prove to be a case of idiopathic carditis in the cow, and, if so, would be a valuable addition to their literature on the subject. In reply to Mr. Gerrard, he said that he had mostly found the secretions in all

chronic cases to be of a milky-white character, but in some instances they were reddish.

Mr. Gerrard said his experience was that the secretions were more of a milky character. Cases of this disorder abounded more in the North of England than in the southern counties, as there women were frequently entrusted with the case of cows, and often dropped hair and other pins, &c., among the animals' food. He had not previously heard of the symptom of the disease mentioned by Mr. Samson, viz. the extraordinary swelling of the jugular veins, and would like to know if that gentleman observed any regurgitation in this case.

Mr. Samson stated that in both jugular veins the blood passed freely up and down. He stood and watched the cow for half an hour at a time. There was no regurgitation. The fluid he exhibited had a most offensive smell. Had opened many abscesses, but never came across one so foul.

Mr. Broad exhibited a specimen of the atrophied wall of the right ventricle of a mare's heart. It did not represent all the atrophied portion. Four years since he attended the animal for heart disease and indigestion. It was laid up for a month. An intermittent pulse, stopping after every third beat, existed. The mare went to work, but always had an intermittent pulse. Observed no other indications of disease. He was called to see the mare a few weeks since and found her very ill; while he went to get some medicine she dropped and died. He found the abdomen full of dark blood; could only determine that the rupture proceeded from the mesenteric vessels, but from the careless way the viscera were removed could not ascertain the cause of the rupture. No blood could have escaped from any part but these vessels. Over the whole extent of the mucous membrane of the bowels there was a thick deposit of gelatinous consistence, as from dropsy. The disease appeared to have been present a long time. There were miliary and other tubercles both in the lungs and liver, which presented the exact appearance answering the description of the calcareous tubercle, like a button embedded in the surface. The animal was probably twenty years old. The owner had had her some fourteen years. He had found some glands removed from the inferior portion of the diaphram, which appeared to be diseased. The tubercles were the same as found in glanders. There was no rupture in the heart; the spleen and kidneys were sound.

Mr. Shaw drew attention to the remarkable thinness of the wall of the heart.

Mr. Gerrard remarked an intermittent pulse was very common at times. He had a case very similar, a six-year old horse. The abdominal cavity was filled with blood. The heart was quite healthy. He could not detect anything wrong. It might have been caused by galloping, leaping a fence, or something of that sort. Could not find where the escape came from.

Mr. Shaw was at a loss to understand how the mare could work in the state she was in, with the wall of the ventricle so thin; she must have been greatly distressed at the least exertion.

Mr. Broad said that was the case, and he believed the acute symptoms were brought on by her having been taken a longer drive than usual. When at the Crystal Palace she had a slight attack, and that brought on serious illness. She had been in regular work, and was a well-bred mare.

The *Chairman* stated that his experience was that heart disease in the horse was of common occurrence, and it was the exception, rather than the rule, upon making *post mortems* to find animals with healthy hearts. In

his practice, which was principally among draught horses, he frequently found fatty degeneration, atrophy, or hypertrophy of the heart. Such horses were capable of undergoing great exertion. Indeed, it surprised him how they underwent so much with heart disease.

The *Chairman*, in calling attention to Mr. Broad's paper on "Glanders and Farcy," regretted he had not attended the two previous meetings, but he now desired to draw their attention to the length of time the disease often laid dormant in the system. One case particularly impressed him. Two horses belonging to a London brewery were turned out to grass; one became affected with glanders and was destroyed, the other one was left out six weeks or two months. He appeared all right when brought up, and was put to work. Ten months after, this horse broke out with farcy. He had no proof of it, but felt certain this horse contracted the disease while out to grass with the other one and became inoculated, and that the disease laid dormant ten months. During a period of sixteen years they only had had one case of farcy in the stud of sixty horses. The animals had water supplied them in their mangers, and to this he mainly attributed their freedom from glanders and farcy, as they could obtain drink at night.

Mr. Shaw said he would like to ask Mr. Broad whether feeding horses with maize had anything to do with the disease, as many horses in London were fed upon it.

In reply to Mr. Gerrard the *Chairman* said he had no positive proof the animal he referred to, might not have contracted the disease elsewhere than from the horse he was put out to grass with. He would not say the poison of glanders *always* laid dormant in the system for so long a time; very much depended upon the constitution of the animal, its freedom from organic disease, and other considerations. He thought neither himself nor any one else could determine how soon the disease would come on.

Mr. Gerrard said he believed in the laying on of water in stables. He thought drinking-troughs did more harm than good.

Mr. Samson remarked that, to detect ulcers in the nostril, he used a small bull's-eye lamp, and found it preferable to a candle, which the animals frequently extinguished.

Mr. Hunting said he would refer to one or two topics shortly. As to *incubation*, it was one of the most difficult, and also one of the most important points to deal with, the difficulty being that with horses kept for work, travelling about town or country, exposed to various conditions, it was next to impossible to say how long the period of incubation was. In the case mentioned by the Chairman it was impossible to say that the horse might not have been contaminated, not at the time he was in the field, but a month previous; such might have been the case. It was well known that the period of incubation extended to a considerable time. For a certainty he could say it might be as *short* as eight days in direct inoculation, and it might *extend* (from his own experience in a number of cases) to three months. This period of incubation had a very important medical-legal bearing. If a man bought a horse, and it became glandered, or showed symptoms of the disease shortly after purchase, it became a question for veterinary surgeons to decide—Was the horse glandered or not at the time of sale? He believed the French law required a period of eighteen days to elapse, and if glanders showed itself within that time the law held that the animal had glanders in its system prior to sale. This seemed a very fair period to allow, and such a law would be good for this country. The burden should rest

upon the seller if the disease appeared within eighteen days after purchase.

Another medical and legal point in glanders and farcy was the *duration* of the disease. He differed from some veterinary surgeons. He had seen more than one certificate saying, "This horse is suffering from glanders of long standing." Now, there were very few cases in which a man had a right to say this, unless the symptoms were very extraordinary. In his experience he had, over and over again, seen such a group and combination of symptoms suggestive of disease of *long standing*, but which, in reality, had only existed two or three days, and he thought there was nothing more difficult than to say a horse was suffering from disease of three, two, or even one month's standing. He did not believe any man could say a horse had been glandered for one month.

As to the *cause* of glanders, he believed there was only one, viz. contagion. He would at once negative such a suggestion as the eating of maize, as his father used it very largely with beans, and his horses never suffered. He did not like the drinking-troughs accused of being such spreaders of the disease; and now there were very few glandered horses to be found about London streets.

Mr. Samson considered the spread of glanders more due to horse repositories than drinking-troughs.

Mr. Steel differed from Mr. Hunting as to the inability of veterinary surgeons to fix the length of duration of disease from appearances of animals. He thought, under certain conditions, and when they presented peculiar symptoms, it was possible for them to fix the time to at least one month, by careful examination of certain lesions in the mucous membrane and skin, and when they found a cicatrix in the Schneiderian membrane also. He was sanguine enough to hope a cure would yet be found for glanders, and alluded to the fact that Dr. Granville, in working out the pathology of glanders, thought he had made important discoveries of bacterial elements different from those found in anthrax. The subject had been largely discussed on the Continent, but still remained to be proved. He (Mr. Steel) thought it possible there might be a state of the blood in which the poison of the disease was diffused through the system, and yet left no local lesions indicative of its presence.

Mr. Shaw said he knew a case of a horse working in Russell Square the night previous with twenty farcy buds on him. The man said, "It only broke out in the night." He quite agreed with the Chairman that the disease could exist in the system for months. In giving an opinion, they should always notice the purple colour of the membrane. He had noticed an invariable sign of lung disease was, an animal affected would grunt if one went to strike him.

Mr. Steel said, respecting Mr. Gerrard's question about the purple colour of the mucous membrane as confirmatory of the animal being affected, and as a reason for its isolation, where there is an outbreak of the disease, and no lesion can be detected as described of glanders, the ulcers probably arising from other causes, the history of the case must be studied with all the particular bearings of the disease, or supposed disease, with which they had to deal.

Mr. Samson noticed affected horses presented a bluish-purple appearance of the Schneiderian membranes, and frequently a loss of flesh about the hind quarters.

Mr. Hunting, in referring to the duration of the disease, said other diseases than glanders might produce a cicatrix, as mentioned by Mr. Steel; it might follow Schneiderian ulcers in the nostril after influenza. A

disease which he called German smallpox, left scars like farcy buds, all over the body; the swelling in the leg might be an ordinary case of lymphangitis; falling away of the hind legs might be the result old-standing case of mudrash; in fact, all the symptoms of old-standing glanders might arise from other causes, and were, therefore, misleading.

Mr. Steel said, in a case he knew of, the lesions could be traced through different stages; they were more acute, plainly showing, for instance, on the membrane, that an ulcer left a cicatrix behind, and sometimes, from the symptoms, he would have no hesitation in saying, in a court of law, that a case had existed for one month.

The *Chairman* said it appeared quite evident that, if one had a horse in London falling off in condition, discharge coming from the nostril, and swelling of the glands, he might be killed, with a certainty that the animal was glandered; but this could not be done in any other place but London, which he thought the hot-bed of the disease. He considered horse repositories and water-troughs great sources of contagion,

Mr. Broad said, as stated in his paper, that there appeared nothing wonderful in the disease lying dormant in the system; tubercles in the lungs frequently required extraneous conditions to set them at work. He concurred with Mr. Hunting's remarks on the legal bearing of the disease, as to the liability of the seller. Mr. Shaw's allusion, at the previous meeting, to the incautious usage of brushes and combs, was a good one. He considered Mr. Samson's method of using a bull's-eye lamp to examine nostrils good, and thought, if used in conjunction with the glass he (Mr. Broad) had exhibited, it would be an excellent aid, and preferable to daylight. He differed from Mr. Hunting as to the length of period of incubation, that gentleman fixed it to three months; he thought it might be an almost indefinite period; the disease might manifest itself after three years' incubation.

The usual votes of thanks were then accorded, and the proceedings terminated.

Present, nine Fellows and three visitors.

JAMES ROWE, *Hon. Sec.*

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE sixty-third quarterly meeting of this Association was held at the Medical Institute, Hope Street, on Friday evening August the 20th, the President, Charles W. Elam, Esq., occupying the chair.

There were present—Prof. Williams, Edinburgh; Messrs. R. S. Reynolds, G. Morgan, A. Bain, W. T. Moore, E. Kitchin, Jackson, Bell, Michaelis, Liverpool; Messrs. Lloyd and Edwards, Chester; W. Woods, Wigan; Ferguson, Warrington; R. Ellis, Ormskirk; Dacre, Altrincham; T. Stone, Walden; Messrs. T. Hopkin, W. A. Taylor, E. Faulkner, T. Greaves and S. Lock, Manchester; Mr. Lyman, Boston, U.S.A.; and the Secretary.

Letters, &c., regretting their inability to attend were received from the following gentlemen:—Jos. Welsby, Liverpool; Whittle, Worsley; Peter Taylor, Manchester; Messrs. Jas. Moore and George Fleming

London; Henry Barnes, Malpas; L. Butlers, Norwich; and Walter Lewis, of Crewe.

The minutes of the previous meeting were read and confirmed.

It was proposed by *R. S. Reynolds*, seconded by *G. Morgan*, and carried unanimously, that Messrs. R. C. Edwards (of Chester), and E. Kitchin (of Liverpool) be elected members of this Association.

In consequence of the unavoidable absence of Peter Taylor the adjourned discussion of his paper on "Counter-Irritation" was postponed until the next meeting.

Prof. Williams then read a very able and scientific paper on "Purpura Hæmorrhagica," which was followed by an animated discussion.

Mr. Morgan, after thanking Prof. Williams for his paper, said that he could not account for the disease being more prevalent amongst horses in Scotland than elsewhere, as stated by Prof. Williams. His experience was that more died than recovered. Thought that "Purpura hæmorrhagica" and scarlatina were often confounded with each other, and that a prominent septicæmic in scarlatina was the presence of a bloody exudate all over the body, which is easily detected by passing the hand through the hair. He thought that a frequent cause of "Purpura" was the debility which existed during recovery from chest diseases. Agrees with the treatment adopted by Prof. Williams, viz. the exhibition of Potass. Chlor., followed by Spts. Tereb. and Ferri Perchlor., but would also give stimulants to support the system. Would not hesitate to scarify the swellings and allow the contents to escape.

Mr. R. C. Edwards had not seen many cases, except when in Edinburgh. Had treated formerly with Ferri Perchlor., but now prefers Potass. Chlor. Has tried Potass. Bichrom., but found it unsatisfactory.

Mr. Greaves had had considerable experience of the disease, and found that the majority died. Agreed with Prof. Williams that it arises from septic material in the atmosphere. Favours the treatment adopted by the late Prof. Dick, viz. to rid the system by the alimentary canal. Did not hesitate to puncture freely. Had recently a bad case and punctured scores of times and obtained a fair bucketful of straw-coloured serum. The horse did well. Recommended exercise, notwithstanding its apparent cruelty. Had tried Potass. Chlor., but without much benefit. Approved of the application of hot fomentations to the swellings.

Mr. Moore does not agree with Mr. Greaves in puncturing. Has seen many cases, and finds that puncturing leads to sloughing. Does not interfere with the bowels. Has given Potass. Bichromate for eighteen years, and finds it eminently satisfactory.

Mr. Hopkin agrees with Prof. Williams that "Diarrhæmia" is a better name for the disease. Favoured the use of Spts. Tereb. and Potass. Chlor. Recommended the administration of dry fibrin. Does not puncture the swellings, except those about the nostrils, thus trying to avoid tracheotomy. If the swellings should slough in consequence of puncture, considers it preferable to the performing of tracheotomy. Has not noticed the extreme variations in pulse and temperature. Does not agree with Mr. Greaves as to exercise, as in his opinion it exhausts the patient. If constipation existed he gave medicine to act gently on the bowels.

Mr. Dacre considers the microscope gives little aid in blood diseases. Believes that there is no special mode of treatment. He leaves matters alone externally, and varies the internal treatment according to symptoms. Thinks that Prof. Williams's success is remarkable. In Manchester they are not so successful. Has tried Potass. Chlor. in

water without success. Would suggest subcutaneous injections of ergot.

Mr. Woods has had many cases. Finds that they always follow debilitating diseases. Gave Spts. Tereb. and Potass. Chlor., and also recommended mild purgatives, cleanliness, and the use of disinfectants.

Mr. W. A. Taylor thinks that the term "Purpura hæmorrhagica" does not give a direct clue to the disease as we find it. Has noticed the great discrepancy mentioned by Prof. Williams in the pulse and temperature, the latter being 102° in the morning, and 106° in the evening, without a corresponding increase in the number of pulsations. Could not account for it. Had noticed in one case attempts at vomition, caused by a sloughing off of a portion of the duodenum. Never punctures, believing that the admission of the atmosphere would produce pyæmia. Gives Spts. Tereb., afterwards Potass. Chlor., followed up by vegetable and mineral tonics.

Mr. Lyman had not met with many cases in America, where bad ventilation is almost universal. Had experienced some cases followed by the "horse disease." Considered it to be of a septic nature. He gave the history of a case which died from intestinal hæmorrhage.

Mr. Faulkner thinks that Prof. Williams has given as good description of the disease as being one of a septic distinguished from that of an anthrax nature. Has not noticed the variations in the temperature and pulse. Gives Potass. Chlor., with Spts. Tereb., with mild laxatives; afterwards vegetable tonics. Never saw sloughing or an unhealthy wound produced after puncturing.

The *President* had not seen many cases in Liverpool. Gave Potass. Chlor. in water, Spts. Ammon. Co., and Spts. Tereb. Had given of late milk in large quantities as food, believing it to be readily assimilated.

Prof. Williams, in reply, said that the true principle of treatment lay in destroying the cause; the employment of ergot only attacked a symptom, as in this disease there is a great tendency for the blood to leave the vessels without rupture taking place. The administration of Spts. Ammon. Co. is quite inadmissible, as it increases the fluidity of the blood, which in this disease is in an anæmic condition. He entirely disagreed with exercising the patient as he would in cases of laminitis. Did not favour puncturing, as it brought about decomposition of the subcutaneous tissue. If constipation existed he gave about eight or ten ounces of linseed oil along with Spts. Tereb., to act on the kidneys. Did not think much of the administration of fibrin.

Mr. Wood proposed and *Mr. Reynolds* seconded a vote of thanks to Prof. Williams for his valuable paper. A similar compliment having been paid to the Chairman, the meeting terminated.

WM. LEATHER, *Hon. Sec.*

DECREASE OF LIVE STOCK IN IRELAND.

It appears from the following table that the returns of live stock in Ireland for 1880, compared with 1879, show a decrease in all descriptions.

Years.	Horses and Mules.	Cattle.	Sheep.	Pigs.	Poultry.
1879 . . .	596,890	4,067,778	4,017,903	1,072,185	13,782,835
1880 . . .	582,053	3,021,026	3,561,361	849,046	13,426,729
Difference in numbers between 1879 and 1880. .	Decrease, 14,837	Decrease, 146,752	Decrease, 456,542	Decrease, 223,139	Decrease, 356,106

Veterinary Jurisprudence.

CONVICTION OF TWO AUSTRALIAN PRACTITIONERS, STYLING THEMSELVES VETERINARY SURGEONS, FOR SELLING POISONOUS AGENTS.

In the *Melbourne Weekly Times*, just received, we find the following report:

At the District Court, on Monday, August 2nd, before Mr. Call, P.M.,

James Leith and *John R. Miscamble*, described as veterinary surgeons, were summoned for illegally selling poisons.

The prosecutions were taken at the instance of the Pharmaceutical Society of Victoria, for whom Mr. Dan Wilkie appeared, and stated that public attention had been lately drawn to the great number of deaths from poison, and as it was known that there were numbers of persons selling without the slightest restriction, the Society, in the interests of the public, had taken the matter in hand. It was shown in evidence that arsenic and tartar emetic had been sold, and that none of the requirements of the Act, as to registration or labelling, had been complied with, and the defendants, although styling themselves Veterinary Surgeons, *had no legal qualification*.

The evidence of the person who purchased the articles, and of Mr. C. R. Blackett, who analysed them, being taken, the Bench fined the defendants 1s., with £3 3s. costs, at the same time intimating that any future cases would be more severely dealt with.

Mr. Wilkie drew the attention of the Bench to the smallness of the costs allowed. He thought that it was only fair that, as the prosecution had been taken on public grounds, the Society should not be losers.

THE FELLOWSHIP DEGREE OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

At a meeting of the Examination Committee for the Fellowship Degree of the Royal College of Veterinary Surgeons on August 12th, the following gentlemen, having undergone the necessary tests, were elected Fellows:

Mr. J. Ferris, Royal Artillery, Woolwich.
„ C. P. Lyman, United States of America.
„ A. Broad, London.
„ J. W. T. Moore, Inspector of the Privy Council, Liverpool.

The following were the written questions:

Dietetics.

1. Name the nitrogenous and non-nitrogenous elements of food.
2. State the relative dietetic value of oats, beans, and bran.

Surgery.

1. Give the pathology and treatment of "Canker" in the horse's foot.
2. Give the pathology of "Seedy Toe" and the best mode of treatment.

Pathology.

1. Describe the pathological anatomy of Swine Plague.
2. Mention some of the more recent discoveries in the pathology of Anthrax.

Epizoötiology.

1. Give a brief historical sketch of the first appearance of Canine Distemper in Europe.
2. Mention the circumstances which lead to the diffusion or spread of contagious Pleuro-Pneumonia in a country recently invaded by it.

Physiology.

1. Describe the composition and uses of the different fluids secreted in the digestive organs.
2. Describe the origin and function of the fifth pair of nerves.

Anatomy.

1. Describe the differential arrangement in the pleural and peritoneal membranes.
2. Give an outline of the respiratory apparatus in birds.

Therapeutics.

1. Describe the preparation and physiological action of choral.
2. What are the physiological and therapeutical actions of belladonna, opium, and digitalis.

THE PROFESSORSHIP OF AGRICULTURE AT THE ROYAL AGRICULTURAL COLLEGE, CIRENCESTER.

Mr. John Scott has been appointed Professor of Agriculture and Estate Management in the Royal Agricultural College at Cirencester. Mr. Scott studied agriculture at the University of Edinburgh, and has had many years' practical experience in farming, estate management, and land valuing, both at home and in the colonies. He is the author of two well-known books on farm and estate valuations, and was formerly editor of the *Farm Journal.—Daily Paper.*

ARMY VETERINARY APPOINTMENTS.

Candidates for appointments under the Army Veterinary Department must possess the diploma of the Royal College of Veterinary Surgeons, and shall undergo a further examination. Successful candidates receive a commission for ten years, pay commencing at £250 a year. At the expiration of the ten years he may be dismissed, or may be selected for further appointments. After serving twelve years he is eligible for promotion to the rank of veterinary surgeon of the 1st class, pay commencing at 16s. a day, rising to 22s. a day, after fifteen years' service as 1st class veterinary surgeon. Army veterinary surgeons rank as lieutenants, 1st class surgeons as captains.

MISCELLANEA.

A DOG'S HUNDRED-MILE JOURNEY.

A Mr. Donovan, of Richmond Street, recently forwarded to a friend living north of Orillia a valuable dog that had been raised in the city. The animal was shipped to its new owner by the Northern Railway, and on its arrival was kept chained up until it was thought to be thoroughly familiar with the place and people. On being released from its fastening the dog made for the road, and was seen no more in that section of the country. The disappointed owner made Mr. Donovan acquainted with the fact, and the dog was supposed to be irretrievably lost. One week after the receipt of the letter conveying the news, the dog made his appearance in front of Mr. Donovan's house, and his delight on gaining his old familiar quarters knew no bounds. In his 100-mile tramp over a strange country the city dog had many a pitched battle with rural curs, as his scarred hide and cut face proved. The wanderer had never been out of the city before, and, as his journey northward was made by rail, it is a matter of wonder how he ever found his way back.—*Toronto Mail.*

THE

VETERINARIAN.

VOL. LIII. No. 635. NOVEMBER, 1880. Fourth Series, No. 311.

Communications and Cases.

OPENING OF THE SESSION AT THE ROYAL VETERINARY COLLEGE.

The Sessional Course of Instruction was commenced on October 1st, in accordance with established custom. The chair was taken by Mr. Bernard Holt, F.R.C.S., and the Introductory Address delivered by Professor Tuson, F.I.C., F.C.S. The meeting was well attended by surgeons, veterinary surgeons, friends from the country, and private gentlemen. The Governing Body of the College was represented by Lord Arthur Somerset and Mr. Harpley.

In introducing the Chairman to the meeting, *Professor Simonds* said: For several years past we have been honored on these occasions by the presence of a Governor who has kindly presided over the meeting. We are thus honored again to-day, and I believe that it is for the first time in the history of this Institution that that governor has been connected with the medical profession, a profession of which I may perhaps be permitted to say, in his presence, that he is a very bright ornament. I have the pleasure now of asking Mr. Holt to take the chair. (Applause.)

Mr. Bernard Holt then took the chair, and called on Professor Tuson to deliver the Inaugural Address.

Profeesor Tuson, addressing the Chairman, spoke as follows:

Different lecturers, no doubt very naturally, entertain different views respecting the object of the address which it is the time-honoured custom to deliver at our various medical and veterinary-medical schools, at the commencement of every academic year.

For instance, some appear to regard the introductory lecture as intended to enable them to ventilate their politico-professional opinions; some air their real or imaginary official grievances; some ride their scientific or professional hobbies, and advocate, what they consider to be, the superior claims to attention which the special department of science, which they are appointed to teach, possesses over every other branch of the curriculum; and so on.

For more than thirty years I have been actively engaged in teaching science—twenty years in this College and the remainder of the time in five different schools of human medicine—during this period I have always held, and still hold, the opinion that the subject of the annual address should be—*advice to newly joined students.*

To-day, however, I desire to depart for a short time from this course, in order that I may refer to certain events which have occurred in, or in connection with, the College during the last year, and which are of interest to at least the majority of the senior portion of my audience, whose presence is most gratifying to my colleagues and myself, as it testifies to the interest they continue to take in their alma mater.

A few months since we lost by death a governor who, for very many years prior to his failing health, took an active part in the administration of the government of the institution, and who up to the time of his decease manifested a deep interest in its welfare.

I refer to the late Mr. Gaussen, whom to know was to admire for his devotion to the work on the Board of Governors, and to highly esteem for the courteous and kind way in which he treated every one with whom he came in contact.

Those who had the happiness to know the late examiner in chemistry and chairman of the Court of Examiners—Dr. Alfred Swayne Taylor—will feel with me that this profession has lost a staunch adherent and supporter. Dr. Taylor was emphatically the student's friend; for he not only possessed that rare, but most desirable, combination of qualities in an

examiner—a good temper, a thorough knowledge of the principles and practice of his profession, many years experience as a teacher, an intimate acquaintance with what one may term the natural history of pupils; but he invariably exhibited that patience, gentlemanly demeanour, and kindness of manner which gives courage and comfort to the student, and materially facilitates the passing of an examination.

That which I have stated in regard to Dr. Taylor will also equally apply to another former examiner at the Royal College of Veterinary Surgeons, the late Dr. Sharpey.

Dr. Sharpey's reputation as a physiologist and as a lecturer on physiology was literally world-wide. Every one who, like myself, had the privilege of his acquaintance, knows how varied, extensive, and sound was his knowledge, and how ready he was to communicate that knowledge to others, and to give encouragement and advice to young aspirants to scientific fame.

Whether as teachers, examiners, men of literary and scientific attainments, cultured companions, or true friends, their loss is to be deeply lamented. In either capacity they can never be surpassed and but rarely equalled.

Another event which I have to mention is the secession of Professor Pritchard. After nearly completing twenty years of official work, circumstances arose which rendered it necessary, in his opinion, to resign the professorship he had so long and so creditably held. His departure from us is a source of extreme regret. Let us hope that Mr. Pritchard, in the "fresh fields and pastures new" which he has chosen for his future career, will meet with that success and happiness of which his many good qualities render him deserving.

Consequent upon the resignation of Professor Pritchard, came the election of Mr. Robertson, of Kelso, to the Chair of Hippopathology.

Professor Robertson comes to us with the reputation of being a practitioner of great experience; we may, therefore, fairly anticipate that in the carrying on of the infirmary practice and the clinical instruction, his addition to the staff will prove to be a most desirable one.

It is an old saying, that "poets are born, not made." Possibly the same is true of some teachers, but most men find that, in order to succeed in the teacher's art, they have to devote years to its study and practice. Possibly Mr. Robertson belongs to the former category; if so, his tutorial path will be a straight and easy one. Should he, however,

find, in the exercise of his new functions, that he needs assistance, I can assure him that he could have met with no colleagues more willing to aid him—so far as in them lies—than those with whom he is now associated.

As the present is the first occasion on which Professor Robertson has assumed an official position in this theatre, I trust I may be permitted to tender him our hearty welcome, and to express the hope that between himself and his colleagues there may develop that esteem and unity of action so essential to the pleasurable and satisfactory performance of our duties, and consequently to the welfare and reputation of the institution.

My list of recent changes would be incomplete were I to omit to notice the rise in position which has been conferred by the governors on Mr. Steel. This gentleman still retains the post of senior demonstrator, but he has now become, in addition, the lecturer on anatomy.

No better appointment could, I believe, have been made.

Mr. Steel was a hard-working and distinguished pupil, and he has proved himself to be a competent and popular teacher, as well as an author of no mean ability. I am sure I may take it for granted that Mr. Steel has the best wishes of every one present for a long and prosperous career in the honorable and important position to which he has been elevated.

With this digression from what I conceive to be my strict path of duty on the present occasion, I abandon topics of general interest and proceed to specially address those among my younger auditors who, as soon as they have satisfied the authorities of their proficiency in scholastic education, will be added to the *matriculus* or roll of pupils of this College.

The first thing I would advise the fresh-men to do, if they have not already done so, is to obtain from our much respected secretary, Mr. Powys, a copy of the prospectus relating to students, and a copy of the syllabus of each course of lectures and demonstrations. Read these productions carefully in order that you may gain an insight into the nature and extent of the work before you, as well as acquire a knowledge of the regulations with which it is imperative that you should strictly comply.

The contemplation of the apparently numerous studies with which you will have to be engaged, may have the effect of disheartening many of you. However, be not afraid; approach your work manfully, and with a thorough determination to conquer all difficulties.

As students you must learn to regard each branch of study as being of equal importance, and consequently endeavour to master one subject as completely as another. You will not, if you are wise, neglect any particular branch because it is difficult, or because, in your opinion, it has no practical bearing on your professional pursuit.

Never forget that the curriculum has been carefully thought out and compiled by far older and more experienced heads than yours, and that, therefore, it is better for you to accept it as the best for enabling you to obtain your diplomas, and subsequently occupying a satisfactory position in the profession to which you desire to belong.

A propos of the acquisition of knowledge which has no apparently direct or practical connection with your particular calling, and the desirability of its non-neglect, let me quote from a speech recently delivered by Mr. Fawcett, M.P., Post Master General, at the distribution of prizes to the successful candidates of the Oxford and Cambridge local examinations. Mr. Fawcett truly says "that he could conceive there could be no greater error than to measure the advantage of learning any particular subject merely by the practical use it would be in after life. He hoped they ('his audience') would not think he was egotistical in referring to his own experience, but during his school and college days he spent a great portion of his time in learning mathematics. From circumstances to which he need not particularly refer, no one had had less occasion to use mathematics than he had, but yet if he could live his life over again, with his present experience, knowing exactly what he would have to experience in after life, he certainly—so great was the advantage he attributed to mathematical training—would not spend one single hour less in the study of that subject than he did in days gone by."

If, during your collegiate experience, you ever feel inclined to regard as useless some of the more abstract scientific questions that your teachers will bring before you, do not regard them with indifference, but recall to your minds the opinions of Mr. Fawcett in regard to mathematics, and believe that a time will probably come when you too will look back with satisfaction to the general as well as to the special training which you were required to undergo in early life.

By way of further encouraging those whose ardour may be damped by a consideration of the number of subjects they will be necessitated to study, I would say, that hundreds have, by application and by a fair amount of hard

work, passed through the course with credit to themselves and their teachers; and that, consequently, given a moderate intelligence and the requisite amount of industry, you may certainly accomplish that which so many have done before you.

The sources of information open to you are manifold, and let me try to impress the fact indelibly on your minds that it rests almost entirely with YOURSELVES whether or not you profit by the advantages we have to offer you. If you will acquire the art of becoming patient listeners you will learn something from lectures, and if you will carefully use your ears, eyes, and hands, you will learn much in the dissecting room and laboratory.

It is, however, in the quiet of your own rooms that the digestion and assimilation of your mental as well as your bodily food must necessarily take place. There it is, you must every evening carefully revise the notes of your day's work and transcribe them to the "tablets of your memory." There it is, you must read your text-books and thereby thoroughly comprehend the subjects of your previous day's lectures which, in all probability, you will have only partially understood in the theatre.

Speaking of text-books reminds me of the fact that, until comparatively recently, the purely veterinary literature available to our pupils was of the most meagre and unsatisfactory description. Now, however, thanks to the labours of several industrious and able compilers and translators, there are but few branches of the curriculum upon which the student is unable to obtain some reliable work.

From what I have already stated, I think it will be evident that with the facilities offered by the governors of this College and the literary productions at your command, your opportunities of gaining a sound and broad knowledge of your profession are far superior to those of your predecessors, and that to the want of application or of ordinary ability must be attributed the rejection in most cases of those who fail to pass the prescribed examinations.

I trust that the attainment of professional knowledge will always be your principal object. Still, there are other aims which, as professional men, are worthy of your careful consideration. The most important of these is general culture. You may be the most profound, the most expert, and the most experienced veterinarians, but unless you are also fairly versed in general literature, and in possession of those other attributes which society demands of every English gentleman, neither the veterinary nor any other profession

can assume that social status which it ought to be the ambition of every man to occupy.

Apart from these considerations, the pursuit of general literature has much to recommend it. With a good book in hand no man can ever be lonely; and with the love of reading comes the desire for home life and the avoidance of vicious companionship. By reading our tastes are refined, our knowledge increased and extended, and our conversational and other social qualities developed.

In this institution there has long existed, and there still exists, an association at the meetings of which essays on professional subjects are read and discussed; it is to be hoped that the time is not far distant when, after the week's labours are over, you will meet together for the purpose of reading and hearing read extracts from standard works on general literature. Should you think it desirable to establish a society for effecting this purpose, you may rely at least on my willing support and hearty co-operation.

Men who lead studious lives need physical recreation, in order that both mind and body may be maintained in a healthy condition. Were proof of the truth of this observation—which is as old as the hills—wanting, I would refer to Mr. Gladstone's axe, Lord Sherbrooke's bicycle, the Lord Chief Justice's yacht, &c.

I contend that it is a good and wholesome thing for every man leading a sedentary life to participate in some sort of physical exercise; the nature of the exercise must depend, of course, on the means, opportunities, and tastes of the individual.

If ever the time arrives when the almost-national Saturday half-holiday is extended to our pupils, I would encourage, providing your previous week's work has been properly attended to, the development of walking, cricket, foot-ball, rowing, and similar pastimes.

On the principle that "brevity is the soul of wit," I think you are more likely to profit by a short address than a long one. I will therefore conclude by stating that every professor, without exception, will at all times be most willing to aid you in every way in his power; by reminding you that attention to work must be your first consideration, and by exhorting you to be ever seeking to climb to the topmost rung of the professional ladder.

"If I were a cobbler, I'd make it my pride
The best of all cobblers to be;
If I were a tinker, no tinker beside
Should mend an old kettle like me."

Gentlemen, let the moral of this homely verse be the dominant principle of your professional lives." (Applause).

At the close of the address,

The *Chairman* said: Although a governor of this College I yet consider myself one of yourselves, a member of your own profession, and one, therefore, who can claim your indulgence in the few remarks that I have to make to you. In the first place it is unnecessary to call for a vote of thanks to Mr. Tuson for the admirable address that he has put before you, because you have already given him that vote of thanks by your acclamations.

You, gentlemen, who are about to enter this profession, must remember that, like the department of medicine to which I belong it is a profession of the highest possible grade, for in my opinion it is far superior to the other two professions which rank before us, namely, the clerical and the legal profession. (Applause.) As physicians and surgeons we have cases of life and death to deal with placed under our care, with the solicitation that we shall exert to the utmost of our powers the education which we have derived in our early years and the experience we have attained in our later years. There are put unreservedly in our hands cases of serious importance, in which we are called upon to exercise the best of our judgment in order to achieve a happy result. Such is also the case with you, and although at the present moment there is an enormous amount to learn so as to enable you to practise your profession successfully, yet I am sure that not only will those who are now about to enter the profession, but those who are students at the present time, recognise that their life is to be devoted to the study of that subject in which they are to-day initiated, and that they will lose no opportunity of making themselves proficient, so that they may alleviate those distresses to which I have alluded. The Governors of this College, I hope, have lost no opportunity of doing what they can to advance the interests of the College. The museum at the present moment, although not, perhaps, perfectly efficient, is far superior to what it was some years ago, and the maintenance of that museum will, in a very material degree, depend upon the exertions of the students themselves. Any morbid specimen which, as students or practitioners, you can supply to the museum will add very much to its efficiency, and I should be certainly prepared to propose to the governors that a record of those specimens should be

kept, and that the names of the individuals who were kind enough to present any valuable specimen should be recorded, so that there might be an evidence of the intelligence and integrity of those gentlemen who had so laboured for the advantage of his College. (Applause.) Professor Tuson mentioned the desirability of your having a Discussion Society. In all the medical schools of London, or certainly in the greater portion of them, there is a Junior Discussion Class. I cannot conceive anything which is more likely to bring out your knowledge or to impress upon you important facts than discussing the several subjects appertaining to other matters as well as to the science and art of surgery amongst yourselves. It gives you a faculty of speaking, it gives you a knowledge of grasping facts, it enables you to listen to discussions and to discuss the views of your fellow-students, and at the same time it is a very profitable as well as a very social means of communicating knowledge from one to another. I am sure the governors would concede that the library or class room should be open to you on certain evenings, as may be agreed upon, for such discussions to take place. I have seen the greatest possible advantage result from such institutions, enabling men to enter the several scientific societies afterwards, and discuss subjects with those who are more familiar with them by age and by research than they could be themselves, and thus they have an opportunity of gaining knowledge which probably they would not be enabled to gain in any other way.

The "cheap practice" which is now attached to this College I cannot but conceive must be of very great advantage. You have an opportunity of thus seeing a larger number of cases and of making yourselves more practically familiar with disease and surgical operations than you could have by the cases that are admitted into the hospital of the College. The fact also of your being enabled to go down and to examine animals as they come from abroad, and so to become familar with diseases which we endeavour by legislative enactments to keep out of the country, is a very great boon which has been conferred only lately upon this College.

My friend, Mr. Tuson, has alluded to those who have, unfortunately, been removed from among us by death; and he has also drawn attention to those who have seceded from the College from other circumstances. We were sorry to lose the services of Professor Pritchard. He was a man for whom I entertained personally great respect. I had the greatest opinion of his intelligence as a veterinary surgeon, and there can be little doubt that the College

has sustained a loss by his resigning his appointment from circumstances which I hope will place him in a better position than even that which he occupied when attached to this institution.

I will only add that there are many of you who will not confine your practice to London, but will be dispersed all over the country. Your practice will not be confined to horses; but, that which will render your emoluments greater and your position much higher will be a knowledge of all the diseases that appertain to cattle generally. In Professor Simonds you have a man who has the reputation of being the most efficient surgeon, and of having a greater knowledge of the diseases of cattle than any other man in this country. (Applause.) I hope you will benefit by the instruction which he will be enabled to offer you, and that you will gain such knowledge as will enable you to outstrip all those who are at present practising in the country, and that by his means, and by the means of the other professors of the College, you will attain such a thorough knowledge of your profession as to help you to advance the science and art of veterinary practice in every manner in your power.

Remember that the governors of this College are at all times most desirous to advance your interests, and are ready to attend to any suggestions you may wish to make, and they hope that each of you will use your best endeavours amongst your friends to advance and uphold the interests of the College. (Applause.)

At the close of his speech the Chairman distributed the Coleman Prize Medals, Certificates of Distinction, and Certificates of Office-bearing to the several recipients, addressing some well-timed and pertinent remarks to each.*

Professor Simonds.—With one exception, gentlemen, the business of the day may now be considered as ended. I feel quite sure that all present would know to what exception I allude; it was that they should tender their best thanks to Mr. Holt for kindly presiding on this occasion, and, indeed, for doing far more than that—for giving them a very excellent address touching on many points which certainly need to be noted, and which I believe will be encouraging to the class, and, at the same time, do a great deal to promote the best interests of the Institution. I shall not attempt to follow Mr. Holt through his address, but simply endorse the observations which had reference to the advantages which would arise from the students associating together for mutual improvement.

* For list of successful candidates see p. 811.

You have a Veterinary Medical Association, but if there were another association formed, by which the minds of the students were cultivated by general reading and discussions other than those of a professional character, considerable advantage would, doubtless, arise.

There were many other things which had been hinted at to-day, which I feel sure will result in great improvements; but to those I will not further allude, as I am desirous of asking you to give a hearty vote of thanks to Mr. Holt for kindly taking the chair to-day.

The vote having been carried by acclamation,

The *Chairman* said: In the name of the governors, I thank you very much indeed for your kind acclamation. I can only say, as I said before, that we shall be at all times delighted to advance your interests in every way, and it is a matter of sincere satisfaction that out of the large number of students who went up for their last examination there was only one rejection.

INTRODUCTORY LECTURE TO COURSE ON HIPPOPATHOLOGY.

By Professor Wm. Robertson, F.R.C.V.S.

Gentlemen,—However cursorily we examine the records of the experience and the doings of the past, we cannot fail to be struck with the fact that animals as well as men have in all lands, and in every age, been subject to disease. This truth is abundantly clear, whether the history we examine be records sacred or profane. From these notices, scanty and ill-defined although they may be, we may not unfrequently by careful comparison draw much valuable information, guiding us in forming an opinion as to the origin and nature of disease as then exhibited; as also the modes of its development, and the laws to which in its progress it seemed obedient.

It is interesting to observe, that coeval with the subjugation of animals by man, and their association with him in the fulfilment of his varied wants and necessities, there is a distinct recognition of this fact, the existence of disease, and a preparedness on his part to meet it.

The earliest stockowners of whom we have any notice,

the patriarchs of the Old Testament, seem to have paid as much attention to the principles of hygiene, or the preservation of animal health, and to have been as successful in their application of these, as they were to certain important conditions associated with the physiology of reproduction.

Jacob, we are told, by his knowledge of the influence which the sight of certain external objects possesses on animals during conception and the early stages of gestation, in determining peculiar conditions of the future progeny, obtained by means of his party-coloured or peeled rods of green poplar, chestnut, and hazel, placed in the gutters before the breeding cattle, a much larger proportion of party-coloured offspring—his stipulated price—than otherwise he would have obtained. We are not, however, made acquainted with the means through which he obtained the other results, which he tells Laban had been achieved, viz. that during the twenty years he had been with him neither the ewes nor the she-goats had cast their young.

From the earliest periods the most ordinary observers of facts and occurrences have noted the obvious separation of animals into strong and weak, healthy and diseased, and the unvarying certainty with which these have propagated in their offspring their own individual peculiarities, good or bad, the establishment of undeviating hereditary conformation and predisposition, in obedience to the operation of the universal law of "like producing like."

In addition, however, to this inherent and independent predisposition to contract disease, or even its occasional appearance in both strong and weak, from the operation of accidental causes, we may learn from the records of the past which have been handed down to the present, sometimes as detached and incidental information, more rarely as a concise and connected history of some dire calamity, thereby showing us that the early fathers of our race were not altogether ignorant of another great group of diseases, which is ever referred to under the generic term of plague or murrain.

Now, although we may not find in these early periods any well-sustained attempts to separate these diseases into what appears to us well-defined subdivisions, of local, or *enzootic* or *endemic*, and general, or *epizootic* or *epidemic*, the true plague of men and of animals; although they may not have observed that these in their origin and distribution are essentially different, the one originating from some accidental cause, some extraordinary *telluric* or *meteorological* or *dietetic* influence; and although extensively distributed as if from

some centre of development, still circumscribed to a definite area, the other entirely independent of any accident, originating from a specific previously existing *entity* or poison and propagating itself indefinitely in obedience to fixed and invariable laws.

Although the early progenitors of our race may not have recognised these things as we now claim to have distinguished them, they were not altogether ignorant of certain great and general influences which seemed to operate in the production of disease, and they were doubtless also busied in the application of such means as their experience and observation indicated were best suited to meet them.

We see, too, how often they, like ourselves, were puzzled by the mysterious movements of disease, and the ready method they had of finding an explanation of all by the assumed immediate intervention of superior and spiritual agencies, as also how all their *hygienic* and *therapeutic* measures were moulded in accordance with this connection. Yes, gentlemen, this often-felt insufficiency of human intellect and means to cope with these malignant natural influences, and the disposition to look for an explanation of them in the direction of an agency which, although unseen, is yet felt to be very near and immensely above ourselves, is exceedingly persistent in its possession of humanity.

Even in periods long separated from those to which we now refer, and extending down nearly if not altogether to our own, how ready do we find men to overlook the fact that wonderful disturbances in the ordinary course of nature, blight and destruction in the vegetable world, and the appearance of terrible plagues amongst men and animals, are but the natural expression of fixed and beautiful laws, the workings of which have been brought into operation rather by the acts of man himself than as the outpouring of the malignant spirit of any presiding agent.

Sailing down the stream of time, feebly illuminated by what historic records we possess, you will in different countries and amongst different peoples find the science and practice of medicine receiving a greater or less amount of attention. In Egypt and Chaldea it seems closely linked with the polity possessed and patronised by the people, and is inseparably connected with the ecclesiastical and religious element—an element which in the early life of every people has ever been wielded by those in power for the management of the masses. The priests or sacerdotal functionaries were the only exponents, as they were the chief practitioners

of the healing art. When we consider how, as in Egypt, the ox was worshipped as a divinity, and other animals much lower in the scale of *being* participated in this superabundant reverential regard, we can readily believe that every care was bestowed on the preservation of animal health, and all that human resource could furnish was willingly placed at the service of those creatures possessed of this sacred life inheritance.

Amongst the ancient Greeks, those patrons and cultivators of æsthetics, in every department of life and action so highly polished in their manners, and where everything pertaining to physical development and the preservation and amplification of human beauty received so much attention, medicine both as a conservative and healing art obtained more than a passing attention.

The disinclination with which even the most ardent cultivators of the art undertook any investigation of the dead body entailing its dismemberment or dissection, and the openly expressed abhorrence with which any such acts were regarded by the multitude, acted as an opposing or deterring influence to the advancement of that knowledge where all principles or exact practice can only be developed by a correct understanding of the organisms to be dealt with both as respects their structure and function.

This difficulty of acquiring knowledge of the very basis or framework upon which the healing art is built, had, with the more enthusiastic workers and thinkers, the effect of compelling them to obtain from the study of other living forms and organisms more within their reach that which they felt was needed.

In this way, doubtless from sources more purely veterinary, did Hippocrates, the father of medicine himself, obtain much of the information from which he drew his inspiration, and which he seems to have utilised as completely as he understood the requirements of the art, and the spirit in which all connected with the study of medicine must be pursued. His remarks regarding the requirements necessary to this end are so well and exactly stated, that although they may be commented upon they cannot be excelled.

Amongst those old Greek philosophers and writers there is one who, because of his cultivation and practical application of all connected with the healing art, in so far as it is related to those animals whose treatment is our peculiar province, is more to us than even Hippocrates, I mean Xenophon. From a much larger field of observation as respects his particular department, he naturally discourses

to us on a greater variety of subjects, which he treats in a manner more tersely practical than his great predecessor.

Regarding the horse with the eye and the mind of a great commander, Xenophon, in language at once elegant and correct, gives us an enumeration of his varied points of admitted excellence; while in his description of disease, and in the instructions in all relating to the preservation of health or sanitary conditions, as also in all connected with the curative treatment of disease, more particularly of the organs of locomotion, he speaks with authority greater than the mere lover of the animal, or the experienced cavalry officer, we hear in his utterances the instructions of the accomplished hippiatrist.

Rome, which succeeded to the literature and science of Greece, and which seized with avidity on so much of this inheritance as accorded with the tastes and necessities of an all-conquering people, could not afford to throw overboard, or refuse to be influenced by, the amount of knowledge, speculative and practical, in the healing art both as applied to men and animals which their masters had bequeathed them. During the earlier and more primitive days of the Republic, when habits were severe, and manners pure, when the practice of agriculture was not deemed derogatory to the greatest and most distinguished of their patricians—men who could be found at the plough or the threshing floor, and removed from them to the highest seat in the senate, or placed in command of their armies, everything so closely connected with this pursuit, as the rearing and successful management of animals, received abundant attention.

As the boundaries of the empire extended, and distant countries and strange peoples owned allegiance to the city on the banks of the Tiber, and paid their tribute to Roman governors and consuls, the military force which had at first achieved these conquests gradually underwent some modification, so as to adapt itself to the altered conditions and circumstances in which it found itself placed. This was early noticeable as the Roman legions penetrated Asia and Africa, and met with such nations of horsemen as the Persians, Partheans, and Numideans. Invincible as the Roman legions were, they were too shrewd soldiers not to observe the great disadvantage at which they were placed in particular situations, from the great superiority of their Eastern enemies in the arm of cavalry. In this manner, first with a military object in view, and afterwards as a source both of pleasure and profit, the breeding and management of horses gradually became a matter of importance,

and deserving of attention throughout the Roman empire. Still, notwithstanding all these necessary and fortuitous circumstances the Romans never, at any period of their history, could with justice be deemed an equestrian people. The cavalry contingents of all their armies were in every instance most probably mercenary or allies.

As regards the condition of the medical art, human as well as veterinary, in all pertaining to its cultivation, advancement, and the light in which it was viewed by those from without its pale during the period of the Roman supremacy, we have abundant information, or more probably, we ought to say, information sufficient to enable us to form not an altogether unjust estimate of its condition and character.

This information is certainly, in the greater number of instances, obtained in an indirect or casual manner, by the allusions which the several writers may have occasion to make to passing events, or from the necessity which they seem to feel to bring into prominence this particular act, for the purpose of illustrating some other study or pursuit which for the time specially occupies their attention. In this manner do we glean information respecting the condition of our special department from the writings of Cato, Varo, Virgil, Horace, &c. In other cases, however, the writers start with the avowed object of placing us in a position to understand all that was then known respecting the subject of which they treat; giving us a systematic and detailed account of some particular department of the healing art, both as respects principles and practice. Of this class are Celsus, whose surgery is as good as his latin; Columella (A.D. 40), a man of science and a scholar, who describes most carefully and pointedly the various sanitary precautions necessary for the maintenance in health and perfection of formation of the legs and feet of horses, and whose records of veterinary medicine, as known to, and applied by, the Romans of his day, at once stamp him as an able hippiatrist, and one to whom the profession is thus early indebted for an influence favorable to its cultivation and development.

Vegetius—Flavius Renatus—(A.D. 450—500), who, of all the writers on veterinary medicine during the Roman period, has left us the most complete description of the diseases and accidents to which the horse is liable. He collected and put into form all that was previously known regarding the maladies of this animal and their treatment. His mind appears to have been neither narrow in its grasp,

nor ill supplied with material upon which to think. Perfectly cognisant, whether from experience and observation or from the perusal of the writings of others, not merely with the manners and customs of other peoples and distant countries, he is especially at home in his descriptions of the various breeds of horses found in these several countries, their peculiarities, special defects or excellencies, and the purposes for which they are severally most fitted.

With a cleverness and penetration of mental vision, which we of the present might envy, considering the advantages which we possess, he at once marks and most clearly distinguishes the oneness of principle and aim in the study of all departments of the healing art, and tersely but forcibly remarks, "*Ars veterinaria post medicinam secunda est.*"

While, if we dip into his work and examine it in detail, both as to accuracy in the description of symptoms, philosophical acumen in their interpretation, and the common-sense character of the remedial applications, we are at once convinced that this is no enthusiastic theorist, but a thoughtful well-informed man; who, in addition to an ardent love of the subject of which he treats, has actually seen with his eyes what he describes with his pen. What more sage advice respecting the preservation of horses' feet, and more in accordance with the dictates of experience and observation, could any one give than is given by this old Roman when he declares, "It is a more prudent counsel to preserve the soundness of horses' feet than to cure any disorder in them; but their hoofs are strengthened if the horses or mules stand in a very clean stable, without dung or moisture, and if their stalls are floored with oaken planks;" or again, the same writer, when speaking of injuries and bruises which the feet may sustain in travelling over uneven and rough roads—for you must recollect that in Vegetius's day the application of iron armature to the hoofs was in all probability unknown—he advises the fomentation of the parts with hot water, and the after application of what, gentlemen, think you?—of an ointment consisting of melted pitch or resin. So let us not be over boastful, are we much further advanced than he was?

Following the dismemberment of the Roman empire, consequent on the irruption and incursion of the semi-barbarous tribes from the more bracing and sterner regions of the north, favoured doubtless by the corruption of Roman manners, and the supplanting of that severe simplicity of tastes and habits which had tended so much to give them the mastery of the world, by effeminacy and a soft luxurious

manner of life, their paying too much regard to "*Panem et circenses,*" a long period of mental lethargy and darkness passed over Europe.

During these well-named dark ages, progress in arts, science, and literature was all but arrested; the human mind, as if entranced, seemed bound by the spell of some mighty magician. Occasionally, from some convent cell or anchorite's cave, a faint flickering of light would throw itself athwart the gloom, only rendering the general darkness more perceptible, speedily to fade from want of material on which it might be sustained ere any lasting impression was produced.

On the removal of this spell, and the resuscitation of intellectual life, Italy starts into prominence as the first to feel the invigorating influence of the revival of letters and liberation of thought. For a long period succeeding this revival of learning, from the twelfth to the seventeenth century, the chief of those in any way associated with what may be looked upon as the literature of veterinary or even human medicine are Italians. From the writing of Jordanus, Ruffus, Petrus de Crescentius, of Bologna, and Larentius Rusius, we can observe a utilisation of what had already been accomplished in periods long anterior by the master intellects of Greece. During the early part of the sixteenth century the most noticeable work done in connection with our particular department of medicine was in the way of translation, first of the original Greek authorities, known as the Constantine collection; this was done through the instrumentality of that patron of letters, Francis I, and also a popular translation of the works of the Roman author Vegetius. Immediately succeeding this is a more important and fruitful period for every thing connected with the science of medicine, during which the department purely veterinary reaped a fair share. Prominent amongst the names which adorned the early part of the sixteenth and seventeenth centuries are those of the veterinarian Cæsar Fiaschi, Carlo Ruini, Blundevil, and Sollysel, workers who, probably more than any others, have gone to shape the current of thought and action in matters veterinary from their own to the present time.

From the first of these we inherit the earliest scientific treatise on that important division of practical work connected with veterinary practice, viz. horse-shoeing. Characterised by much industry, exact observation, sound reasoning, and sensible advice and instruction, this work of Fiaschi's served as the model for all who in the next

century undertook a similar task, and with many was the source from which their material was obtained.

In Carlo Ruini we have perhaps one of the brightest ornaments which ever adorned medical science, human or veterinary; of noble lineage, and reared amidst the fascinating surroundings of pomp and authority in the ancient city of Bologna, which he was destined to serve and to honour as a senator, he seems to have been less influenced by these surroundings which usually have charms for men of all classes, than by the quiet but purest pursuits of scientific research.

Veterinarians have known far too little of Ruini, and have never yet paid the tithe of respect to his memory which is most justly due. The more I think of his position, his character, and his attainments as a man of science, the more do I revere his memory and respect my profession of which he was such a noble representative, and for which he achieved so much both in science and practice.

Choosing as his profession the study of medicine, he entered upon that study with all the enthusiasm of an Italian, and with all the advantages for its successful cultivation which in his day Italians pre-eminently possessed.

From the days of Galen of Pergamos, in the second century, down to the period now under review, anatomy, the basis of scientific medicine, had made no advances. But with the renewal of intellectual life, men had started in the pursuit of truth, physical as well as mental, with an eagerness and earnestness hitherto unknown. In every department of investigation the human mind was craving for and busy with realities, thoroughly occupied with the collection of facts rather than enamoured with the construction of theories. Vesalius has with his scalpel produced as great a revolution in the medical world as immediately antecedent had been occasioned by Luther with his pen in the world both of religion and of politics.

At first hooted and despised, he had lived to be admired and regarded as an oracle, and so far gained the confidence and respect of the great ones of Europe, as to be sent for to consult regarding the condition of Don Carlos, son of Philip II of Spain, and heir to the mighty Empire of Spain, the Netherlands, and all the Indies.

It was doubtless with much consternation that the whole medical world heard the assertion of Vesalius, an assertion he was both willing and able to make good, that old Galen, their authority upon anatomy, had attempted to describe

what he had never seen, and that his 'Visceral Anatomy of Man' had been compiled from the dissection of an ape.

When we give due consideration to these circumstances connected with the life of Ruini, which we have now noted, his natural bent, or inclination to the study, his superior early tuition, his favorable position for obtaining instruction and study in the highly favoured medical school of Padua, where the spirit aroused by Vesalius was carried on and favoured by his pupil Fallopius.

When we consider these things, we are a little less inclined to wonder at the exactness in what may be looked uponas small matters, and the great general excellence of his treatise on the 'Anatomy and Diseases of the Horse,' which was published in 1598; and the more inclined to believe that there may be some truth in the statement that, as an anatomist, this noble Italian veterinarian was regarded as not inferior to Vesalius, and that although he had not demonstrated, he had nevertheless all but made out the discovery of the circulation of the blood, an honour reserved for our countryman Harvey not long afterwards.

It is at this particular period in the history of the progress of veterinary medicine—the middle of the sixteenth century—that our own countrymen appear as bestowing upon it somewhat of special attention.

Thomas Blundevill, in his 'Four Chiefest Office of Horsemanship,' published in 1565, gives us a *résumé* of the knowledge then current respecting the diseases of the horse and their manner of treatment, with special reference to the management of their feet and the proper method of shoeing.

Although not so scientific or so learned as the works of the Italians we have noticed—his indebtedness to which he, with all the spirit of an honorable gentleman, ever acknowledges—it is yet characterised by a wonderful amount of really practical knowledge of horses, which seems the birthright of Englishmen, and contains much sensible advice, not merely as respects their treatment in health, but also when suffering from disease. Doubtless, there is much connected with the description and treatment of disease which we at this period regard as anything but correct, and all is written and expressed in the peculiar quaint style of the period in which it appeared.

With all its defects, however, Blundevill's work must ever be regarded as amongst the first, if not the very first, attempt in Great Britain to place veterinary medicine in something like its proper position.

In the second half of the seventeenth century (1664)

Sollysel, by his industry and by his appreciation of what had been done by the Italians of the Ruini period, introduced to France a knowledge of the works of these masters of the art; and in this way prepared the way for the success in the next century of Bourgelat, the founder of veterinary colleges in France (1766).

Although in Great Britain considerable advance had been made in the knowledge and practical application of medicine as an art to the treatment of our horses and other animals long anterior, it was not until the last years of the century, by the establishment of the present institution, that any attempt was made to regard and cultivate veterinary medicine as a distinct and special study.

From that time until the present, although its progress has not in all respects satisfied its most ardent admirers, it has at least been steady and successful.

We have not thus hastily glanced at the origin and progress of the connection, association, and influence of the principles and practices of the healing art as applied to animals other than man, with any idea of giving even an outline of the history of veterinary medicine, this is a matter far too important and extensive to be thus summarily discoursed upon; rather have we done so to indicate how from desultory and small beginnings that which was originally and incidentally brought under men's notice as a mere accessory and subordinated consideration, has now in its principles and scientific bearing been recognised as entitled to take its place as a separate and distinct department of human knowledge, and that it is in its application as an art both honorable and of every day practical value and use, both to communities and individuals.

In whatever light we view our profession as belonging to that great department of "social science," public health, we cannot but regret that it has not yet received that consideration which it deserves.

The question, how are we to find an adequate supply of food for an increasing population, and this at a price within the reach of those classes most requiring it, has gradually been forcing itself on the attention of the thinking portion of our community. And here I think the most lukewarm and sceptical observers may be convinced that a recognition and cultivation of veterinary medicine may be made to pay, which with many of our social reformers is the touchstone by which all questions, not even excepting those of moral obligation, are so unceremoniously judged. If he who conserves the health of the population is justly esteemed a

benefactor of his kind, then surely in a nation such as ours, where from climatic and other influences the use of animal food is all but a necessary article of existence, the preservation of animal health and the prevention of disease are objects worthy the attention of intelligent men, and their endeavours in this direction deserving of public countenance and support.

If we are not yet in possession of any specific for the most formidable and fatal disorders with which our stock are affected, we have at least reached this—the certainty of our ability to prevent or circumscribe their ravages.

The annual loss to the country and the holders of stock from certain diseases, probably incurable, or at least unprofitable to treat, might in all cases be materially lessened or circumscribed were an investigation of the causes and circumstances under which these are developed only undertaken by men competent to conduct such inquiries.

We have been and are still too often looked upon as the mere tools or agencies by which it is sometimes possible to reinstate sick animals in healthy or working condition; too much valued simply by the test of how many can you save of those which are diseased? and too little employed to prevent the occurrence of such diseases.

It is not an uncommon thing for both writers and teachers, when introducing to their readers or hearers any particular subject or branch of human learning, to expatiate on its individual importance or superiority as compared with other cognate studies. Thus it is that the metaphysician, in introducing his subject, starts with the acknowledged superiority of man, and in him of the supremacy of mind; that the teacher of religion balances the seen with the unseen, the material with the spiritual, time with eternity.

Now, as regards that division of veterinary medicine, which shall here from time to time more particularly engage our attention, although we cannot claim for it any such transcendent importance, it will nevertheless be found that when viewed in its relation to those other divisions of study which go to make up the sum total of that very extensive and important subject or branch of human knowledge the science of veterinary medicine—we use the term science of veterinary medicine in its widest and most general acceptation, as embracing both science or principles, and practice of veterinary medicine and surgery—it will be found second to none.

No, gentlemen, I am not afraid that in the present day of intense utilitarian tendencies and fierce grasping after

tangible and immediate results, and in the present condition of veterinary medicine, that veterinary students will underestimate the importance of that branch of their studies which is included with the "Practice of Veterinary Medicine and Surgery," as specially pertaining to that animal we have generally been disposed to regard as our noblest specimen and as the type of the others—the horse. Rather am I fearful that in your eager anxieties to grasp those fruits which pathology offers to every earnest and persevering and correct cultivator, you should signally fail, through neglecting to employ the means by which alone those fruits can be appropriated and made your own; lest through disinclination to believe what others may tell you, or through a mistaken estimate of the importance of collateral subjects, you fail to master or understand the principles and facts of these latter, upon which pathological inquiry has ever rested, and in the employment and subordination of which any true advancement in the knowledge of the complex phenomena of disease is to be looked for.

Feeling, as many of you doubtless do, that upon your capacity to master the subject of pathology, both in its theory and practical application, depends not merely the position which you may in after life occupy, but probably with many the answer to the sterner question, whether or not as veterinary surgeons you shall be able to earn your daily bread? There is, I feel assured, little danger of your ignoring its study, I only fear that you may forget or ignore the fact that the principles and facts of pathology are only to be reached through the doors opened by the collateral subjects of anatomy and histology, physiology, chemistry, materia medica, &c.

Standing as we now do, gentlemen, on the threshold of a collegiate and systematic course of instruction in the science of medicine, as applied to those animals which from a regard to our necessities or pleasures we have subjected to our influence and control, there must, if success is to attend our labours, be some definite ideas, not merely of the objects or results sought after, but also of the means by which it is proposed to attain these. Aimless, misdirected or undirected labour, particularly intellectual labour, is likely to be both barren of results and excessively exhaustive to the mental powers, possessing none of that healthy invigorating influence which ever results from the consciousness of knowledge gained step by step in obedience to will and as the result of a pre-arranged plan.

The science of medicine—we use the term in its largest

and widest sense, including both the arbitrary divisions of medicine and surgery so called—whether human or veterinary, may be looked upon in two aspects, it may be viewed as a *science*, and as an *art*.

As a science it proposes to take into consideration all that is connected with disease in its causes, origin, development, progress and results. As an art it is concerned with the practical application of these great truths—general principles so called—which have been arrived at by carefully recorded observation and experiment in all pertaining to the guidance of the animal system through these altered conditions recognised as disease and the proper manipulatory practice indicated where this is required.

For us, as you are aware, it is medicine veterinary, and this more particularly in the latter aspect, which shall regularly and from time to time demand our undivided attention.

Veterinary surgeons on entering on their active professional career, are not so far, if at all, behind their brother practitioners of human medicine in their knowledge of what pertains more properly to some of the divisions of scientific medicine, such, for instance, as special anatomy and chemistry.

It is rather, or precisely, in that field where of all others so many think themselves most competent, that we are most deficient, and consequently sustain the greatest loss. I mean pathology. We have too much dwelt in the region of speculation. The inheritances of the past we have too often accepted as substantial acquisitions when they have been merely hypotheses; accepting them as demonstrated truths, we have, as in the science of pure numbers, reasoned from these downwards to facts, which we have ruthlessly squeezed in our anxiety that they should fit our assumed hypothesis.

Cherishing what we fancied, or seemed to fancy, as pathological axioms, we have therefrom attempted to develop an accurate description of particular diseases. Emerging so recently from rough and vulgar empiricism, and at a period when human medicine was being regarded as a deductive science, we could scarcely expect aught else than that seizing hold of the more scientific part of our profession as that which raises it above all more scientific pursuits, and eschewing the plainer but more certain and correct pathway to medical truth, our earlier cultivators of veterinary medicine should, like their compeers in human medicine, become enamoured of what they consider in pathology first principles or fixed laws, from which might be evolved or deduced a definite system of clinical medicine; while if observation and

experiment have been employed in the collection of facts, they have neither been extensive enough, nor conducted with sufficient accuracy, to ensure those results they are so well calculated to achieve. Ideas have too often taken the place of facts. We have been too apt to content ourselves with observing some of the more prominent symptoms of diseased action, grouping these according to their prominence and relative bearing on each other, without, it may be, associating these in their persistency or change with certain alterations in structure of particular organs, giving to certain assemblages of symptoms, irrespective of natural grouping, individual names, often neither the most elegant nor exact, with the employment of such remedies as we might consider most appropriate to counteract these developments.

I am afraid, I say, that having done this, we have been too apt to imagine we have done all that was necessary, and earned for ourselves the character of correct, painstaking, and scientific observers of disease.

In this field of pathological inquiry there is room and work for all. Disease in its varied causes and forms of development is ever inviting inquiry and investigation. We may all of us be observers, and although I can scarcely acquiesce in the opinion entertained by some—that to be an observer requires as great a range of faculties as to make a speculative thinker, that to note facts is as lofty a range of intellect as to conceive thought—still I am of opinion that in the science of medicine it is not easy to overestimate the importance of correct observation, seeing that it is by pure induction, by the observation of individual facts, that we rise to these general inferences, which are to us the most comprehensive expressions of attainable truth.

Facts, however, gentlemen, are of themselves of little worth until associated with mind, they must be collated; and save as the indices of particular functional or organic changes, and the exact relation they bear to these are of comparatively trifling practical value in the advancement of clinical medicine.

And as in a study like pathology, where we cannot expect that fixed laws or first principles exist from which we may reason downwards to the possession of facts, so it is that advancement is less connected with the wonderful achievements of a few individual minds than the result of the accumulated labours in observation and experiment of the many. And it is well and encouraging that it should be so. Great and shining lights are only occasionally, and at long

intervals, vouchsafed to humanity to guide or to dazzle by their brilliancy; but many, if not all, may be earnest, patient, and enlightened workers in the field of observation, from which point we must ever consent to start in any true advance in pathological inquiry.

SYNOPSIS OF CONTINENTAL VETERINARY JOURNALS.

By John Henry Steel, M.R.C.V.S., F.Z.S., Demonstrator of Anatomy at the Royal Veterinary College.

(*Continued from p.* 683.)

It must be a matter of congratulation to all members of our profession that a veterinary surgeon has been successful in the Bennet-Stanford competition. *M. Bourrel*, senior, of Paris, is the gentleman to whom we are indebted for breaking a lance on our behalf, and while we all congratulate him on his well-deserved success, we must feel glad that we have had so doughty a champion. But stern are the decrees of fate! She in one hand carries a palm, in the other a rod; while M. Bourrel, senior, was awaiting the decision about his essay on rabies, that fearful disease was in a state of incubation in the system of Pierre-Rose Bourrel, his nephew; and nearly three months after the fatal bite this young veterinarian died of hydrophobia. In Belgium, the "*National Science Congress on Hygiène and Public Medicine*, among other resolutions, passed one concerning the transmissibility and action of certain morbid products, notably tubercle and that of aphthous stomatitis, with which the edible parts of our meat-supplying animals may be impregnated; and another concerning the measures to be taken by the authorities and consumers to mitigate or prevent ill effects. These interesting and important questions were brought forward by our honored confrère, M. Hugues. These resolutions prayed the government:—(1) To consider the organisation of a department for the inspection of provisions of animal origin. (2) To use its influence or its authority with the consumers to persuade or compel them to adopt the system of public abattoirs (slaughter-houses)." It is satisfactory to see that this Congress has thoroughly agreed on so important a matter with that of veterinary surgeons, and it is to be hoped that the government will act under the influence of the enlightened

hygienists and veterinarians. From the journal which gives the above information (*Annales de Médecine Vétérinaire*) we continue *Dr. Willem's* paper on "Pleuro-pneumonia Exsudativa," as he terms the "lung disease." "I summarise my opinions on this subject in the following propositions.

1. Pleuro-pneumonia exsudativa is a general and specific disease.

2. It is contagious and inoculable by miasma (volatile virus) or by fixed virus. It never arises spontaneously.

3. Inoculation produces a general disorder in every respect similar to that known as pleuro-pneumonia exsudativa.

4. Pleuro-pneumonia exsudativa, except in very rare instances, affects an animal only once.

5. The inoculated patient is unable to take pleuro-pneumonia; he resists the contagion.

6. Inoculation of an animal cured of pleuro-pneumonia gives no result; the same may be said of an animal previously successfully inoculated.

7. Pleuro-pneumonia is a special disease, and affects only bovine animals; it is transmissible to no other animal, not also to man, by direct inoculation.

8. The pathological product of inoculation is in every respect like the matter exuded in the lungs and other organs of an affected animal.

9. The inoculated animal transmits the disease only by inoculation.

10. The fresh liquid produced by exudation in the lungs of a diseased animal, of the first or second remove, is the best material for inoculation.

11. The tail of the animal is the best point for insertion of the virus.

12. Inoculation produces more severe effects on animals and herds affected by the epizooty than on non-contaminated subjects or herds.

13. Inoculation does not act by derivation, as do setons, &c.; it is not a simple septic inoculation.

14. The virus of pleuro-pneumonia has the properties of a true contagium, being communicable from one animal to another, and having a stage of incubation, and multiplying.

15. In the pulmonary exudate, in the pleural extravasations, and in other parts of the sick animal, as also in the products of inoculation, may be found germ-corpuscles, microbia which are the agents of transmission of the disease.

16. Pleuro-pneumonia, being now better understood,

should no longer be placed among virulent diseases, but among parasitic disorders."

Dr. Willems' paper then deals with the questions of the contagious nature and non-spontaneity of pleuro-pneumonia, showing that these views have gained ground only since he began to work up the subject, but with some opposition at first, and have now been admitted by all those who have seriously worked at this subject. With regard to its contagiousness, we note the following among the list of supporters: "Simonds, Gamgée, Bruce, Cox de Dublin, Flemming, &c., the Veterinary School at Lyons, and those of Germany and the Netherlands, also all official commissions, Belgian, French, German, Italian, of the Netherlands, &c." With regard to spontaneity he continues: "My personal experience after (an attentive) series of observations, lasting through many years, on the progress of pleuro-pneumonia, convinces me that the affection is purely contagious, transmissible from a sick to a healthy animal by inoculation and by infection; artificially by fixed virus; naturally by volatile virus. It never arises spontaneously. In the town of Hasselt I have never proved and never heard of a case arising spontaneously, and the disease having once gained entry into a stable can only be extirpated with difficulty. In spite of the use of the most powerful disinfectants, the contagion persists, attaching itself to the soil, straw, walls, &c., and long after the stable has been emptied and whitewashed, even after many years, the miasma, which has been preserved in a dry state, again becomes active on the introduction of fresh cattle, under the influence of warm and humid air, detaches itself and falls down on them and infects them." He then tells us that "in stables contaminated with the disease in question, air condensed in a vessel containing cold water and collected in a special receptacle, showed that it contained the special corpuscles which we meet with in the lungs of affected animals. A glass plate covered with glycerine suspended during many hours in a stable containing diseased beasts, when examined under the microscope, also showed the presence of the special corpuscles." "I have just said that the beasts carried to the camp of Beverloo are destined as food for the soldiers; unfortunately, government goes on the principle of paying as little as possible for meat. This pleuro-pneumonic flesh is, indeed, neither succulent nor agreeable to eat, but, nevertheless, I can affirm that it is not prejudicial to the public health. For pleuro-pneumonia cannot be transmitted to man; there is, therefore, no danger in consum-

ing this meat unless the alterations have been brought about by the disease in its last stages." "Meat is necessary for the preservation of human health, and pleuro-pneumonic meat is better than none. M. Loiset, of Lille, is of the same opinion. He has proved that during a period of nineteen years, 18,000 pleuro-pneumonic carcases have been consumed in his town without a single ill occurrence in consequence, and without the sanitary state of the population being in the slightest degree affected." Next, "contagiousness of pleuro-pneumonia is confirmed by the circumstance that its spread can be traced from its source to the remotest corners of the world. Its first appearance, so far as we are aware, was in 1750. The terrible scourge which was to cause so much ruin descended from the mountains of Switzerland, invading on the one side the Bernese Jura, on the other the French Jura. From these countries it successively passed to Germany, Holland, Italy, Belgium, England, America, &c., and more recently to the Cape of Good Hope and Australia. The dates of its invasion of these countries are accurately known. Thus it will insinuate itself into other countries where it is at present unknown." This paper terminates with the discussion of the spontaneous origin of the disorder, and a full account is given of the experiments undertaken by the Prussian Official Commission as taken from an agricultural journal, *Der Landwirth* of the 5th December, 1871, reported by Dr. Ulrich, Royal and Departmental Veterinary Surgeon at Breslau. Pleuro-pneumonia, he says, "must be considered contagious. The experiments made by the Agricultural Society of the Ober Barmin district, as carried out by many practitioners, agricultural societies, and the Official Commission of Prussia, have proved conclusively that pleuro-pneumonia is communicated by contagion." Dr. Krauss, Reporter of the Agronomic Committee, which met in full force in 1873 to resolve this question, has warmly contested that pleuro-pneumonia is not contagious, but after the experiments made at Moëglin, was compelled to acknowledge the contagiousness of the disease. Similarly, Dr. Wagenfield, veterinary surgeon at Dantzic, had published a work generally considered the best treatise on the subject, entitled *The Pulmonary Disease of Cattle*, in which he pronounced against the opinion of those who hold that pleuro-pneumonia is contagious, but in his *Veterinary Encyclopædia*, published later, he finds himself compelled to withdraw his former expression of opinion, and says the disease is very contagious. The Royal Academy of Agri-

culture of Moëglin, proposed to resolve the question whether pleuro-pneumonia originates from contagion alone or under the influence of other causes, and therefore commenced experiments which extended over ten years. Various artificial means were adopted for the generation of the disease, such as bad feeding and the influence of such unhealthy conditions as have been, whether rightly or wrongly, considered the cause of the disease. In no case did these measures result in spontaneous origination of the lung disorder." The opinions of Professors Bouley and Gamgee are cited in support of those above advanced, and this portion of the paper concludes: "From what precedes, it results that it has been proved experimentally that pleuro-pneumonia originates solely from contagion, hence veterinary science must point out measures which should be taken to efficaciously arrest the spread of the scourge, and the government ought more vigorously than it does now to forbid the movement and sale of suspected animals, since they are the most fruitful source of propagation of the disorder in every direction by the expired air, nasal discharges, contamination of trucks, and such means." Still we must await M. Willems' account of the bacteria of pleuro-pneumonia.

ON PLANTS IN RELATION TO ANIMALS.

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

(*Continued from p. 687.*)

The species of Clovers which we are now about to describe may be distinguished as follows:

Trifolium repens—White Dutch Clover:—Heads many flowered, axillary, pedicels distinct; calyx not inflated, the upper tooth the longest. Corolla persistent, white at first, then turning to a brown dry head of flowers.

„ *fragiferum*—Strawberry-headed Trefoil:—*Head* many-flowered, all axillary; pedicels short, bracteate. *Calyx* two-lipped, becoming inflated above, membranous, reticulated; teeth equal, the upper pair lengthening. Corolla withering, standard deciduous. Flowers suffused with a slightly pinkish hue.

Of these, the first is the common white Dutch clover of the farm, being, however, common as a native plant in almost every situation and soil, though probably more attached to the lighter than the heavier lands. It is much grown by the farmer in those shifting pastures which he terms seeds. We have got a great bulk of produce on some very sandy fields on our farm, where we advise it being sown by itself, but where the soil is a little more calcareous, we always use some of the varieties of the *Lolium perenne*, called by the seedsmen *L. perenne sempervirens* or "Devon ever Grass." This is a good mixture when it is intended to keep it laid down for over two years. It is relished by cattle both as green herbage or as hay, but it is recommended that in early summer sheep should be put on it somewhat cautiously, as it may otherwise bring about that tympanic state known as blasting, or if not that effect, it often produces diarrhœa, a fact not to be wondered at when we consider that many of the family possess purgative properties. Sometimes it is profitable to eat down the first crop as early as possible, and take seed from the second growth.

This clover is endeared to the Irish as the plant which is traditionally asserted to have been used by St. Patrick to explain the nature of the Trinity. This notion, with others connected with the folk lore of the white clover, has been so admirably described by Mrs. Lankester, that, long as it is, we cannot forbear to quote it in its entirety, premising, however, that the suddenness with which the plant is said to spring up after the use of lime, does not appear to us an evidence of the seed having lain dormant for some time. When we see it suddenly arise in a meadow, as it does sometimes, in a very luxuriant form, we take it that this is due to the amelioration caused by manure, lime, or draining encouraging the growth of plants there before, but so starved as to be scarcely noticed by the common observer.

So, again, the fact of a patch of this clover very quickly taking possession of a new surface is due to the quickness of its growth and its spread by two methods, namely, the ordinary one of seed and its creeping habit, its scions being capable of rooting at every joint.

We are not prone to believe in the assertions as to the longevity of the fecundity of seeds, as we have little proof of its truth from actual trial and experiments, but we do know that where they have been observed to so suddenly abound, we have better evidence whence they came than to suppose that seeds dug from many feet deep in some work-

able geological stratum has been known to produce seeds which germinated from the effects of heat and light.

"This pretty little plant is so familiar to us all that it appears almost like a spontaneous product of the soil, and so rapidly and constantly does it spring up, that Withering says, 'On the soil of our moors in the North of England being turned up for the first time and lime applied white clover appears in abundance, a circumstance in no way satisfactorily accounted for, but which is known to take place both in Britain and North America.' In such situations, doubtless, the seed may have lain dormant for a length of time, until stimulated into vegetation by the admission of moisture and heat. The plant is perennial, and bears its dense clusters of white blossoms all the summer. In rich soils it grows a foot or two in height, but varies greatly in luxuriance according to the situation, and is only an inch or less above the surface of the ground, becoming almost woven in with the thick short grass that forms the natural carpet of our downs and commons. Its chief value in cultivation is as a pasture plant; and so quickly does it grow that Mr. Curtis affirms that a single seedling covered more than a square yard of ground in a single summer.

"It does not seem to be ascertained when white clover or trefoil first became cultivated in this country, but it appears to be of late date, for it is not mentioned by Gerarde, Parkinson, or Ray, as an agricultural plant in this country, nor by any of the writers of the seventeenth century. Gerarde, however, says that 'there is a Trefoil of this kind which is sowne in fields of the low countries in Italy, and divers other places beyond the seas, that come up ranker and higher than that which groweth in meadows, and is an excellent food for cattell, both to fatten them and cause them to give good store of milk.'

"Sheep thrive well upon this little plant, and there are seldom any moors or meadows where it is not to be found. Even in the midst of London fogs and dark December weather, we have discovered this little plant of the wayside nestling under the shadow of a wall in a city garden waiting for the warm day of spring to beam forth, invigorating its tiny leaves, and bringing forth its little white blossoms, which are then in unseen preparation.

"The common plants of a country are almost universally associated with its songs and legends. The Irish names for *Trifolium repens* are shamrock, shamrog, or sea muroge; and some botanists claim for it priority as the national emblem of Ireland. Some contend for the *Oxalis aceto-*

sella (wood-sorrel), while others maintain that the white clover was the favoured plant of St. Patrick, who, when he was preaching the Gospel in the earliest times to the benighted inhabitants of the Emerald Isle, chose to illustrate the great doctrine of the Trinity by the simple instance of a triune nature in this well-known and beautiful leaf. We incline, as we have expressed before when writing of the Oxalis, to believe that it was this plant, and not the white clover, which was the original trefoil of Ireland; for our little plant does not arrive at perfection until considerably after St. Patrick's-day. The national emblem and spirit of the institution is, however, equally preserved in either plant, and we may take the term 'shamrock' as applicable to all trefoils or three-parted-leaved plants. The 'Irish Hudibras' says:

'Within a wood near to this place,
There grows a bunch of three-leaved grass,
Called by the boglanders sham rogues,
A present for the queen of shoges (spirits).'

"In all ages a sort of mystic reverence has surrounded the notion of a Trinity, and this idea seems embodied by the imaginative and poetical Irish in the triple leaflet. Whenever this sacred leaf is found to depart from its usual forms to produce four leaflets its mystic power is said to be greatly enhanced, and all sorts of spells are supposed to be worked with its enchantments. The old song—

'I'll seek a four-leaved shamrock in all the fairy dells,'

tells of the wonders to be accomplished by it when found.

"The white clover forms a very interesting study itself as a type of the family to which it belongs. No class of plants affords such evident and interesting examples of the law of morphology as do the Leguminosæ.

"In the white clover we frequently meet with cases in which parts of the flower exhibit a tendency to return to their leafy origin; the pod frequently changes into a small leaf, whilst the stamens, petals, and sepals, all exhibit the same tendency, the pedicels of the flowers at the same time elongating.

"We have seen many specimens where the whole head of flowers on a stalk of clover has undergone this transformation, presenting the most singular appearance possible, with the green leaves looking as if quite out of their accustomed place, and, consequently, very odd and uncomfortable. In passing through a field of clover it is worth while to look for such monstrosities, and they are by no means uncommon.

"We may mention some interesting observations and drawing made by Mrs. Godwin Austin on this subject, first exhibited at the meeting of the British Association in 1849, and afterwards published in Henfrey's *Botanical Gazette* for March, 1850. It was a happy idea of the great German poet-botanist, Goethe, to reduce the previously received and complicated theory of plant structure to the simple formula of leaf formation. In this way everything presented itself to him under a different aspect; what had been considered essential became accidental, and *vice versâ*. In all the higher plants foliage, flowers, and fruit were formerly regarded as essentially different parts. It was Goethe who first recognised in the flowers and fruit the recurrence of the foliage, so that there is no essential difference between these three parts of a plant.

"In studying this subject somewhat carefully, it becomes evident that it is the leaf which, in its Protean capability of transformation, gradually assumes the form of fruit or flower. These are truly leaves, whorls of leaves differing in character and position from other leaves, although not in their essential nature. This great doctrine of unity of plan of creation was first demonstrated and successfully taught in relation to the vegetable kingdom, and has since been clearly worked out and adopted by the ablest comparative anatomists of this and other countries, as applied to higher organisms, and even to man himself. The susceptibility of the little trifolium to the withdrawal of light, and its habit of closing its leaves somewhat on the approach of light, remind us of its family relationship to the group of sensitive plants. The observations of the older botanists led them to record this curious fact, and Gerarde tells us that 'Pliny writeth and setteth it down for certaine that the leaves hereof do tremble and stand upright against the coming of a storme or tempest.

"While examining the tissue of the stems of a plant under the microscope the abundance of spiral fibre suggested the thought that this very elastic and delicate material might possibly have something to do with the hitherto unexplained cause of the curious movements of sensitive plants. Microscopic research, in skilful hands, will do much to clear up these unsolved questions."*

Our second plant, the strawberry-headed trefoil, receives its name from the peculiarly enlarged calyx, which, as the corolla begins to wither, enlarges to such an extent that the

* 'Sowerby's English Botany,' by G. T. B. Syme, Esq.

whole head of the flower, with its sometimes ruddy colour, forms an apt resemblance to a strawberry.

At first sight the plant is much like the *T. repens*; the leaflets, however, have not the semilunar white or purplish spots. The flowers are sometimes nearly white, but oftener they are tinged with a pink or purplish hue.

Both the *T. repens* and *T. fragiferum* have running prostrate stems, which root at the joint, but the strawberry-headed fruit is at all times a good distinguishing character.

The two plants are very different as to their spread and their conditions of growth; the *T. fragiferum* is very local, and is only found in stiff clays, such as those of the fullers' earth, forest marble, or Oxford clays, and it is an indication of a stiff, cold land, in want of drainage.

We have gathered it very plentifully on the forest marble clays about Cirencester, and it is with us in Dorset everywhere on the fullers' earth, and when its heads of tumid, coloured calyces are well grown, and as they sometimes are elevated on long peduncles, these fruits become very conspicuous objects, but beyond this it has little to recommend it, its herbage being not only scanty, but, we fancy, strong and purgative.

Pathological Contributions.

CATTLE PLAGUE.

The cattle plague having made its appearance in the Praga Superb of Warsaw, and being no longer confined to its original centre in Warsaw itself, the Prussian authorities at Oppeln have published an order, dated 3rd October, 1880, forbidding the import and export of sheep from and to Russian Poland, as likewise the carriage of sheep to and from railway stations within the Prussian border, unless a certificate, duly attested by the police authorities, declares that the sheep in question have been in the district in which the loading station is situated for the period of three months.

There appears to be no diminution of cattle plague in the governments bordering on Austria and Germany, and those adjoining the Black and Baltic Seas; and a fresh outbreak of the disease is reported to have occurred at Wenden in e Province of Livonia.

PLEURO-PNEUMONIA.

THIS disease is stated on reliable authority to exist in an aggravated form among the cows stabled in Brooklyn and its vicinity in the State of New York; many animals are suffering from the malady.

Pleuro-pneumonia has also broken out in a malignant form among the cattle at Westbury, in Queen's County, and at other places on Long Island.

In the State of Maryland, seventeen head of cattle in Harford County are reported to have died of pleuro-pneumonia. The disease appears to be local and confined to one farm, and cattle intended for exportation to the United Kingdom are not to be transported through the infected district.

In the Netherlands, from 8th of August to 4th of September, the following cases of pleuro-pneumonia occurred:

In North Brabant	3 cases.
In South Holland	3 „
Total	6 „

In Great Britain there were, during the thirteen weeks ending September 25th, 280 fresh outbreaks of pleuro-pneumonia reported, and 756 cattle attacked. In the corresponding period of 1879 there were 414 fresh attacks of this disease reported, and 1178 cattle attacked.

FOOT-AND-MOUTH DISEASE.

A SERIOUS outbreak of this disease is reported to have occurred in the North of France, and is said to be very general in the Department of the "Nord," but owing to the vigorous measures adopted for its suppression appears to be rapidly diminishing; this disease also exists in the "Pas de Calais;" only a few cases, however, have occurred there compared with the Department of the "Nord."

In Great Britain, during the four weeks from September 26th to October 24th, fresh outbreaks of foot-and-mouth disease have been reported in the following counties:—Bedford, Bucks, Derby, Hertford, Kent, Middlesex, Surrey, and Warwick.

SHEEP-POX.

A CONSIDERABLE outbreak of this disease has occurred in several of the districts of the Grand Duchy of Mecklenburg Schwerin.

SWINE FEVER.

In Great Britain there were, during the thirteen weeks ending September 26th, 662 fresh outbreaks of this disease reported, and 3061 swine attacked. In the corresponding period of 1879 the fresh outbreaks reported were 1043, and the number of swine attacked 5379.

TEXAN FEVER.

Texan fever has lately appeared among cattle on a farm at Oswego, in the north-western part of the State of New York, contracted from Texan cattle slaughtered at the place.

Facts and Observations.

Curious Case in Veterinary Pathology.—Sir,—I have a greyhound puppy, aged three months, and ever since he could see there is on the ball of each eye at the outer corner a quantity of hair, which entirely covers the white of that part, and approaches quite up to the pupils. I have shown the dog both to a surgeon and veterinary surgeon, and they have never met with a similar case. If any of your readers have, I should be glad to hear as to what treatment was adopted. I am, Sir, yours, &c., Courser.—*The Lancet.*

Enormous Destruction of Animals.—*September 24th*, Buenos Ayres.—A terrific snowstorm occurred in this province on the 18th instant, by which it is estimated that 700,000 oxen, 500,000 sheep, and 250,000 horses have perished. The storm raged, with more or less violence, during three days and three nights, and was the greatest ever known here.

Sheep Traffic in the North.—During September between 50,000 and 60,000 sheep were carried by special trains on the Highland Railway, and a correspondent telegraphs to-day, October 6th, that the traffic shows no diminution. No fewer than eight specials ran yesterday laden entirely with sheep.

Total Number of Sheep and Worth of Wool.—It is estimated that there are from 484,000,000 to 600,000,000 sheep in the world.

The total wool clip of the whole world last year was 1,497,500,000lbs., worth, at a low estimate, £300,000,000.

A Dog's Fast.—Mr. W. Brankston Richardson, writing from 61, Southerland Gardens, Maida Vale, sends the following dog-story to the *Times*:—"Concurrently with the forty days' fast of the misguided American doctor, another fast has been in progress in our own country, for the truth of which I myself can vouch. A friend of mine who lives in Devonshire left home some weeks since on a series of visits to his friends in distant parts of the country. A few days after he left his servants wrote him that a favourite Sky terrier was missing. My friend, after every search had proved fruitless, considered that the dog had been stolen. On his return home, after an absence of one month and five days, he unlocked the library, the doors and windows of which had been bolted and barred during his absence, and to his astonishment the missing dog crept out into the light, a living skeleton and totally blind. He was well cared for, and has now quite recovered his health and sight. But his existence was wonderful. He had had no food and no water, and had not gnawed the books or obtained sustenance from any source whatever."—*Nature*.

Detection of Ammonia in Water.—Ammonia is usually present in water as carbonate, but frequently in such small quantities that it cannot be detected by the ordinary tests. In such cases Hager ascertains its presence by mixing 2 to 3 litres of the water with 20 drops hydrochloric acid, evaporating to dryness, dissolving the residue in 10 or 15 c.c. distilled water, filtering, and applying Bohlig's test, which consists in adding, first, 5 drops of solution of corrosive sublimate (1 part in 30 parts of water), and then 5 drops of solution of potassium carbonate (1 part in 50 parts of water), when a cloudiness indicates the presence of ammonia.

Absorption of Lime Salts. By L. Perl (*Bied. Centr.*, 1880, 308).—The amount of lime secreted in the urine of a dog weighing 22 kilos., to which 7·10 grams of calcium chloride had been given daily with the food, was increased from 0·135 gram to 0·325 gram per day and the chlorine by 6·14 grams. These results were confirmed by another series of experiments, in which the greater part of the lime introduced as calcium chloride was found in the fæces, but the whole of the chlorine in the urine. The calcium chloride had probably been decomposed by the alkaline secretion of the bowels into sodium chloride and calcium carbonate.—A. J. C.—*Jour. Chem. Soc.*

THE VETERINARIAN, NOVEMBER 1, 1880.

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

FOOT-AND-MOUTH DISEASE.

SINCE the introduction of foot-and-mouth disease into this kingdom in 1869 we have never been quite free from it for any considerable length of time; in fact, it may be questioned if at any time the affection has been completely extinct. The history of the disease includes times of excessive prevalence and intervals of decline, and we had one or two long periods during which very little notice appears to have been accorded to its progress by veterinary and agricultural writers.

So far as our own observations and the records of the affection enable us to judge, there have been something like nine outbreaks of foot-and-mouth disease in this country between 1869 and 1880. The duration of each outbreak may be roughly estimated at eighteen months to two years. In the succeeding interval of about the same number of months the disease has declined to a minimum state of existence before it has again began to spread. A reasonable solution of this phenomenon of periodic occurrence and decline has been offered in the following terms:

During the prevalence of the complaint in all parts of the country the majority of susceptible animals are attacked, and the disease decreases for want of new material; in the interval of decline another generation of susceptible animals springs up, and the requisite conditions for the extension of the affection are thus supplied. Whether or not this view is correct, the fact remains that the occurrence of outbreak of more or less severity, after short intervals of comparative freedom, is a feature peculiar to foot-and-mouth disease. In 1874 the last serious outbreak of foot-and-mouth complaint occurred, and the progress of the malady was rapid during that year. In 1875 the affection began to decline, and the decline continued through 1876; but in 1877

another accession of disease occurred, and apprehensions were entertained that it would again spread; but the introduction of cattle plague early in the year led to energetic action on the part of the authorities, and the enforcement of restrictions on the movement of animals all over the country had the effect of arresting the progress of foot-and-mouth disease to a considerable extent; the provisions of the Contagious Disease (Animals) Act of 1878 have been further effectual in keeping the malady in check, and for the last few months we have been as nearly as possible free.

As usually happens in cases of the reappearance of a contagious disorder, the connection between the point of origin and the attacks around it or distant from it cannot be traced with any certainty; the facts, however, are suggestive. In August last animals affected with foot-and-mouth disease were landed at Deptford from France, where the affection prevails in a severe form, and in a few days it was detected in a London dairy. Other centres of disease were discovered in quick succession in Middlesex, Kent, Bedfordshire, Berkshire and Herts.

As to the channels through which infection might have been carried everything is left to conjecture, but a rational theory may be constructed in accordance with our knowledge of the laws which govern the disease.

All risk of communications of foot-and-mouth disease from diseased to healthy animals is eliminated from the circumstances of the case before us, because the animals which introduced the disease could not be removed from the landing place alive; but foot-and-mouth disease can be communicated by mediate contagion, and it is well known that dealers and drovers who are engaged at Deptford also pursue their calling in other markets, and in all places where animals are to be found. The man who is employed in contact with diseased cattle in the morning is occupied in the afternoon in driving a fat cow which he has taken from a dairy to a market or slaughterhouse, or his avocation leads him to take a railway journey to examine, and probably purchase, some cattle in the country. It is difficult to see how this

sort of thing can be prevented, and it is impossible to avoid seeing that this ordinary system of conducting the trade in animals is likely to result in the wide dissemination of a disease which can be so easily spread as foot-and-mouth disease can be.

We can only advise stockowners to be on their guard. There is no doubt that the circumstances are just now favorable to the spreading of foot-and-mouth disease, and there are signs which suggest the probability of the malady assuming a somewhat malignant form.

Extracts from British and Foreign Journals.

OBSERVATIONS ON THE LUNG PLAGUE OF CATTLE (PLEURO-PNEUMONIA CONTAGIOSA BOVINA).*

By Professor James Law.

Concluded from p. 717.

Tendency to the Encysting of Dead Masses of Lung.—The limits allotted to this article will not allow a consideration of the distinctive symptoms and pathological lesions of this disease but there is one pathological feature of this complaint with such all-important bearings that it cannot be passed over unnoticed. This is the constant tendency to the death of large portions of the lung by the plugging of its blood-vessels, and to the inclosure of such necrosed masses in a complete fibrous cyst formed by the organisation of the surrounding exudation. The blood-vessels leading to a particular group of lobules become implicated in the inflammation even to their internal coats; the blood contained within them immediately coagulates; the normal circulation in such parts ceases; the blood that filters into their capillaries from those adjacent loses its liquid portion by quick transudation through the coats of the vessels, so that they are left filled to repletion with blood-globules only; the circulation and life in such parts cease, and around their margin where the blood still circulates the exudation is slowly built up into fibrous tissue, forming a complete and unbroken envelope in case of

* Extracted from the 'First Annual Report of the Cornell University Experiment Station, 1879—80.'

recovery. The imprisoned mass of dead lung completely excluded from contact with air and aërial germs does not putrefy, and never exhales a septic odour. It undergoes a slow metamorphosis through its contained cells and granules into a purulent liquid, which is observed with equal tardiness. The liquefactive metamorphosis commences at the surface, separating the dead mass from the sac, so that it appears for the future as a great solid nucleus floating in a variable amount of purulent fluid. When large masses are encysted in this way it may be over a year before the whole has been liquefied and removed, and not unfrequently after nine months the outline of lobules, air-tubes, blood-vessels, and nerves can still be traced with ease in the necrosed lung.

The important bearing of this is related to the lack of all putrefaction or other important changes in the mass of necrosed lung, which, in the absence of such metamorphosis, remains an encysted mass of infecting material so long as it continues solid and unchanged. To the average mind, and even to the medical one who has made no special study of this disease, the danger even of infection seems past when the patient has for some time resumed its appetite, rumination, milking, natural breathing, and, above all, its disposition to lay on fat. Yet the majority of patients that have apparently recovered, carry within their chests the encysted necrosed masses above described; and so long as these remain they cannot be considered otherwise than as exceedingly dangerous to other stock. It is true that the bearers of these encysted masses will often stand for months beside other cattle without infecting them, but it is none the less true that each bears within its chest a sealed up store of infection, and there is only wanted a breach or change in the surrounding fibrous envelope to allow the deadly virus to escape.

Instances of Infection from Encysted Necrosed Lung.—Charles Reeves, Success, Suffolk Co., N. Y., bought two calves from the infected Isaac Billard herd about January, 1879. They did badly. In June he lost several animals infected from these, and on July 19th I visited his place and found a cow, steer, and a calf, infected from the same source.

George Patrick, Patterson, Putnam Co., purchased a cow in February, 1879, which sickened in April, but recovered. Others died in June, July, and August. On September 15th I found four sick and had them disposed of; and Oct. 15th, when the whole herd was slaughtered, the cow that had recovered in April was found to carry still a solid encysted mass as large as an egg. This is more interesting as showing the long retention of the encapsuled mass, even after a very mild case, than as positive proof of the infection from this source.

R. Braun, Lorimer Street, Brooklyn, had a yearling heifer that had been kept in the Blissville distillery stables prior to their quarantine in Feb. 1879. Her infection therefore dated back to January. July 26th he applied for a permit to send this heifer to the country, but on examination she was found to carry a large mass of encysted lung. She was sent to the slaughter-house, being in fine condition, and a large encysted mass was found as expected. On August 22nd a fine short-horn cow that had been sent from a healthy district through our iaspection yards direct to Braun's stable was found very ill with Lung Plague and had to be slaughtered.

In place of furnishing further cases of my own it may be well to quote one from another source confirmatory of mine.

In the *Récueil de Médecine Vétérinaire*, March, 1879, M. Raboüam records the case of an ox supposed to have chronic bronchitis, and brought from a stable where Lung Plague formerly prevailed, transmitting the disease to the healthy stock of his purchaser.

The danger from animals bearing these encysted masses are hardly less than from those still in the incubative stage of the disease. Be it understood that many cattle that bear such masses have natural pulse, temperature, and breathing, will lay on flesh, or yield as many as fifteen quarts of milk per day, and it can be easily perceived how such animals will change hands, and pass into fresh and susceptible herds without any consciousness of wrong on the part of either buyer or seller. Such animals may any day carry infection from state to state, or from the infected states to our unfenced territories, where, owing to the constant commingling of herds it will be impossible to eradicate the virus. Many such cases can with difficulty be detected even by the most carefully conducted professional examination, much less are they likely to be recognised in the hurried examinations that can be given to large numbers of animals at a frontier. In short, these chronic cases with encysted necrosed lung, and the long period of incubation of the Lung Plague condemn absolutely the passage of animals on a mere examination, and without the attendant quarantine of three months. Cattle for immediate slaughter may be passed under such precautions as shall prevent their contact with or proximity to store cattle, but the passage of store cattle on examination only betrays the unfitness for his office of him who prescribes it.

The same considerations show the utter inadequacy of any measures that fail to reach every infected locality and every infected herd, and to prevent the shipment of any cattle from any infected district.

To have suppressive measures effectual, either there must be a

central controlling Federal authority that will grapple intelligently with the plague in every state, district and herd simultaneously, and thus prevent its spread; or every state bordering on an infected one, or having maritime commercial relations with it, must impose a three months' quarantine on all cattle from such infected state. The folly of the present system is stupendous, and the common markets for store and fat cattle from infected and healthy districts, the passage of animals from an infected state on a simple examination, and the threats of one class of officials of forcing upon their neighbours the stock from their infected territory, furnish a spectacle that is a disgrace to the intelligence and science of the nineteenth century, and a travesty on all National Sanitation.

Value of Fumigations with Sulphurous Acid.—As a disinfectant for Lung Plague no better agent exists than sulphurous acid, produced by burning flowers of sulphur in the contaminated building. But the value of this agent is perhaps even greater as a prophylactic agent, for cattle that have been exposed to the contagion. I shall quote but three illustrative cases, and refer the reader for further evidence to my 'Report' for 1879.

Timothy Ryan, Ridgewood, L. I., kept on an average 25 cows, and had lost 20 head within the year. The stables were so thoroughly saturated with infecting materials that our own inspectors and eminent veterinarians from a distance concluded that it would be impossible to disinfect the premises. The wooden flooring was replaced by new, a quantity of filth was removed from beneath, the soil was sprinkled with quicklime, and the building whitewashed with chloride of lime. Whitewashing had been resorted to before, but with no good result. On June 15th, 1879, he commenced fumigating the cows twice daily with sulphurous acid, and although he had some fresh and susceptible cows in the stable, not one more contracted the plague.

Patrick Green, West Farms, New York Co., entered infected premises in April, and by July had lost by the plague twelve out of a herd of thirty-two head. After the sickness appeared the cattle were kept at pasture to avoid the infected buildings and secure pure air, but, as the plague continued, I now directed him to turn the herd into the buildings for half an hour twice a day, and make them breathe as much sulphur smoke as they could bear without violent coughing. From that time not one more case of the plague developed.

James Cowan, Yonkers, in April, 1879, bought a cow from Hog Hill, which infected his herd. By July 12th he had lost eight out of a herd of twenty-three, notwithstanding that

they were kept in the open field and fed tonics (including sulphate of iron). I now enjoined him to turn them into the stables twice daily, and fumigate for half an hour each time with sulphurous acid. This was done, and not another case of sickness occurred.

A wide experience enables me to place a high value on this measure as an auxiliary to the slaughter of the sick and the purification of the premises by aqueous disinfectants. To its proper application certain couditions are indispensable: 1. All virulent matters in the buildings, drains, manure heaps, &c., must be destroyed. 2. No animal with manifest disease must be retained in the herd, nor have access to it or its pasturage. Chronic cases with necrosed encysted lungs must be removed, as well as the acutely diseased. 3. The attendants should not be allowed near diseased animals. 4. The buildings must be close enough to confine the fumes of sulphurous acid, so that they may be breathed of sufficient strength for half an hour in succession each time. 5. The administrator must be intelligent and reliable, and must shut himself in with the animals, that he may watch the result, and push the production of the gas as far as the animals can breathe without irritation, and at the same time be ready to open doors and windows and admit the air promptly in case of an over-dose.

Suppression of Lung Plague on the Large Common Pasture of Montauk.—On May 7th, 1879, while on a visit to infected herds in Suffolk Co., I learned that some yearlings from the same herd that had infected the county had been turned out on the great pasture of Montauk, a stretch of 12,000 acres at the east end of Long Island, on which were 1100 head of cattle, the property of about 200 owners. As the yearlings from the infected herd were alleged to be sound, we had no power to act until the passage of a Bill then pending, which empowered us to deal with animals that had been exposed to infection. On May 21st and 22nd twenty head of cattle—all that could be traced to the infecting herd or to herds with which cattle from the infecting one had mingled—were killed, about half of those that were opened showing the disease in the chronic form. Two more cases of sickness occurred on the range on July 15th and August 10th, respectively, both in cattle that had had communication with the infecting herd, though this information had been withheld at the earlier slaughter. Aside from them the whole herd had escaped. The reasons of our unprecedented success in Montauk are manifestly these—1. The Montauk pasture was large enough to allow ten acres to every animal. 2. The cattle belonged to many different owners, in lots of from one to fifty head. The cattle of different

owners, being strange to each other, herded widely apart, so that there was virtually no chance of infection from the herd of one owner to that of another. They were never yarded nor turned into buildings *en masse*, so as to concentrate the virus. 4. There was no meeting at any common watering-place, for ponds abound all over the range. 5. Whenever a herd was known to have had any communication with cattle from the infected herd such herd was slaughtered without exception. 6. The two cattle that suffered later in the season were the only cattle from their respective owners, and had never herded with any other stock on the range.

Had these cattle been crowded more closely on a smaller pasture, had they pastured successively on the same ground, had they been frequently rounded up, yarded or stabled, had they all been watered from a common pond or trough, had they been accustomed to meet to eat grain or salt from troughs, or had they become acquainted so as to congregate at night in one vast herd, as occurs on Montauk later in the season, it would have been impossible to prevent infection. The prevalence of this plague for ages on the unfenced steppes of the Old World, and for decades on the open ranges of South Africa and Australia in defiance of all the efforts of owners and governments, shows only too clearly that in all but very exceptionable conditions the advent of this plague to such unfenced territory means its spread and permanent prevalence in such a district. It is but repeating on a large scale what has for thirty-seven years preserved and extended the infection upon our eastern seaboard, and what must continue to maintain it until common pasturage is abolished. Our Montauk triumph gives no hope of the extermination of the plague from our great grazing lands in case they should become infected, so that the imminent risk of infecting these means the risk of imposing a perpetual annual tax on the nation of 60,000,000 dollars and upward.

Results of One Year's Labour.—In the course of the year we have caused the slaughter of 1400 cattle that had either developed the lung plague or had been exposed to its infection; we have abolished common pasturages in all infected districts excepting one (Brooklyn, where circumstances prevented this); we have controlled the movement of cattle in all infected districts, and have virtually rooted out the plague from seven counties, leaving but one (Brooklyn and suburbs) in which the affection still prevails.

While a multitude of details were needful for each district, it will be instructive to notice the main restrictions in force in New York City, where the disease was suppressed, as compared with Brooklyn, where it still remains to be dealt with.

By July 1st, 1879, we had perfected arrangements to receive fresh cows and other store cattle from healthy districts only into new inspection yards from which all other stock were excluded, and to allow no other animals to be distributed as store cattle in or from New York. Pasturage was allowed in enclosed ground where herd would be safely secluded from herd. The police seconded our efforts, so that no cattle could be moved on the streets without a special permit granted after inspection of the herd to which such belonged. Dealers' stables, which in such localities soon became simple pest-houses, were abolished, no cows were allowed to leave the city stables except for slaughter, and as the fountain of infection was thereby stopped, every subsequent step made in dealing with the disease in individual herds was a decided and permanent gain. New infections were exceedingly rare, and the old ones only had to be stamped out. With such measures success was assured.

I urged strongly that Brooklyn should be put under a similiar system, and had this been resorted to there can be no doubt that the results would have been similar in that city, and that the State of New York would have been to-day practically free from Lung Plague. But the prospective lack of means, the existing opposition of the city magnates and magistrates, and other considerations which need not be mentioned here, stood in the way; the adoption of the approved measures was deferred until there should be less to hinder, and although money has at last been appropriated by the Legislature, three months have elapsed without any satisfactory movement in this direction. With regard to this it need only be said that any ostensible economy that entails delay in the extinction of the disease is the most wasteful prodigality. The perpetuation of a force of officials and inspectors becomes much more expensive than the execution of the work in a sharp and decisive manner, and in a much shorter period of time; the maintenance of the plague in the infected district leads to a continuous and in the end a far greater outlay in indemnities for cattle slaughtered; the continued interference with the normal channels of home trade heightens the burden in a way that cannot easily be estimated; the persistence of the plague loses to the nation 1,500,000 dollars a year on our exports to England, and finally every day of delay endangers the infection of the middle states, and of the western and southern grazing ground, which would perpetuate the plague for ever, and entail an annual tax equal to that imposed by the late war.

Already we see the evil effects of a relaxation of efficient work in other parts of New York than Brooklyn. When the appropriation was made in February I at once took measures to in-

crease the veterinary staff, and actively resume the aggressive work that had been so long and injuriously delayed. But orders were received to reduce the force of inspectors still further, and at the same time the system of distributing fresh cows and other store cattle from the inspection yards only was seriously relaxed, and though there is as yet little time for more than the incubation of the plague, cases have appeared in fresh cows taken into sound stables in New York and Brooklyn, and Staten Island, which has been sound for over a year, has again become extensively diseased.

ALCOHOL IN ANIMAL TISSUES DURING LIFE AND AFTER DEATH.*

In order to verify the truth of the statement that flesh superficially coagulated would rapidly putrefy under conditions in which well-cooked flesh would remain sound for many weeks, M. J. Béchamp coagulated some horse flesh by immersion for ten minutes in boiling water, then wrapped it in a closely woven cloth, and placed aside for eight days. At the expiration of that time the meat was found in an advanced state of decomposition, and the muscular striation had disappeared, although the air had not penetrated to the interior of the substance, whilst *Bacteria* and *Vibrios* abounded. By methods described in the original memoir, the author isolated and identified about 0·8 gram of alcohol and 10 grams of sodium salts formed by acetic, butyric, and other acids. The alcohol was converted into aldehyde, and oxidized to acetic acid, so that its identity was established beyond doubt; within certain limits the quantity obtained was larger the further the extent of the decomposition.

It would seem, therefore, that the phenomena accompanying putrefaction are very closely allied to those belonging to fermentation properly so called, perhaps more directly with those of the butyric fermentation. By the same process alcohol was obtained from the *fresh* tissues. The brain of sheep gave a larger quantity than the liver, but the largest quantity was obtained from the brain of an ox, which furnished sufficient alcohol to measure with the hydrometer. It may be argued, therefore, that in medico-legal cases the detection or separation of alcohol from putrid or healthy tissues is not sufficient evidence to show that alcohol has been administered at all, still less that this liquid has been the cause of death.—*Journ. Roy. Micros. Soc.*

* *Comptes Rendus*, lxxxix (1879), p. 573; see *Journ. Chem. Soc.*, Abstr., xxxviii (1880), p. 174.

SCIENTIFIC SECRESY.

At a recent meeting of the *Académie de Médecine*, a short discussion arose which involved a point of some importance. M. Toussaint, a veterinary professor at Toulouse, addressed a note to the Academy, stating that he has been able to devise a means of preventing carbuncular disease in animals by manipulating the virus in such a way as to render it a preventive agent, or what he calls, by an abuse of terms, "vaccinating" by its means. He, however, furnishes no particulars as to how this is done, although Professor Bouley stated that it is effected on the principle of attenuation devised by Professor Pasteur as a preventive of fowl-cholera. On the proposition that this communication should be inserted in the *Bulletin* of the Academy, M. Jules Guérin protested against the reception of communications which professed to make known the results of experiments obtained by methods or procedures which their authors kept secret, rendering all control and criticism impossible. The case was not made any better by Professor Pasteur having furnished the precedent of a similar procedure. Professors Le Fort and Depaul joined in M. Guérin's protest.

Dr. Révillout, in the *Gazette des Hôpitaux*, commenting upon this incident, makes the following appropriate observations:

"In France the medical family has its traditions, its scruples, and its delicacy, which it considers in some measure connected with professional dignity, and to which it adheres as a most precious inheritance. Those who do not belong to this great body, and are not medical, though members of the Academy of Medicine, are liable sometimes to irritate the susceptibilities of their colleagues, which they do not appreciate, and seem quite astonished at the opposition which they raise without knowing why. We have made this observation recently in relation to Professor Pasteur, who, keeping secret his procedures for the attenuation of the chicken-cholera, nevertheless related to the Academy the good effects which he had obtained from the inoculation of this attenuated virus. When this illustrious *savant* was desirous, generalising the conclusions he had drawn from his first results, of reasoning from them as to the affinities of variola and vaccinia, he was surprised at finding how little medical men felt disposed to follow him in this course. That was because he was ignorant of the customs of our body, not knowing that the rule here is to place all in common, whether

knowledge acquired, means of investigation and observation, methods, procedures, or discoveries. Physicians formed in our schools admit no other secret than professional secresy in all that relates to our art. If you discover a remedy, your duty is to divulge it, without troubling yourself as to whom will accrue the honour and profit of your labours and your anxieties; and if you discover a means which may be useful in prophylaxis, your duty is still the same in the presence of similar risks. The physician, and he glories in it, knows, when the occasion arrives, how to close his eyes to his personal interests. As Professor Béclard so well says in his *éloge* on Andral, 'he has the habit, the passion, of silent sacrifice.'

"Quite opposite to all this are the principles which prevail in manufactures and the applied sciences. The inventor is invested with an exclusive transitory right, which is protected by the law. For years he may appropriate to himself the fruit of his investigations as a legitimate property. Here secresy is quite natural. The points of view are entirely different, according to the situation. Our medium is peculiarly our own, and even in its most immediate vicinity things are looked upon differently than by ourselves. This was evidently the case at the Academy."

Since the above was in type, M. Toussaint telegraphed to the Academy, stating how contrary it was to his wish to keep any of his procedures secret, and furnishing the requisite details. It would seem that he had only delayed doing so in order to make further investigations before communicating them. The better way would have been to have delayed the original communication until these were perfected. M. Toussaint, it seems, takes some of the blood of an animal suffering from *charbon*, and separates from it by filtration, or kills by the application of heat, all the Bacteria which it contains, and then inoculates with it the animals which he wishes to preserve from the disease. The inoculation having been practised, this liquid, devoid of living germs, acts on the economy in a special manner. It requires, however, from twelve to fourteen days for such action to become completed; and if during this interval inoculation with infecting Bacteria be performed they may pursue their ordinary evolution to the death of the animal. But after the period in question this is no longer the case; for, whatever number of Bacteria be then introduced, they remain absolutely inert, the Bacteria succumbing and disappearing without leaving any trace of their passage either in the blood or the tissues.—*Medical Times and Gazette.*

STATISTICS OF CATTLE DISEASES.

At the meeting of the Cuckfield (Sussex) Agricultural Association, Mr. Charles Lennox Peel, clerk to the Privy Council, gave some important statistics as to the operation of the Cattle Diseases Prevention Acts, and the Orders in Council founded thereon.

The number of cattle and sheep affected with pleuro-pneumonia had been during the first eight months of 1879, 2955; and during a similar period in 1880, 1859, showing a reduction of 1096. The number of animals affected with foot-and-mouth disease, which was formerly so prevalent in this country, was, for the first eight months of 1879, 14,648; and the same period of 1880, the figures had declined to 49, and a large proportion of those cases were reported not to be true foot-and-mouth disease.

The figures relating to sheep-scab also showed a considerable diminution, for whereas during the first eight months of 1879, 40,308 animals were affected, in the first eight months of 1880 the number had fallen to 14,414.

There was also a falling-off in the animals attacked with swine fever, from 11,983 in the first eight months of 1879, to 7741 during the same period of 1880. These results must be, he thought, regarded as most satisfactory.

Mr. Peel also considers that it was not desirable to import store stock from the United States till that country could show a clean bill of health. At the present time it would be folly, nay madness, to allow them to come because many animals were not found to be affected till they were slaughtered; thus showing a hidden source of danger, which, if left unheeded, must lead to most serious results. Therefore, he was convinced that home restrictions and foreign restrictions must stand or fall together, because if the restrictions on imported animals were abolished, it could not be expected that the farmers would bear the expense of stamping out the disease.

Ten years ago pleuro-pneumonia prevailed extensively in Holland. The term Dutch cow was synonymous with pleuro-pneumonia. But in 1871, when the number of cases amounted to 6079, the Government ordered that diseased animals should be slaughtered. And the returns since showed that the number of cases had decreased to 1723 in 1876. In that year the slaughter of healthy cattle that had been in contact was sanctioned, if ordered by the Minister

of the Interior, and the result was remarkable, for in 1879 only 157 cases of pleuro-pneumonia occurred in the whole country. That, he thought, was an encouragement to them to proceed in the course upon which they had embarked, and he ventured to hope that the time was coming when stock-owners in this country, feeling secure about the health of their cattle would go on breeding, and that with their improved breeds and other advantages they possessed over the foreigner, they would be able to compete with everybody all over the globe.—*Mark Lane Express.*

MODIFICATION OF THE PROPERTIES OF BACILLUS ANTHRACIS BY CULTIVATION.

In the course of some experimental investigations into the pathology of anthrax at the Brown Institution, made during the past twelve months, two series of phenomena have been the subject of study, and in each some results have been attained which Professor W. S. Greenfield (in a "preliminary note") believes to be novel, and of considerable practical importance if verified by other observers.

The practical purpose of these investigations was to ascertain (1) by what means the virus of splenic fever may be so modified as to be capable of inoculation without fatal result, and (2) whether a modified attack, produced by inoculation, exerts any protective influence against a future inoculation with unmodified virus.

The conclusions arrived at by these experiments were as follows:

1. That anthrax may be artificially communicated to bovine animals by inoculation with the blood or spleen of the guinea-pig which has died of the disease artifically induced, and that the same result may be attained by inoculation with the *Bacillus anthracis* cultivated from the fluids of a rodent; the disease thus induced being severe, but rarely fatal, to previously healthy bovine animals, a result previously attained by Dr. Burdon-Sanderson independently.

2. In all the cases thus inoculated, the animals appeared to have acquired either a considerable degree of protection or entire immunity from the results of subsequent inoculation, although much larger doses of the virus were employed.

In the course of these experiments the author employed on several occasions *Bacillus anthracis* artifically cultivated in

successive generations in aqueous humour, and finding that the results appeared to vary considerably with the stage of the cultivation, those furthest removed from the original parent-source being more frequently inactive, he was led to make a series of observations, of which he now communicates the results. They may be stated as follows:

That when *Bacillus anthracis* is artifically grown in successive generations in a nutrient fluid (aqueous humour), it maintains its morbific properties through a certain number of generations, but each successive generation becomes less virulent than its predecessor, requiring both a longer time and a larger quantity to exert its morbific action; and after continuous diminution of virulence, at a certain stage in the successive cultivations, the *Bacillus*, though maintaining all its morphological characters and its power of growth, becomes completely innocuous even to the most susceptible class of animals.

It may be added that the modified virus produces forms of modified disease which differ widely from ordinary splenic fever, both in the distribution of the *Bacilli*, and in the nature of the symptoms and pathological appearances.

In regard to the general method employed in the determination of the gradual diminution of virulence by successive artificial cultivations, the cultivating fluid was aqueous humour in closed tubes half filled, and the animals inoculated chiefly mice. The cultivations were continued to the nineteenth generation, each successive generation presenting identical morphological characters at the various stages of its growth, and showing no diminution in the capacity for growth nor marked variation in the time and temperature relations of its germination. In no case were any symptoms or a fatal result produced by inoculation with a later generation than the twelfth; beyond that stage, a large quantity of actively germinating rods and spores produced no result whatever. The diminution of virulence was very marked at the eight generation, both as regards the proportion of animals affected and the rapidity of action with an equal dose.

The author defers at present dwelling upon any conclusions to be drawn from the experiments pending further investigations.—*Journ. of Roy. Mic. Society.*

ROYAL VETERINARY COLLEGE.

The Quarterly Meeting of the General Purposes Committee was held on the 8th October, in the Board Room of the College.

Present :

Mr. C. N. Newdegate, M.P.
Col. Kingscote, C.B., M.P.
Sir F. Fitzwygram, Bart.
Lord Arthur Somerset.
Mr. Berens.
Mr. J. Collins.
Mr. M. J. Harpley.
Mr. Barnard Holt.
Mr. H. G. Sutton.

Mr. Berens was elected Chairman of the Committee for the year in the place of Sir Paul Hunter, to whom a vote of thanks was unanimously accorded for his valuable services during the previous twelve months.

The Accountant read the Quarterly Statement of Receipts and Expenditure. The names of 53 new Subscribers were submitted to the Meeting and declared elected.

The Principal's Quarterly Report was read, from which it appeared that at the Examinations held at the close of the Summer Session, by the Royal College of Veterinary Surgeons, 47 students were examined, of whom 37 passed; 8 of them with "great credit!"

With further reference to the school, it was stated that, compared with former years, there was a falling off this Session in the number of Students entering the College, in consequence of the higher standard of the Matriculation Examination recently introduced. The Principal recommended that English History should be removed *temporarily* from the list of obligatory to that of voluntary subjects, and that the minimum number of marks required in all the subjects should be lowered.

The Committee agreed to these recommendations, and ordered that they should at once come into operation.

It was reported that 175 horses had been admitted into the infirmary during the past quarter; of these, 71 were the subjects of lameness, 28 of injuries (including fractures), 26 of catarrh, influenza, bronchitis and chest affections, 15 of skin diseases, 7 of abscesses, 6 of tumours in different parts of the body, 5 of indigestion and colic, 2 of farcy, 2 of nasal gleet; the others being sent for either the loss of condition, the existence of worms, or the exhibition of a course of physic.

A great increase was noted in the number of patients treated under the head of "Cheap Practice," the number being 148 against 112 in the preceding quarter. The horses so treated have been mostly the subjects of lameness, the larger number of cases being of long duration.

The report concluded with a summary of the diseases investigated on behalf of members of the Royal Agricultural Society.

The meeting was subsequently adjourned until the following Friday, the 15th, at 3 p.m.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD 13TH OCTOBER, 1880.

Present:—The President, George Fleming Esq. (in the chair); Sir. F. Fitzwygram, Professors Pritchard, Walley, and Williams; Messrs. Freeman, Anderton, Morgan, Cartwright, Dray, Gowing, Cox, Whittle, Taylor, Greaves, Blakeway, Coates, Dollar, Reynolds, Robertson, Woods, Cartledge, and the Secretary.

The *Secretary* read the notice convening the meeting.

The minutes of the last meeting were read and confirmed.

Signatures were affixed to diplomas in favour of Mr. James Callender, and Mr. Charles Byrne, holders of the Highland and Agricultura. Society's Certificate.

The *Secretary* stated that a gentleman, who had received a certificate from the Highland Society in the name of Alexander Bell Stuartson, wished his name on the diploma of the Royal College of Veterinary Surgeons to be mentioned as Alexander Stewartson Bell.

Mr. Taylor and *Mr. Gowing* thought the Council should not agree to the request, as one diploma would not be in unison with the other.

Mr. Robertson moved that the Council decline to give the diploma in the altered name as requested.

Mr. Taylor seconded the motion, but said there would be no objection to the diploma being granted in the original name.

At the suggestion of the President, the Secretary was instructed to inform the gentleman that he might have the diploma of the College if he resumed the name in which he received the certificate of the Highland Society of Scotland.

The *Secretary* announced that a letter had been received from Mr. Harpley regretting his inability to attend the meeting.

A letter had also been received from Mr. Duncan Marquis, expressing his thanks to the Council upon receiving his brother's certificate in lieu of his original diploma, which had been lost in Australia.

A letter had been received from Mr. Morrison, stating that the diploma offered was not what he required, and declining to accept it.

Professor Williams stated that as Mr. Morrison had paid the fee and received the diploma, his name had been correctly entered in the New Register.

Mr. Dray, therefore, proposed, and *Mr. Blakeway* seconded, that the fee of one guinea be not returned.

The motion was carried unamimously.

A letter was read from Mr. Mayer, of Cirencester, stating that the minimum marks on the different subjects on which students were examined, when added together, made sixty, whereas seventy-two marks were required to pass, and requesting that the instructions of the Council might be given to the Board of Examiners with reference to the rejection of students.

The President said it had always been understood at Examinations for the Fellowship Degree that seventy-two marks were required to pass a student.

Reports of Examinations.

At a meeting of the Court of Examiners for the Fellowship Degree, held in London on the 8th August, 1880, four candidates were examined and passed.

Report of the Voting Committee.

At a meeting of the Committee, held 28th September, it was decided to suggest for the consideration of the Council a change in the form of the ballot papers, and an alteration in Bye-law No. 7, providing that, previous to an election, the Council should nominate not less than twelve scrutineers.

The *President* explained that the Secretary would prepare the form of voting papers, and that three months' notice would be given of the proposed alterations, after which they could be discussed.

Report of Finance Committee.

The vouchers and receipts for payments during the preceding quarter were examined and found correct. The present liabilities amounted to £107 0s. 3d., which the Committee recommended should be discharged, and there would then be a balance left at the bankers of £345 17s. 4d.

The Committee reported that, in their opinion, the present state of the finances of the College would not admit of the appointment of a second Examiner at each table.

The *Secretary* read the Treasurer's balance-sheet.

Cheques were ordered to be drawn for the half-year's grant to Mr. Coates, and for current expenses.

Mr. Dray moved, and *Mr. Taylor* seconded, that the Charters of the College be deposited at the Bankers for safe custody.

The motion was carried unanimously.

Election of Examiners.

Mr. Dray proposed that Professor Pritchard should be elected on Examiner in the room of Mr. Robertson, resigned, and, in doing so, said that Professor Pritchard had long been known in connection with the Veterinary College at Camden Town, and that was a sufficient guarantee of his eligibility. He was well versed in anatomy and physiology, and had had extensive practice in the diseases of domesticated animals.

Mr. Coates proposed Mr. Dan. Gresswell, of Louth, who had been an Examiner of the Royal Agricultural Society for a great number of years, and was well known as a highly respected member of the profession.

The *President* said that one feature in the election which deserved notice was that Mr. Robertson occupied two positions on the Board of Examiners. He examined in anatomy of other domesticated animals besides the horse, and also in bovine pathology. The fact should be known that it was a dual function.

Mr. Robertson explained that the Council had divided the Examination upon Anatomy into two sections, placing at one table the anatomy of the horse alone, and at the other table the anatomy of animals other than the horse. He had acted as Examiner on the Second Examination, and at the Final Examination he examined first on equine pathology, and afterwards on bovine pathology.

Professor Walley said that the balance of numbers between the English and Scotch schools should be taken into consideration.

Mr. Dollar proposed Mr. Archibald Robinson, of Greenock. He had been eight or nine years in extensive practice with his father, and had an extensive knowledge of all domestic animals, and of the professional science of the day. He had also studied for two years at Lyons, where he had done a great deal of work in connection with comparative anatomy. He was twenty-nine years of age, and was nominated for the double function.

Sir F. Fitzwygram thought the Examiners should be rearranged, as

he considered it was not possible to get the best Examiner in Cattle Pathology who was also the best on horse pathology. It was important to have a thoroughly practical man as regarded the cattle portion of the practice, and he knew of no man who would answer the requirement better than Mr. Finlay Dun, whom he proposed as Examiner.

Mr. Greaves said the best man for the Practical Examination would very likely be unfit for the Examination on Anatomy. He would speak of Mr. Gresswell as perhaps the most thorough cattle pathologist in England. Whether he would come to their expectations was another thing.

Professor Williams proposed that the appointment should be provisional till the period when the other Examiners retired.

Mr. Taylor agreed with that proposal.

Professor Williams supported the candidature of Mr. Archibald Robinson.

Mr. Gowing supported the candidature of Professor Pritchard.

The *President* supposed it would be understood that the gentleman who should be elected would perform the double function of examining on both subjects.

Professor Walley said that Mr. Finlay Dun would not undertake that office.

The Bye-laws having been referred to, it was decided that the appointment was to be a provisional one as previously suggested.

The ballot was taken, when six members voted for Professor Pritchard, seven for Mr. Gresswell, and eight for Mr. Robinson. The latter was declared to be elected.

Salary of Secretary in Scotland.

The *Secretary* read a letter from Dr. Dunsmure, explaining the increase which had taken place in the work appertaining to the duties of his office, and requesting that his salary might be raised to £31 10s. per annum.

After some discussion, in which Mr. Morgan, the President, Professor Williams and Mr. Cox took part

Mr. Collins proposed, and *Mr. Dray* seconded, a motion that the consideration of the matter should stand over until the new arrangements respecting the Examining Board had been made.

The motion was unanimously agreed to.

The *President*—the Author—presented to the College Library a phamphlet on 'Tuberculosis.'

The *President* stated that the New Register had been published, and that each member of the Council was entitled to a copy.

Mr. Morgan called attention to the omission of the name of a gentleman which he had asked to be inserted.

The *President* said that it would be well to have the name printed on a separate slip, which should be attached to the New Registers.

Pupilage of Candidates.

The *President* proposed "That in and after the year 1884, no Candidate for the Diploma of Membership of the Royal College of Veterinary Surgeons shall be allowed to present himself for the Final Examination unless he shall have given sufficient proof that he has served a pupilage of at least one year with a duly qualified member of the profession, and that during that time he has conducted himself satisfactorily."

The *President* said it was apparent that many graduates of the College were extremely deficient in the art of veterinary medicine. A veterinary surgeon had to handle animals which were extremely refractory, rendering the operations to be performed dangerous to the operator and to the animals, unless the operator were skilled in manipulation. There

were complaints that gentlemen who graduated in the College were sometimes utterly incompetent to practise their art, or deficient in manipulative skill. For the sake of the profession, the owners of the animals, and the animals themselves, he thought that graduates of the College ought to be able to practise their art on graduation. It was at one time recognised in the profession that an apprenticeship was necessary in order that a man might be instructed to use his hands in the manipulation of the animals he had to deal with, and also know the practical details of his work. The schools deserved all credit for the manner in which they had carried on the education of students, but it was not possible for them to teach a young man the practical details of his profession during the short time he was at College. He, therefore, thought the College should be able to assure the public and the profession that those who held its diplomas were qualified to practise the art of veterinary medicine.

Mr. Taylor seconded the motion, and said he agreed with every word the President had said, and would rather that the term should be two years instead of one.

Mr. Reynolds agreed that a student should become acquainted with the manipulation of all kinds of animals before he went into practice, but did not think an apprenticeship should be insisted upon. It was the duty of the Examiners to ascertain that a student possessed all necessary knowledge. He moved as an amendment that the President's proposition be not carried.

Mr. Cox, as one of the Examiners, said that at each examination the Examiners had a very anxious task, and sometimes did not know what to do for the best. They felt that to exact from very young men knowledge which they had no means of obtaining was illogical and unfair. He did not think a school would ever be able to impart to the student the knowledge of manipulation necessary for his profession.

Mr. Collins remarked that the fifteen or twenty minutes during which the student was before the Examiner were not sufficient to ascertain what practical knowledge he possessed. He had great pleasure in supporting the motion of the President.

Mr. Cartledge supported the President's motion. He said that a large number of young men wishing to enter the army were rejected for deficiency in practical knowledge. There was no reflection on the schools, as they had comparatively few cases under their care. The other day he asked a young man, who he believed had taken all the medals at one of the colleges, to put the hobbles on, and he could not do it.

Mr. Dollar cited instances of want of practical knowledge, and said that when he acted as Examiner if a man obtained a bad mark for practical knowledge he was not allowed to go up for the Oral Examination, and eight men out of twenty had been so plucked last year.

Mr. Morgan seconded Mr. Reynold's amendment.

Professor Williams thought there would be a difficulty in finding sufficient veterinary surgeons to take young men for a short period. Other men who had little or no practice would take money from young men and teach them nothing.

Professor Walley said he had four and a half years' practice before he went to College, but thought the time had been thrown away, as he had to *unlearn* all he had learned. "Apprenticeship" was a term which they, as professional men, should not employ. His opinion was that a student should pass the Preliminary Examination, and then go to a veterinary surgeon.

Mr. Taylor felt it was a humiliating condition by reason of its being supposed that a certificate would be given to people who had been taught nothing; or that it was possible that a student should for a number of years perform the various duties appertaining to the practice of the profession without learning something of the art. (Hear, hear) In his observation the most exalted men in their profession were those who had seen most practice previously to going to College (Hear, hear.) The motion of the President was a step in the right direction, and he warmly supported it.

Professor Walley trusted none would think his remarks were directed to the Examiners.

Mr. Dray also supported the President's motion.

Sir F. Fitzwygram said he could find nothing in the Charter enabling them to insist on apprenticeship.

Mr. Robertson thought they should not ask more than they could expect. The tendency was for the last few years to put practical above theoretical knowledge.

The *President* said the College had power to exact from a candidate for his diploma a sufficient knowledge of the science and art of the profession, and nothing could be stipulated in the Charter with regard to that knowledge. Until the schools were in a position to teach men in such a way that they would be proficient, in at least the minor operations of veterinary surgery, or until the Examiners could devote a day to each candidate, some guarantee was necessary that the candidates for the diploma of the College had acquired sufficient knowledge of the details of their art and a knowledge of handling animals. There was no reflection on the schools, as they had done their duty to students well, and the adverse circumstances under which they laboured were well-known.

Mr. Reynolds' amendment was put to the Council and lost by eleven votes.

The President's motion was declared to be carried.

Honorary Foreign Associates.

The *President*, in pursuance of a notice given at the last meeting, submitted a list of names of gentlemen whom he would propose that the Council should elect as honorary members of the College, in recognition of the valuable services they had rendered to the veterinary profession. He could vouch that the names he had selected were those of professionl men well known on the Continent to scientific men in general. He thought it was high time such a step should be taken, for the College had obtained a recognised position in this country, and he would like it to stand as well on the Continent as it did in this country. Out of gratitude to members of the profession who had done so much for it he had drawn out a form of certificate or diploma in Latin (which could be read by scientific men of all countries) for settlement and use if his motion should be passed. The diploma was in the same form as the ordinary Fellowship Diploma, with the necessary alterations in consequence of its being for Honorary Associates.

The *Secretary* read a list of the names of the proposed Honorary Foreign Associates.

The *President* stated that the list comprised the names of men of world-wide reputation, and he felt sure, if the Council elected them, that they would do honour to the College, while the College would be doing honour to them.

In reply to Mr. Dray and Mr. Taylor,

The *President* said the expense might stand for future consideration, but he did not think they could charge it to the Honorary Members.

The *Secretary* reported an interview he had had with the Secretary of the Royal College of Surgeons, who informed him that they granted to Honorary Members the free entry to the museum, library, and offices.

Mr. Dollar thought the number of Honorary Members proposed was large, and that the Council would do better if they asked the President to select some of the names, and let the members know which were chosen.

The *President* explained that the official position occupied by the gentlemen named was a guarantee of their high scientific attainments, and every one of them was a doctor of medicine, and before taking that degree they became veterinary surgeons.

Mr. Taylor inquired what would be the privileges of the Honorary Members.

The *President* said the privileges they could offer were few. The privileges offered by the Royal College of Surgeons were somewhat similar to those of the Royal College of Veterinary Surgeons.

Professor Walley considered the President's word was a guarantee that the names mentioned were those of men worthy of the honour proposed to be given them.

Mr. Cox thought, if the President's motion were carried, it would be an immense gain to the College to have such men associated with them. He considered it was a gracious act, and that it was desirable to themselves to invite those gentlemen to become Honorary Members.

Mr. Whittle thought the passing of the resolution would improve the position of the Society everywhere.

The *President* said he had selected names which had been long before the profession on the Continent and the scientific world. To have selected one or two names among so many would have appeared invidious. That would account for the large number of names he had proposed.

Mr. Woods seconded the President's motion.

The *President* said that anything in the shape of an honour emanating from a body like theirs would afford great pleasure and gratification to their foreign colleagues.

The motion was put to the meeting and carried.

The *Secretary* read the proposed certificate, and directions were given that it should be printed and sealed, and forwarded to the gentlemen named in the motion.

The *Secretary* was instructed to write to the different schools, requesting them to make arrangements in good time for the approaching Examinations.

Notice of Motion.

The *President* read a notice of motion, which he proposed to make at the next meeting, to the effect that before a student presented himself for the First Examination of the College he should furnish proof that he had passed an Examination in general knowledge by some recognised educational body; that the extent of the Examination should be fixed by the College from time to time; and that it be of two grades—that which will qualify only for the membership, and that which will entitle the candidate to compete for the Fellowship Degree.

A Veterinary Surgeon charged before a Magistrate.

The *Secretary* reported that, in accordance with instructions, he had

written to the Clerk of the Court upon this subject, and had been informed that the man referred to was not a veterinary surgeon.

The obituary notice was read.

SPECIAL MEETING.

The *Secretary* read the notice.

Sir. F. Fitzwygram said that as a Committee would be appointed to inquire into the rearrangement of the tables of the Examiners, he would withdraw his motion as to appointing a second Examiner in each subject in the Pass Examination, thinking it better that that matter should be considered by the Committee to be appointed.

Mr. Dray assured the Council that the funds would not permit of their incurring further expenses.

Age of Candidates.

The *President* explained that an amendment carried in the beginning of the year for the adoption of a bye-law limiting the minimum age at which a candidate could present himself for Final Examination to twenty years, would be confirmed in due course.

Mr. Whittle proposed, and *Mr. Taylor* seconded, a resolution, that the motion should be adopted at this meeting, and it was carried unanimously.

The *President* announced that a meeting would be held within fourteen days to confirm the resolution.

On the motion of *Mr. Dray*, seconded by *Mr. Taylor*, a vote of thanks was accorded to the President for the very efficient manner in which he had performed the duties of the day.

The Council then adjourned.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The usual quarterly meeting of the above Association was held at the Blackfriars' Hotel, Manchester, on Wednesday, September 29th, 1880. W. Dacre, Esq., President, in the chair.

Present—Messrs. T. A. Dollar, Peter Taylor, Geo. Morgan, Jas. Marshall, James Lomas, W. Whittle, T. Greaves, C. W. Elam, Ed. Kitchen, J. Litt, T. Hopkin, J. W. Hill, Tom Taylor, J. Welsby, J. B. Wolstenholme, T. Stone, H. Beard, J. Bunnell, — Wood, jun., E. Faulkner, J. Polding, J. Bede Polding, W. A. Taylor, J. Ingram, — Welsby, jun., and the Secretary.

The minutes of the last meeting were read and confirmed.

Letters were received from Prof. Williams and Mr. Geo. Fleming, accepting and thanking the members for the honour they had conferred upon them by electing them Honorary Associates; also from Messrs. Prof. A. Gamgee, J. B. Taylor, Alex. Lawson, H. Thompson, Geo. Darwell, and Wm. Leather, regretting their inability to attend the meeting.

Mr. S. Locke proposed, as member of this Association, Mr. James Wood Ingram, of Manchester, seconded by *Mr. Tom Taylor*, and carried.

Mr. J. B. Wolstenholme exhibited a peculiar and interesting case of congenital malformation of fore legs in a silver-haired terrier dog-puppy; it was the sole offspring, and five weeks old. Each forearm

was twisted from the elbow, so that the radius along its entire length was upon the ground; the anterior aspect of the carpi met and touched, from which point the paws were sharply adducted, with their plantar surfaces turned outwards at right angles with the ground. The outer aspect of each humerus was concave, to admit the misplaced elbow. Progression was difficult, and puppy healthy.

Mr. Tom Taylor described an interesting case, which he had named in the circular, "Practical remarks relative to a case of supposed lameness." The history was that the animal, a dark-brown cob, had been lame at special times for three weeks, but the seat of lameness could not be diagnosed. Mr. Taylor, on seeing the animal run on in hand, was of opinion that both in the walk and trot he was perfectly sound. But the owner remarked that Mr. Taylor had not yet seen the animal go lame, and to do so it was necessary that his daughter (who had ridden it for a month prior to the lameness presenting itself) should ride it. The young lady did so, and at once the animal went very lame of the off hind leg, both in the walk and trot; and even when the saddle alone was on, the cob was still very lame. A careful examination gave no indication whatever of the cause of lameness; but under the mane (of which the cob had a plentiful supply) a small circular abrasion was found, due to injury from pressure of a portion of the saddle which rested upon the off shoulder; in the centre of this abrasion was a portion of disintegrated tissue, or what is termed a setfast. On manipulation of the surrounding tissue, the animal gave undoubted evidence of pain. Mr. Taylor was reluctant to think that so small an injury could produce the lameness; but upon examining the internal portion of the saddle, he found a few spots of blood. He, therefore, had the cob run on in hand without the saddle, and both in walk and trot he was sound. The coachman, twice the weight of the young lady, rode the cob without saddle, and it still went sound. With a little care and attention the injury soon recovered, and the cob lost all indications of lameness. Mr. Taylor thought the case almost unique in character, and considered the apparent inability of the animal to bring forward the off hind leg was purely due to the fear of pain in bringing forward the muscles of progression, because, upon doing so, abrasion against the saddle of the sore part could not be avoided. This he substantiated by proving that, when the irritation was removed, the cob went perfectly sound.

A discussion arose, in which many of the members took part, the whole of whom concurred in saying the case was very remarkable in its character.

Mr. T. A. Dollar then read the following paper upon the proposed "Penal Act:"

"Mr. President and Gentlemen,—As you are aware, I am about to offer you a few remarks on the proposed "Penal Act" in connection with our profession; the effect of such an enactment would be to legally separate the veterinary surgeon from the farmer, cowleech, or empiric.

Much the same was effected in the sister profession of surgery fully one hundred years ago, when in the reign of George II the surgeons were separated from the "barber surgeons;" that was a complete severance of a sort of body, or combined body, which existed from the time of Henry VIII; ever since that time the surgeons have gone on as a separate body, and the barbers have been kept separately, It was a question of bleeding and cupping. For a long time the barbers kept up the old plan of bleeding and cupping, and the public thought it a sort of injustice to take the practice out of their hands, but no one now goes to a barber to be bled, though at that time it was thought to be an improper interference that people should not be bled by whom they liked.

I need hardly tell you that the education received by a veterinary surgeon of the present day will contrast most favorably with that received by the surgeons during the time of George II, though the barber of that period was quite as intelligent an individual as the cow-leech of to-day.

It may seem a paradox for me to state, that in my opinion legislation in connection with this matter is of far greater moment to, and affects more largely, the beneficial interests of the public than our own profession.

The securing of that skilful and competent treatment for our domestic animals when diseased, which is based upon a thoroughly scientific training in the individual that is to practise it, touches more or less directly the pecuniary interests of every owner of stock in the kingdom, and that is placing the matter on the very lowest footing; for in my opinion there are very few proprietors even of the domestic pets, the dog and cat, but, as a matter of humanity, who would not wish to have the advantage of scientific advice and treatment for them when suffering, and were such an Act as proposed in operation they would then have a certain guide to obtain what they desire.

Upon what grounds are we justified in approaching the House of Commons and asking for a penal act?

There are many reasons, but I will bring to your notice the four which I deem most cogent;

First, for the benefit of the public generally, so that they may be enabled to distinguish between the quack and the individual who has undergone the prescribed scientific training, and passed the requisite examinations, so that his name appears on the College Register.

Secondly, on the score of humanity to the lower animals. How often does it not occur that persons are entrusted with the treatment of animals who describe themselves as veterinary surgeons, and have not the most rudimentary knowledge of the diseases they are called upon to treat, nor the nature, composition, or action of the drugs they administer.

Is it not cruelty of the most atrocious description to place an animal suffering, it may be, with some very acute malady, under the care of a person who is as likely to give it medicine that will greatly aggravate its sufferings as tend to their relief?

Thirdly, on the ground of equity to the profession. Why should its members suffer in the estimation of the public by reason of ignorant, illiterate, and low-bred individuals assuming the title confirmed by charter in the following terms:—"And we do further declare and grant, that the veterinary art, as practised by the members of the said body politic and corporate shall be henceforth deemed and taken to be recognised as a profession; and that the members of the said body politic and corporate, solely and exclusively of all other persons whomsoever, shall be deemed and taken and recognised to be members of the said profession or professors of the said art, and shall be individually known and distinguished by the name and title of veterinary surgeons."

Fourthly, on the ground of precedent. What has legislation done for our own position and safety when requiring medical or surgical aid?

I cannot do better than quote from the 'Medical Act,' 21st and 22nd Victoria, chap. 90, 2nd Aug., 1858, "an Act to regulate the Qualifications of Practitioners in Medicine and Surgery." Whereas it is expedient that persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners, Clause 40 is as follows:

"Any person who shall wilfully or falsely pretend to be, or take or use

the name or title of a Physician, Doctor of Medicine, Licentiate in Medicine and Surgery, Bachelor of Medicine, Surgeon, General Practitioner, or Apothecary, or any name, title, addition, or description, implying that he is registered under this Act, or that he is recognised by law as a Physician, or Surgeon, or Licentiate in Medicine and Surgery, or a Practitioner in Medicine, or an Apothecary, shall, upon summary conviction for any such offence, pay a sum not exceeding Twenty Pounds."

That is what the legislature have done with regard to medical aid.

I would inquire still further. What has been done to ensure that the medicine prescribed will be dispensed by persons properly trained and educated in a knowledge of drugs, so as to minimise the risk of being poisoned instead of obtaining the desired benefit.

In 'The Sale of Poisons and Pharmacy Act Amendment,' passed 31st July, 1868, Clause 15 provides that, "From and after the 31st day of December, 1868, any person who shall sell or keep an open shop for the retailing, dispensing, or compounding of poisons, or who shall take, use, or exhibit the name or title of Chemist and Druggist, or Chemist or Druggist, not being a duly registered Pharmaceutical Chemist, or shall fail to conform with any regulation as to the keeping or selling of poisons, made in pursuance of this Act; or who shall compound any medicines of the British Pharmacopœia, except according to the formularies of the said Pharmacopœia, shall for every such offence be liable to pay a penalty or sum of five pounds, and dealt with in the manner provided by the Pharmacy Act, for the recovery of penalties under this Act, and nothing in this Act contained shall prevent any person from being liable to any other penalty, damages, or punishment to which he would have been subject if this Act had not been passed."

I do not for one moment think that any of my hearers will consider that too much precaution has been taken to preserve ourselves from harm. Are we, therefore, to deny our dumb and patient servants and faithful companions the same measure of protection that we have obtained for ourselves? Up to the present time we have denied them that protection, and will continue to do so till a satisfactory Act on this subject has been placed on the statute-book.

Not being a parliamentary draughtsman, I am unable to place before you the exact terms of the Act that we as a profession desire, and that could secure for the domestic animals the same protection we require and have for ourselves, But, to begin, I would style it, the Veterinary Surgery and Medicine Act; I would have it to recite part of our Charter, and provide a penal clause with relation to the title of veterinary surgeon, and also a clause securing for the lower animals a certain amount of safety from being poisoned, as they may be at present, by requiring that all persons selling or dispensing drugs for them will have some knowledge of their composition and action, and that this knowledge will be certified by an examination.

To conclude, an Act of Parliament, like most other things worth having in this world, costs money, and I would suggest, as the funds of the body corporate can ill afford the expense an Act would cost, that every member of the profession should subscribe the sum of half a guinea for the attainment of this object." (Applause.)

A long and very animated discussion took place, in which nearly all members and friends took part, all of whom (with one exception) were of opinion that the time had arrived when such an Act was very desirable, and no doubt, if obtained, would prove of great benefit to the profession at large.

It was proposed and seconded "That a committee be formed to con-

sider the matter in all its bearings, and to draw up a form to present to the Council."—Carried unanimously.

A vote of thanks was accorded Mr. Dollar for his kindness in bringing before the members a subject of such vast importance; also to Mr. Tom Taylor and Mr. J. B. Wolstenholme.

After a vote of thanks to the Chairman the meeting terminated.

SAM. LOCKE, *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held at the Turk's Head Hotel, Newcastle-on-Tyne, on Friday, August 27th.

The President, Mr. D. Dudgeon, occupied the chair. There were also present: Messrs. H. Hunter, A. Chivas, F. Gofton, C. Stevenson, W. Wheatley, F. Corbett, G. Elphick, F. Nisbet, T. Foreman, M. Hedbey, W. F. Mulvey, F. Mitchell, the Secretary, and Professor Walley.

Apologies were received from Messrs. W. Awde and J. Malcolm.

The minutes of the previous meeting were read and confirmed.

Mr. W. Grieve, of Blaydon-on-Tyne, was unanimously elected a member of the Association.

A committee, consisting of the President, Messrs. C. Stephenson, H. Hunter, and the Secretary, was appointed to wait on the Registrar of the School of Medicine in Newcastle, and ask him for the use of a room in which to hold the meetings of this Association,

Professor Walley was then called upon to deliver his lecture on "Diseases of the Hock."* Before doing so he desired to express to the members of the Association the great pleasure he had in being among them, and also to say that he was not going to lay down any dogmatic rules, but simply express his ideas in the hope of teaching something, also of learning something in return from the discussion which he hoped would follow. Before commencing his lecture he laid before the members some interesting specimens; amongst others, there was a fine speci- of an *ante-mortem* clot from the left ventricle, extending along the anterior and posterior aorta and iliacs, &c. The history of the case was as follows:—A Belgian cart-horse had an attack of bronchitis in March, and again in May, and recovered. In August he took ill again, was coughing, the membranes were yellow, and there were indications of another attack of bronchitis; but the animal in a few days became much wasted. The pulse went up to 140, the temperature to 105°. Auscultation revealed patchy consolidation in both lungs; emaciation went quickly on. The opinion formed was that the case was one of breaking up of the lung tissue, or of abscesses with disease of the liver.

On *post mortem* being made there were found multiple abscesses in the lungs, with the large *ante-mortem* clot as above described, which, no doubt, had been produced by the absorption of septic matter from the lungs, aided by weakness of the heart's action.

He also exhibited a clot from the pulmonary artery, and, with the

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* Up to the time of going to press the Lecture had not been received by us.—EDS.

object of showing the difference in their structure and formation, a stratified thrombus from the superficial inguinal veins.

Professor Walley next exhibited to the members his new instruments (as recently described in the Journals), which he had considerably improved since they were first constructed, but were not yet quite as perfect as he intended to make them. The compound écraseur and concealed bistoury was so constructed as to enable the veterinary surgeon to use any of the following without danger and with ease internally, viz. blunt, sharp, convex, straight, or Chassaignac bistoury; sharp or blunt spatula; embryotomy saw and blunt or sharp hook; vulsellum forceps; trocar and canula; wire or chain écraseur, &c. These various instruments could also be used for ordinary external purposes, by the aid of a small universal handle, and, in addition, drawing knives, seton needles, directors, and torsion forceps. The price of the whole, when complete and perfected, would not much exceed that charged for some of the écraseurs alone. The aspirator, Professor Walley stated, he had found to act splendidly in a case of hydrothorax in a dog; but he remarked that such an instrument, while invaluable in emptying cavities in which there were no loose soft organs, or where these organs—as the lungs—had been compressed by the effusion, was inferior to an ordinary trocar and canula in tapping the abdomen, as in the act of aspiration the bowels were drawn against the point of the needle, and plugged it up.

The Professor also remarked, in a case of pre-pectoral fibrous tumour, which he had treated by irrigation with iodide, by the aid of the same instrument, and which was entirely resolved in the course of ten days or a fortnight, a small thrombus, terminating in an abscess, formed in one of the superficial veins, a little distance below the seat of the operation, but it did not prevent the animal working; in fact, he was put to work eight days after the operation. In the removal of large quantities of fluid from cavities the instrument could be used as a double-action syphon, without the possibility of a particle of air passing into the cavity, and with much greater rapidity than by its use as an aspirator.

A vote of thanks was unanimously passed to Professor Walley for his kindness in coming among them, and the Professor having replied,

Mr. E. Stephenson introduced "The Penal Clause" for discussion. He asked, first, Has the time come for it? I answer, No; and, what is more, the time for it is yet a long way off. We cannot make a veterinary surgeon by Act of Parliament, for, as Mr. Fleming said, veterinary surgeons are born, not made. The tendency of the schools, at present, was to turn out non-practical men, and, instead of a penal clause, there should be an apprenticeship clause. The practical examination should also be more strict.

A long discussion here took place between Professor Walley and Mr. Stephenson, the former maintaining that practical students and sons of veterinary surgeons, as a rule, made the worst students; the latter replying that, if such was the case, the men nowadays must be made of different stuff to what they once were. He asked, How much better is the medical profession for their penal clause? Mr. Stephenson finished by moving, "That, in the present state of the veterinary profession, it is not desirable to press for the penal clause."

The *President* and *Mr. Elphick* agreed with what Mr. Stephenson said.

Mr. Gofton thought, in justice to our clients, as well as to ourselves, we should be protected. If people desired to employ the quack, by all

means let them do it, but they should know whom they were employing. He moved, "That the Association petition the Royal College of Veterinary Surgeons in favour of the penal clause."

Mr. H. Hunter, *Mr. W. F. Mulvey*, and the *Secretary*, spoke in a similar strain to Mr. Gofton.

On the motions being put to the meeting, Mr. Stephenson's was carried by the casting vote of the Chairman; but it was ultimately agreed, as there was a small attendance of members, that the discussion should stand over.

G. R. DUDGEON, *Hon. Sec.*

NORTH OF IRELAND VETERINARY MEDICAL SOCIETY.

A MEETING of the North of Ireland Veterinary Medical Society was held in the Thistle Hotel, Belfast, on the evening of August 25th, 1880. A large number of professional gentlemen were present, including several members of the medical profession.

The minutes of the last meeting having been read and approved of,

Mr. J. B. Dunlop, Vice-President (who occupied the chair in the unavoidable absence of the President, Mr. J. Doris, Cookstown), related a case, and showed the specimen, of a membranous cast from the bowels of a cow, ten yards in length. Mr. Dunlop also related a peculiar case of ulceration in the palate of a bull.

Mr. Wm. J. Johnson showed a calculus (which had been taken from the bowels of a horse) of great size. The case was one which occurred in the practice of the Secretary, the patient being a post-horse. It had never shown any symptoms of abdominal pain until a week before death, about which time it sustained an injury by the vehicle to which it was attached coming in contact with a car. Symptoms of colic followed, enteritis supervening, followed by death.

The *Secretary* next related a case of poisoning in a pony, and said the symptoms which he noted during the fifteen minutes the pony lived after he saw it were almost identical with those occurring in poisoning by aconite.

The members present were of opinion that aconite was the agent, but no definite idea could be given as to how the aconite could have got mixed with the provender supplied to the pony, which was the same as that given to several other horses at the same establishment.

Professor McCall, Principal of the Veterinary College, Glasgow, who was kindly present, read an interesting and highly instructive paper on "Cholera in the Dog," and illustrated his subject by exhibiting several diagrams and wax specimens.

A unanimous vote of thanks was awarded to Professor McCall for the reading of his paper, when he expressed a hope that at some future period he might follow the above subject, and introduce "Stringhalt" and "Shivering" in the horse.

Votes of thanks were also passed to the members who had sent communications, and to Mr. Dunlop for his dignified conduct in the chair.

Present: Professor McCall; Drs. Spedding, Whitla, Ball, and Gilmore; Messrs. Dunlop, Chambers, Gillespie, Kernohan, Giffen, Johnson, Matthews, Kidney, Stringer (student), Urquhart (student), and G. Johnstone (student).

GEO. KIDNEY, *Hon. Sec.*

Veterinary Jurisprudence.

CASE OF ALLEGED PLEURO-PNEUMONIA.

DURHAM MICHAELMAS SESSIONS, 20*th October*, 1880.

Before the Chairman (John Lloyd Wharton, Esq.), John Fawcett, Esq., and F. Greenwell, Esq.

COWLEY AND WALKER *v.* GARRY AND THE COUNTY JUSTICES OF STOCKTON WARD.

THIS was an appeal against a conviction of the Stockton magistrates, the appellants being Robert Cowley, cattle dealer, of Darlington, and John Walker, cattle dealer, of Cockerton.

Mr. Luck, instructed by Mr. Edward Wooler, for appellants, and Mr. Milvain, instructed by Mr. H. G. Faber, for respondents.

On the 8th of September last appellants were convicted by the Stockton magistrates for sending, or causing to be sent, a cow suffering from pleuro-pneumonia from Darlington to Stockton, by the North-Eastern Railway. They were each ordered to forfeit the sum of £15 4s. 3d., and £4 5s. 9d. costs, making a total of £20 each.

Mr. Luck, at the outset, took certain technical objections—first, that the conviction was a joint one made against the appellants, and they ought to have been separate and distinct convictions; and, second, that by the Summary Jurisdiction Act, 42 and 43 Vict., cap. 49, sec. 5, in default of payment of penalty, the amount of punishment should not exceed two months for a sum of £20, whereas in this conviction the magistrates had imposed a sentence of three months.

The Court overruled the first objection, and amended the conviction as to the second. The case then proceeded on its merits, Mr. Milvain stating that he should prove that the cow was diseased on the morning of the 25th of August, and he thought, if he proved the animal to have been suffering from some disease or other, that would be sufficient to show the conviction was good.

The Bench reminded Mr. Milvain that he must show the cow was suffering from "cattle disease," which the Act defined as being rinderpest, pleuro-pneumonia, foot-and-mouth disease, sheep-pox, or sheep-scab. The real question the Bench had to decide was whether this animal was suffering from one of these diseases or not.

The transmission of the animal by the appellants having been proved,

John Metcalfe Garry, inspector under the Contagious Diseases (Animals) Act to the Stockton Corporation, said he saw the cow in the Half Moon Hotel yard, Stockton, on the 25th of August last. She was suffering very badly from pleuro-pneumonia.

Mr. Hall, veterinary inspector to the Corporation of Stockton, said he made an examination of the cow on the 25th of August last. He found the animal suffering from pleuro-pneumonia of a very bad description. He had had long experience of this disease, and remembered, when a boy, his father losing forty beasts from this disease. He believed the disease arose spontaneously, but its origin was an unsettled question at the present day. The temperature of the animal was 102 degrees. The normal temperature of a healthy cow was 98 or 100 degrees, but temperature was only one symptom of pleuro-pneumonia out of a great number of others.

Mr. Thomas Batey, member of the Royal College of Veterinary Surgeons, and one of the veterinary inspectors to the Corporation of Stockton, had also examined the cow. He corroborated the evidence given by Mr. Hall. He made a *post mortem*, and examined the lungs of the cow, and found both lungs much consolidated, and three fourths of both lungs affected.

Mr. Luck.—If as far back as January you had seen the animal continually coughing, its coat standing on its back, eating heartily, and giving short milk, would that not alter your opinion as to the animal suffering from pleuro-pneumonia?

Witness.—I don't see what you want to be at.

Mr. Luck.—Would the cow have been suffering from pleuro-pnemonia at that time?

Witness.—Had the cow been suffering from pleuro-pneumonia in January it would have been dead long ago.

The *Chairman.*—But if the cow was suffering from these things in January, may not pleuro-pneumonia have supervened?

Witness.—Most certainly.

Mr. Luck.—Did you not, Mr. Batey, make a mistake in a case of alleged pleuro-pneumonia at Norton, near Stockton, and did not you and Mr. Plews condemn a cow for pleuro-pneumonia, and were not the lungs afterwards sent to the London and Edinburgh Colleges, and certificates given by the professors that the lungs were affected with parasites, and was not the case so reported in the *Veterinarian?*

Witness.—I do not remember anything about it.

This was the case for the respondents; and

Mr. Luck, in opening the case for the appellants, admitted, if the witnesses could be relied upon for accuracy, there would be an end of the case; but he would call witnesses who would say this cow could not have been suffering from pleuro-pneumonia at all.

The *Chairman* asked Mr. Luck if it was his intention to call professional gentlemen who had had an opportunity of seeing the animal when it was alive, or who had seen it when it was dead?

Mr. Luck said unfortunately he could not, inasmuch as they had applied to the Privy Council to have the animal exhumed, but the application was refused. He wished to call Mr. Stephenson, of Newcastle, and Mr. Peele, of Durham.

The *Chairman.*—No one can have a higher opinion than I have for those two gentlemen, but it is clear they can only speak from what they have been told; and I do not think the Bench will be justified in setting aside the evidence of witnesses who have made a *post-mortem* examination of the cow, and who saw it when it was alive, on the evidence of gentlemen who have not had that opportunity; but, however, you can call your witnesses if you wish to do so.

Mr. Luck.—I certainly hope you will not decide the case without hearing my evidence.

The *Chairman.*—Very well, by all means call your witnesses.

Leonard Burton, cattle dealer and farmer, living in Westmoreland, remembered buying the cow in question of a Mr. Beck, on the 14th of January last. He also remembered when he was driving her to Kirby Stephen station, to truck her for Darling Market, she put out her tongue and coughed.

William Howe, agent to Messrs. Tarn, auctioneers, Darlington, had had the cow in his possession, and was aware she had a cough upon her in January last, and was suffering from consumption.

John Snowden, farmer, Nag's Head, Darlington, bought the cow on

2nd of February last, and kept her among his other cattle until the 24th of August. She used to cough and blow a bit. His cattle had been examined by Mr. Hedley, veterinary surgeon, on 12th of October, and they had been found to be in good health.

John Ambrose Bamlett, a farmer in an extensive way at Darlington, knew the cow. She was in a field adjoining one in which some of his cattle were. He saw she was an ailing cow, and he examined her to see if she was suffering from any contagious disease, with a view of making a complaint to the inspector, so that he might have the cow removed from close proximity to his own cattle. After making the examination he was convinced she was not suffering from any contagious disease but from consumption.

Mr. Matthew Hedley, veterinary surgeon, and inspector for the Borough of Darlington, Darlington Ward, Durham, and Gilling Division, Yorkshire, spoke to having examined Mr. Snowden's cattle, and finding them all in good health. It was the opinion of the veterinary profession in this country that pleuro-pneumonia did not rise spontaneously. He had generally found that an animal lived about four or five weeks after it had become infected with the disease. From the evidence he had heard to-day, he was quite satisfied the animal could not be suffering from pleuro-pneumonia, but *tuberculosis*.

Mr. Clement Stephenson, Fellow of the Royal College of Veterinary Surgeons, and practising at Newcastle-on-Tyne, said from the history he had heard of the animal, and from the evidence of the *post mortem*, he was of opinion that the cow was suffering from *tuberculosis*, and not from pleuro-pneumonia. In forming that judgment he had been chiefly influenced by the witness who made the *post mortem*. That witness said both lungs were much consolidated, and three fourths of each affected. He (Mr. Stephenson) had made hundreds of *post mortems*, and had never known a single case of an animal suffering from pleuro-pneumonia when both lungs had been affected. The rule was, in pleuro-pneumonia cases, to find one lung, or a small portion of one lung, affected, and the remainder perfectly healthy. It was his experience that a great many cases of *tuberculosis*—and many other diseases, such as heart disease and ordinary colds—had been mistaken for pleuro-pneumonia. The symptoms of pleuro-pneumonia and *tuberculosis* were very analogous. But it was very difficult to tell sometimes which disease it was, and this rendered a *post-mortem* examination necessary.

The *Chairman*.—Can you speak with positive certainty as to a disease of this sort without a *post-mortem* examination?

Mr. Stephenson.—Yes, you can occasionally; sometimes it is quite plain, while at other times it is most difficult to distinguish *tuberculosis* from pleuro-pneumonia in the diagnosis of the living animal.

The *Chairman*.—But would not a veterinary surgeon, who had made a *post-mortem* examination of an animal, be more likely to judge of the true condition than a veterinary surgeon who had only seen it alive?

Mr. Stephenson.—Certainly, it is the last test you can put to doubtful or suspicious cases, particularly in lung diseases.

Examination continued by Mr. Luck.—Witness said pleuro-pneumonia was purely a contagious disease, and never arose spontaneously in England. Last year as chief inspector for Northumberland, he examined forty-eight cases of alleged pleuro-pneumonia and only three were found to be pleuro-pneumonia. This statement was sent in his report last year to the Privy Council. It was the case generally throughout England.

In *cross-examination*, witness said he would rather draw his conclu-

sions from what he saw himself than what he heard; and that a professional man, however experienced, might be mistaken in the conclusion he came to.

Mr. John Edward Peele, member of the Royal College of Veterinary Surgeons, Durham, was of opinion the cow was suffering from *tuberculosis*, and not pleuro-pneumonia. In the latter disease, during his experience, he had found one lung only affected, and generally the right one. Mr. Batey, who made the post-mortem examination, had said that both lungs were affected. That was a case unprecedented in the annals of pleuro-pneumonia.

This was the case for the respondents, and Mr. Luck reviewed the evidence that had been given, remarking that it was impossible for the Bench to confirm the conviction in the face of the professional testimony he had adduced, and when they bore in mind the great number of mistakes that had been made as to the existence of pleuro-pnemonia.

The Bench, after a brief consultation, dismissed the appeal with costs and thus upheld the conviction.

Mr. Luck asked the Bench to grant him a case for the Queen's Bench, on the technical objections he had taken. A case was granted as to whether the Court had power to make the amendment in the conviction from three to two months' imprisonment.—*Durham Chronicle.*

LIST OF STUDENTS TO WHOM PRIZES WERE AWARDED AT THE OPENING OF THE SESSION OF THE ROYAL VETERINARY COLLEGE.

The Scholarship for Two Years.

Mr. James Smith, Louth, Lincolnshire.

Coleman Prizes.

Silver Medal.—Mr. Edward George Johnson, South Austen, Rotherham.
Bronze Medal.—Mr. George Gartside Mayor, Kirkham.
Certificate of Merit.—Mr. Arthur William Briggs, Bury.

Special Certificates.

Assistants at the Royal Agricultural Society's Show at Kilburn, 1879.

Mr. A. W. Briggs. | Mr. G. G. Mayor.
Mr. W. F. Garside.

Assistants at the Smithfield Club Show, 1879.

Mr. E. Slipper. | Mr. J. J. Crowhurst.

Certificates of Distinction.

Mr. N. Almond.
— G. G. Mayor.
— W. Caudwell.
— S. Villar.
— W. J. Malvern.
— E. G. Johnson.
— T. W. Cave.
— H. T. W. Mann.
— J. J. Crowhurst.

Mr. D. Gregory.
— F. W. Lepper.
— H. A. Rumboll.
— F. G. Rugg.
— C. Taylor.
— E. Slipper.
— A. W. Briggs.
— G. Deveson.
— W. J. Palmer.

Mr. T. C. Toop.

CERTIFICATES FOR OFFICIATING AS CLINICAL CLERKS.

Mr. N. Almond.
— G. G. Mayor.
— W. Caudwell.
— S. Villar.
— M. J. Malvern.
— E. G. Johnson.
— T. W. Cave.
— H. T. W. Mann.
— J. J. Crowhurst.
— D. Gregory.
— F. W. Lepper.
— H. A. Rumboll.
— F. G. Rugg.

Mr. C. Taylor.
— E. Slipper.
— A. W. Briggs.
— W. F. Wright.
— W. H. Beach.
— F. L. Gooch.
— T. J. Keech.
— H. Talbott.
— A. Harris.
— F. F. Woolcott.
— F. W. Whitney.
— A. S. Auger.
— T. J. Rippon.

Mr. F. Elworthy.

MONITORS.

Mr. N. Almond.
— G. G. Mayor.
— W. Caudwell.
— S. Villar.
— W. J. Malvern.
— E. G. Johnson.
— T. W. Cave.

Mr. H. T. W. Mann.
— J. J. Crowhurst.
— D. Gregory.
— W. H. Beach.
— G. Deveson.
— W. F. Wright.
— W. T. Garside.

PROSECTORS.

Mr. N. Almond.

Mr. G. G. Mayor.

OBITUARY.

WE much regret to have to record the following deaths :

On October 13th, George Wentworth, M.R.C.V.S., Grimsby, aged 51. Diploma dated May 20th, 1851.

October 14th, Edmund Charles, M.R.C.V.S., May Fair, London, aged 73. Diploma dated May 26th, 1830.

Algernon Pitcher, M.R.C.V.S., Royal Artillery. Diploma dated April 26th, 1866.

William Boyd, M.R.C.V.S., Royal Artillery. Diploma dated April 16th, 1867.

John Shaw Jackson, M.R.C.V.S., Whitby. Diploma dated April 13th, 1871.

Also of John Bennett, M.R.C.V.S., Stony Stratford, who, having obtained his Diploma on December 29th, 1812, was designated "The Father of the Profession."

MISCELLANEA.

DOG DENTISTRY.

A NEW YORK lady recently paid a dentist's bill of £70 on account of services rendered to her pet poodle. And that's the way the money goes to the dogs in New York.—*Liverpool Echo.*

THE

VETERINARIAN.

VOL. LIII. No. 636. DECEMBER, 1880. Fourth Series, No. 312.

Communications and Cases.

LECTURES ON THE PRACTICE OF VETERINARY MEDICINE AND SURGERY.—HIPPOPATHOLOGY.

By Professor Wm. Robertson, F.R.C.V.S.

Lecture 1.

Gentlemen,—You are aware that in the study of medicine, using these terms in their widest sense, that it has been found both necessary and convenient, alike for teacher and taught, to consider, individually and in a separate manner, the various subjects or branches of knowledge bearing directly or indirectly on the acquirement of that sum total of knowledge which has for its ultimate end the equipment of the individual as a sanitary or therapeutic expert — as one who, according to our present-day ideas, is sufficiently qualified to be specially employed in the prevention and cure of disease. In like manner, and for a similar purpose or end, the more purely and specifically professional or medical work and study has been dealt with; while there is little doubt that, as time moves on and advances are made both in the science of medicine and in the public estimate of and demand for its employment, a further and, it is to be hoped, a fuller and more perfect and correct division of study and labour will be adopted.

This division will be the more needful when both medicine human and medicine veterinary occupy their true positions as important matters in that great division of social science, public health.

Although for ultimate good to yourselves, and for the successful termination of your College curriculum, it is needful that no one of those studies considered needful for the perfecting of your professional education be at any time during your student life lost sight of or lightly dealt with, there are yet particular subjects which at particular periods demand more especial attention. If during your earlier student days much of your time is necessarily employed in obtaining a knowledge of those subjects which are calculated to form the basis, structure, or framework, so to speak, of your more purely professional knowledge—a structure or framework which, if neglected to be laid or carelessly and in a perfunctory manner put together, will ever afterwards be to us a source of disappointment and grief, seeing that without a sure and good foundation no lasting or goodly superstructure can be raised.

For a just and true appreciation of what may be styled the theory or science of medicine and surgery, whether this be medicine and surgery human or veterinary—for a sound and satisfactory training in this department of knowledge likely to be fruitful of wholesome and appreciable results—many separate and distinct branches of study require to be engaged in, which together embrace or make up the sum total of the knowledge expressed by this science, which has for its divisions the departments of physiology, pathology (general and special), therapeutics, and hygiene.

All these departments or sections require cultivation, and they each and all by this cultivation prepare the way for the study of that which is the ultimate end of all medical training, viz. the exercise of medicine and surgery, human or veterinary, as an art.

With only one of these departments of general medical study, however, are we in our studies required to attend to, viz. pathology.

This, in its widest as well as in its literal sense or meaning, is a discourse upon disease, and includes all that pertains or is in any way directly related to its nature and existence.

But as in the entire study of medicine it is not possible for any one man to grasp or thoroughly master either the principles or knowledge embraced in any one department, far less to teach these, so even any single section

is amply sufficient to engage the undivided attention of one mind.

Thus it is that even this subject of pathology, in its unrestricted sense and meaning, has a significance too extensive and recondite, and we will confine ourselves to what is more properly designated special or particular pathology, or at least so much of it as requires our consideration in discoursing to you upon that thoroughly practical and tangible section or branch of your special medical study, the practice of medicine and surgery, and that, too, as specially pertaining to the horse.

In this study and teaching of the practice of equine medicine and surgery the history, phenomenal exhibition, and treatment of special diseases and disturbed states of the system, will form the chief points of consideration and investigation.

Although in systemic teaching of medicine it is generally considered necessary to begin with, or certainly at least to carry on contemporaneously with, the study of the practice of medicine and surgery, *i. e.* the study of special diseases, that of general pathology, *i. e.* a consideration of those general truths arrived at from comparison of many diseases or of particular diseases with each other—truths which have been established by observation and experiment.

Yet it ought never to be forgotten that the first of these divisions—the one specially pertaining to our present walk—comes first in the order of nature. It is from this the study of special diseases, the phenomena they exhibit, their modes of development, &c., as also their relations to each other in all pertaining to them individually, that we approach the study of the more extensive and general truths relative to disease in general, kuown by the term of general pathology.

Fortunately for all of us, and particularly for him who has to prelect those upon whom has devolved the duty of arranging for the instruction of the pupils of this institution, have, with a proper consideration of the fulness and efficiency of the teaching here supplied, and with a just estimate of the importance of the subject of general pathology, determined that it shall receive consideration and treatment specially by itself, apart from other special pathological teaching.

By this arrangement it will not be needful, nor yet expedient, that either as introductory to or mingled with our special pathological teaching will the necessity arise for discoursing at length on matters pertaining to the peculiar province of general pathology—those great truths, leading

facts, and acknowledged inferences, drawn from observation and experiment.

For this reason we shall leave untouched the consideration both of those complex vital processes whose phenomena, more or less combined, constitute disease, as irritation, congestion, inflammation, degeneration, atrophy, &c., and the examination of the varied and differing materials which are met with as the ultimate or constituent elements of disease—matters pertaining specially to the department of pathological histology and chemistry.

Methods by which Disease may be elucidated and understood.

As students of special pathology we will find that disease in those animals with which we are called upon particularly to deal is, in our case, to be studied in two different characters or aspects.

1st. As those diseases present themselves to our notice and consideration in separate, distinct, and individual cases and animals. 2nd. As they form, or constitute, or are gathered or grouped into particular classes or genera of disease, sytematic study.

Of the first method of instruction or investigation we shall say nothing further here or at this time, except to bring prominently under your notice that, taking into consideration the exceptional advantages enjoyed by this College, it has been determined to give to this method of acquiring sound practical knowledge of equine medicine and surgery well-considered attention.

In whatever character or aspect, whether clinically or according to any system of medical classification, we, as students or practitioners, make examination of disease, there is always a certainty that a perfect similarity of subjects or problems will be placed before us for consideration. There is, as Aitken says:

"1st. The morbid phenomena or symptoms by which we become aware that derangement has taken place in the economy. It is by a mental effort that either the student or the physician converts these symptoms into signs of disease; and hence arises the necessity of studying symptomatology or semeiology. 2nd. The agents by which derangements and diseases are produced or brought about, constituting the department of etiology. 3rd. The seats or localities of disease or of derangements constituting pathogeny. Here the peculiar nature, general forms, and types of disease must be studied, together with varieties in their

course, duration, and termination. 4th. The morbid alterations discoverable in the structure of the body before, and particularly after, death" ('Morbid Anatomy').

By a correct interpretation of these phenomena or signs a just appreciation of the causes operating in their production, assisted by our comprehending to some extent, at least, the nature of tissue change, we are able to forecast the probable course and termination of the disease, we are said to give a prognosis; while a true consideration of all these points renders us able to form an opinion as to the particular class or genera to which any particular disease may belong—it helps us with the nosology.

For a correct and comprehensive appreciation of these subjects for a solution of such problems—for problems they often are—I would, gentlemen, on this the very threshold of your work and study connected with equine pathology, desire most particularly to impress upon you that there is one, and only one, way of attaining this end, viz. the correct cultivation of your observing faculties.

We may, all of us, be observers; we must, all of us, be observers, if we are successfully to cultivate the practice of medicine.

For although I can scarcely acquiesce in the opinion entertained by some—that to be an observer requires as great a range of faculties as to make a speculative thinker—that to note facts is as lofty a range of intellect as to conceive thought—still I am of opinion that in the science of medicine it is not easy to over-estimate the importance of correct observation, seeing it is by pure induction, by the observation of individual facts, that we rise to those general inferences which are the most comprehensive expressions of attainable truth. Facts, however, gentlemen, are of themselves of little worth until associated with mind; they must be registered and collated, and, save as indices of particular functional or organic changes, and the exact relation they bear to these, are of comparatively trifling practical value in the advancement of clinical or systemic medicine and surgery.

And as in a study like pathology, where we cannot expect that fixed laws or first principles exist from which we may reason downwards to the possession of facts, so it is that advancement is less connected with the wonderful achievements of a few individual minds than the result of the accumulated labours in observation and experiment of the many; and it is well and encouraging that it should be so. Great and shining lights are only occasionally, and at intervals vouchsafed to humanity to guide on to dazzle by their brilliancy;

but many, if not all, may be earnest, patient, and enlightened workers in the field of observation, from which point we must ever consent to start in any true advance in pathological inquiry.

In the exercise of this observation of morbid phenomena the signs and symptoms of disease, the agents or causes operating in the production of the morbid conditions, and the associating of signs and causes, with certain disturbed or perverted functions or structural change, certain methods must be observed and means adopted to facilitate this observation and ensure its accuracy.

Whatever may be the nature or extent of the significance which we may attach severally to the terms symptom and sign of disease, whether we regard these as simply every occurrence or circumstance taking place or happening in the diseased animal which is capable of being perceived or appreciated, or as something in addition, as, in fact, a part of the disease itself, and as veritably a constituent of its existence and identity, as any specific lesion or structural change, we remember that, for the proper collection of these symptoms, appropriate means and methods must be employed, and that when possession of these is obtained much thought and reflection is needful for their correct interpretation.

Symptom must be weighed against symptom, the relation of one to the other, and of the whole to each. Considered in this way only can we arrive at any just conclusion as to the nature of the disease, the probability of its course, and the termination of the treatment indicated. While as a means of systematising our knowledge as obtained by a study of symptoms or signs, and also of rendering it more definite, we agree to speak of these by terms to which, by general consent, a specific meaning is attached.

Symptoms are general when they affect, to a greater or less extent, the whole system; local when confined to a particular part or organ; premonitory or precursory when they precede the full appearance of the diseased action; positive or direct when consisting of phenomena actually present; negative or indirect when such phenomena are absent; characteristic when the same are usually seen in a similar disease; commemorative when developed during the course of the disease.

They are also spoken of as diagnostic when they lead us to distinguish one disease from another; pathognomonic when peculiar to some particular disease; prognostic when they enable us to predict the course, &c., of the disease.

In a similar way, and with like purposes in view, do we

mark out and name the varying character of the agencies or influences recognised in the department of etiology. We speak of causes as predisposing when there are such, whatever may be the nature of the influence which seems to act unfavorably in influencing the functions or structures of the body, rendering it more liable than it would otherwise be to exhibit actual disease; as exciting when by their immediate action on the animal body, more particularly when predisposed disease is the result; as external or internal when the inducing agent acts from within or without the body.

We also speak of aptitude or predisposition and of idiosyncrasy when the animal within itself possesses some peculiar tendency to or power of resistance of adverse influences; and of influences epizootic and enzootic when diseases originate over extensive districts of a country, the causes of which are inappreciable, or where they are confined to some particular locality, the causes being obvious, and confined to the place of their existence.

In following out the study of the practice of medicine and of special equine pathology, which is in reality the recognition of veterinary medicine and surgery as an art, inasmuch as it is directed to observe and to ascertain, as far as possible, the causes, the nature, the means of cure or of alleviation, and the most successfnl modes of the prevention of disease in the horse, it will be for our advantage, at this particular stage, to recognise and examine those large and general sources of information, those channels through which symptoms of derangement are exhibited, and from which signs of disease are collected, and by which we are led to understand the causes or factors which may have induced this derangement or disease, and the localities and textures specially the seat of morbid changes—all which are needful to qualify us for giving a place to any diseased process or condition, in whatever system of nosology or naming of disease we may choose to adopt.

Sources of our Knowledge in Disease.

The chief sources or channels through which, in disease, are exhibited those phenomena which, when collected, compared, and associated with mind, constitute what we speak of and regard as positive knowledge in relation to both the nature, character, development and probable results of disease, are—

1st. Those associated with or drawn from a consideration of the condition of the pulse. 2nd. The state of the visible

mucous membranes. 3rd. Conditions or temperature of the body. 4th. The nature of the respirations. 5th. The state or character of the natural secretions and evacuations.

1st. Of the signs or symptoms and accompanying information afforded by the pulse in disease—of the *rationale* of the processes concerned in the production of the pulse—we will not stay to inquire; it belongs more properly to another department of your studies; sufficient for our purpose it is to know that, meaning literally "I beat," we regard it as the beating of the arteries from the afflux of the blood in response to the contractions of the heart.

The different characters or conditions of the pulse in disease are referred—1st, to the number of pulsations or beats in a given time; 2nd, to the rapidity or degree of quickness with which each pulsation is accomplished; 3rd, to the character of volume, hardness, or strength of each pulsation; 4th, to the equality or inequality, either of the pulsations themselves, or of the intervals occurring between each; 5th, to the various impressions each pulsation may produce on the finger.

The different characters and names which have been given to the pulse are exceedingly numerous and very confusing, while few, if any, of these probably may with truth be regarded as simply a deviation from the normal character in any of the different manifestations now named; that is to say, that rarely do we in disease find a pulse simply a frequent pulse or an irregular pulse; most usually it is a modification of two or more of the characters under which we have attempted to classify them.

Also it is necessary to remember that, with every other exhibitional phenomena of disease, the condition of the pulse alone is not to be relied upon as of itself an unfailing index of functional or structural change; that, to be of any real value, it must be read or interpreted in connection with other features, symptoms, or indices of changes. The variations also to which, even in the same breeds, or even the same individuals, under somewhat varying conditions, the pulse is liable must not escape our notice. Under circumstances as nearly similar as possible animals of the same breed may be found exhibiting a variation, as to frequency of the number of the pulsations, extending to five or even ten in the minute.

1st. Alterations of the number of the pulsations in a given time. The frequent pulse (*pulsus frequens*), one which strikes more frequently in a given time. This must not be confounded with the *pulsus celer* (the quick pulse), one which

strikes quickly against the finger, where the sensation is sharp and quickly accomplished. The frequent pulse, unless the increase in the number of the beats is considerably over what has already been indicated, and occasionally even not then, is not always indicative of disease. It indicates increase of the cardiac contractions, and this may be the result of excitement or disturbance; any unusual movements or sounds are with some horses provocative of a considerable increase in the number of the pulsations in a given time. When, however, there are no extensive exciting circumstances in operation the fact of an increase of 25 per cent. in the number of the pulsations may safely be regarded as indicative of febrile disturbance, and ought to draw our attention to compare this state with such others, as the respiration and temperature. This condition of simple frequency of the pulse must not, however, be at once regarded as indicative of a truly sthenic state of the system—probably is oftener met with in the very opposite. The heart in all cases where, from insufficient vigour, it is unable to transmit a sufficient quantity of blood to the different parts of the body, seems disposed to attain this end by frequency of propulsive efforts—increased number of contractions.

There is little doubt that, acting on this belief, that frequency of the pulse indicates inflammatory action in many animals, men as well as horses have been unfairly dealt with, and that in both instances energetic phlebotomy has at once and for ever destroyed their chances of recovery. How often do we hear it recommended to take blood because the pulse is high and inflammation is imminent or in rapid progress? Certainly, these ideas are in our day rather at a discount; but, as the time is not so far over past when it was otherwise, and as I know well that there are still districts where the belief is strong and the practice is considered orthodox, it is well to remember that neither science, pathology, nor practical experience endorse either premises or conclusions.

Increase in the number of the pulsations in a given time does not of itself indicate inflammatory action, nor does bloodletting in any amount reduce this frequency, but the opposite; while, at the same time, it ought to be remembered that, granting the presence in the blood in inflammation of an extra amount of certain constituents that we cannot by depletion deal with the blood but as a whole, and that in abstracting what we consider abnormal and inflammatory, we also remove that upon which we have to depend for recuperative action.

The opposite of the frequent pulse—the infrequent pulse

(*pulsus rarus*)—sometimes confounded with the slow pulse (*pulsus tardus*), otherwise recognised as the long pulse, the opposite of the quick pulse. In the slow or long pulse the beat of the vessels is prolonged beyond the normal time, indicative of slow or prolonged contraction of the heart's cavities.

This combination of pulse—the infrequent and tardy—is generally found associated with, or may be said to be indicative of, cerebral mischief, as compression, coma, epilepsy, &c.; it is also observed in severe functional disturbance of the digestive organs.

Certain medicinal agents in physiological doses induce this condition; an infrequent pulse is also seen in structural diseases of the heart, where the impaired cardiac power is unequal to produce the arterial wave.

2nd. Alteration in the pulse as to the degree of quickness with which each pulsation is accompanied.

Quickness of the pulse, as already remarked, must not be confounded with frequency of its beats.

The former has reference to duration of the actual stroke or impulse of the artery, the latter to rapidity with which the beats follow each other.

The quick pulse is the pulse of irritation and of cardiac weakness.

3rd. In variations as to the character of volume, hardness, or strength of each pulsation we have many distinctions. The volume of the pulse may be greater (*pulsus magnus*), or it may be less (*pulsus parvus*).

The large or full pulse, where the artery is distended with the volume of blood, may be either associated with strength or with feebleness of impulse. In the former the artery does not yield readily to the finger, and the impulse is firm and distinct; it is the pulse of strong cardiac action, of plethora, or of capillary obstruction. The latter is sometimes termed the *oppressed pulse*, in which the artery feels full; it is easily compressed, but the blood-wave is indistinctly felt, or felt in a slightly jerking manner. This is the pulse of pneumonia.

A hard pulse (*pulsus durus*) is one in which the pulse of the finger seems to yield to the artery, not the artery to the pressure of the finger, and is dependent on the tonicity or contractility of the arterial muscular coats or wall. This quality or feeling of resistance, so to speak, may be associated with fulness of volume, but more often with the opposite; the calibre seems lessened, known as hard and small, wiry or thready, corded and incompressible. This hard and small pulse is particularly the pulse of acute disease and of

inflammatory action, probably specially so of membranous and serous structures in the earlier stages of that action.

A feeble pulse (*pulsus debilis*) and soft pulse (*pulsus mollis*) may be regarded together. In both the impulse of the heart is weak, the tonicity of the walls of the vessels lessened, and the volume of blood small. In the soft pulse the compressibility of the artery is very marked, and in the feeble pulse the stroke of the blood-wave is little felt. These conditions are encountered during the latter stages of exhausting diseases; they are indicative of weakness, anæmia, and serious structural changes.

4th. As respects the quality of regularity or irregularity, either of the pulsations themselves or of the intervals occurring between each, the character of irregularity of the pulsations and of their relations to each other is often rather curious and complicated.

The simplest form is irregularity as to the character of the pulsations, not as to the intervals occurring between them.

In these cases there may be a certain number of beats at regular intervals between each, followed by a lesser number, of tone, character, and force entirely different; the greater number may follow each other in regular succession, and be of normal character; the smaller number, following or preceding, may be quicker, stronger, or weaker; those interposed pulsations may be all of the same character, whatever the deviation may be, or they may be of dissimilar characters, or they may be marked by irregularity in the intervals which occur between each.

A modification of the irregular pulse is the intermittent pulse. In this form there is a beat omitted; this intermittency may be regular, *i. e.* occurring after a certain number of pulsations, or it may be irregularly intermittent, occurring at uncertain times in a given period. This pulse, although it may be met with in horses showing otherwise no abnormal conditions, and in these seemingly associated with or resulting from indigestion, is, nevertheless, to be regarded with grave concern. I have found both, as the irregular and intermittent, accompanying severe forms of catarrhal influenza, with pneumonic complications; also as a prominent symptom of the sequelæ of this disease—hydrothorax and of structural changes of the pericardium, also of chronic disease of the valves of the heart.

The dicrotic pulse (*pulsus dicrotus*), double pulse, is that in which the finger feels struck twice at each pulsation one

slightly, the other more strongly. In this state of the pulse there seems, from experimentation, to be a complete reversion as to the blood pressure in the circulation; the arterial pressure is diminished, while the venous is increased, and the capillary movement, instead of being uniform, is oscillatory.

The venous pulse (*pulsus venerum*) is the name given to that obvious throbbing of the large veins, particularly in the jugular; common enough in the ox, and then not necessarily indicative of disease; is, when marked in the horse, the usual accompaniment of certain grave cardiac lesion.

ON THE ACTION OF CHEMICAL AGENTS AND MEDICINAL SUBSTANCES ON THE LARVÆ OF *DOCHMIUS DUODENALIS*, AND *ANGUILLULÆ*; INCLUDING THERAPEUTICAL CONSIDERATIONS RELATIVE TO THE CURE OF PATIENTS FROM MONT ST. GOTHARD.

By Professor Perroncito, M.D., Turin,

(Communicated by Dr. Cobbold, F.R.S.)

The larvæ of the Anchilostoma possess greater resistance than those of the Anguillula of Bavay. The first are evidently stronger and resist far more the action of the substances that have been experimented with, prophylactically and therapeutically. The chemical and pharmaceutical preparations which kill the larvæ of the Anchilostoma, kill also those of the Anguillula. The concentrated solution of chloride of sodium kills them in a period of time agreeing with the percental degree of the saturating substance. The larvæ of Anguillula in the second state die in a few minutes in the solutions at 8 to 9 per cent.; those of Anchilostoma, lately capsuled and immature, die also soon in the dilutions of 9 to 10 per cent.; if mature, not yet calcified in the solutions at 12 per cent., die in five or six minutes; the mature ones with calcified capsule I have seen resist till beyond 24·25 in solutions of fifteen and sixteen of chloride of sodium. In the dilution of bromide of potassium at 10 per cent. the larvæ of live Anchilostoma were found alive after half an hour.

In a 2 per cent. solution of chloride of mercury the larvæ in their first stadium of free life were seen to die in not more than fourteen minutes; the mature ones instead, put in the same dilution after forty minutes, were still all alive.

In a 5 per cent. solution of chloral hydrate after three hours the larvæ in the first and second stadia were still alive.

In sulphuric and hydrochloric acid they die very soon, one might almost say immediately. In commercial sulphuric acid in 60 per cent. of water they were seen to die in three minutes; in the dilution at 20 per cent. they died in fifteen or sixteen minutes; in an insecticide liquid sent me by the famous chemist Dépérais, for experiments of another kind, the larvæ die in less than one or two minutes.

In solution of ferric acid at 1 per cent. the immature larvæ die in from four to six minutes; in that of 3 per cent. in three minutes, and in solutions more highly concentrated (at 4 to 5 per cent.) they died in less time, even the mature ones.

In thymic acid dissolved in the proportion of 1 to 2 per 100 the immature larvæ die soon, the mature ones in eight to ten minutes.

In solutions of sulphate of sodium at 1, 2, 3, 4, 5, 6, 7 per cent. even the larvæ of the Anguillula live a long time.

In a solution of phosphate of sodium at 8 per cent. in alkaline reaction, after half an hour were still alive.

In a solution of bisulphate of potassium at 8 per cent. at acid reaction, after thirty-five minutes they were not yet dead.

In pure glycerine the mature larvæ still gave signs of life after twenty-five, thirty, till beyond forty minutes.

Larvæ in different degrees of growth put in ethylic alcohol at 36° died in five minutes.

Having heard from a patient from San Gottardo that he experienced evident benefit from the use of wine, and especially from intoxication to drunkenness in less degrees, I wished to try the action of wine on the larvæ, and I saw that in Nebiolo and Barbera (bottled wines from the province of Asti) after three quarters of an hour, nearly contemporaneously, their movements stop; however, they soon became active again when the preparations were warmed and carried to a temperature about equal to that of our organism. After an hour they were still alive, and though they moved, they always remained in the same place. After an hour and twenty minutes the movements ceased, nor did they recommence, though the temperature was maintained at 37° C.

Mature larvæ encapsuled and discysted put in good Marsala, received through the kindness of my friend Prof. Bizzozero, became soon very lively; twenty minutes after the movements grew slower, forty-five minutes after they became very weak, and were only discerned now and then. After an hour and forty minutes they were, however, still alive. It is to be noted the experiment was made as follows:—On a glass slide was put a drop of water containing the larvæ, to which were repeatedly added drops of Marsala. Many larvæ, however, in the first day of capsulation, treated with plenty of Marsala in a watch glass, began to die after twenty-five minutes, and were found all dead after an hour and twenty minutes. In santonate of soda and in the infused saturo of corallina, they were seen to live beyond six hours, without having shown suffering or alteration.

A drop of water containing larvæ of mature Anchilostoma, exposed, in a damp room, to the action of the vapours of essence of turpentine, after six hours the larvæ were still very lively.

In the infusion of kamala the larvæ, even in their first stadium, were still alive after twenty hours.

In the infusion of kousso, cold and hot, they were very lively for more than an hour. In a strong tænicide of Drs. Haidlen and Haek, of Stoccarda, mature larvæ lived over forty minutes. In the ethereal extract of male fern, old and well prepared, they died very quickly; in less than five to ten minutes their motion ceased completely and their life.

The knowledge of the history of the development of the helminths, cause of the disease at San Gottardo, and the results of the numerous experiments made on the larvæ by means of heat, chemical reagents, and different pharmaceutical substances, now suggest to us the means adopted to prevent the disease with certainty, either with labourers or other individuals that may henceforth be employed in excavations analogous to that of the Cenisio, S. Gottardo, &c.; and what is the most important in the present state of things to cure so many poor creatures, incompetent to work, and hurtful to themselves and their families.

When the perforation of another mountain is to be undertaken, Mont Blanc, for instance, or a similar work, the first thing to be done should be to examine (medically) all the labourers before their being accepted, so as to exclude entirely (or to keep them under given conditions) all those proved to be infected, though but slightly, by Anchilostoma or Anguillulæ. By a vigorous execution of this rule the importation of the germs will be obviated, or, better even,

that of the spawn or larvæ of the three helminthic species studied, which in our case are the cause of the anæmia. And as it might easily happen that some or even a certain number of labourers might escape the most minute clinical examination, so, to hinder the dissemination of the infecting germs, the excrements should be carefully collected and disinfected with such solutions, saline, acid, simple or complex, or with such other means as I recognised to have the privilege of hindering the fructifying of the eggs, the development and life of the larvæ. Amongst the substances calculated to produce these beneficial results, I limit myself to the indication of the most economical and efficacious, such as the concentrated solutions of chloride of sodium, dilutions of ferric acid of at least 2 per cent., of sulphuric or hydrochloric acid to the strength of 20 and more per cent., and, above all, of the vermicide liquid Dépérais, that may, perhaps, find an extended and economical practical application in the works that occupy us.

In any case the careful collection and torrefaction of the fæces of the labourers in the first twelve hours (if possible, even immediately) would constitute a sure means of hindering the development of infective germs. It would be sufficient even with a particular system of tubulation and heating the alvine matters to a temperature of 50° C., to be afterwards used safely as manure. With these rules even the infected labourers could not in any way spread the disease, and they themselves would be preserved from successive hurtful infections of the same parasitic species. The waters and other drinks that might be in any way contaminated by the larvæ of the nematodes in question should be heated to 55—60° C. to render them wholesome, non-infectant. The food that is eaten raw or half-raw (salads, *e. g.*) should always be carefully washed, so as to be sure of their perfect purity.

In the patients of the Gottardo the organic strength should be sustained with food of easy digestion, very nourishing, aided by the best tonics and reconstituents, proceeding at the same time to the killing of the nemato-helminthic species that constitute the fundamental cause of the oligoemia. I am profoundly convinced that none of the patients subjected to treatment with the best anthelmintics, with a good meat diet and generous wine, need succumb, unless the anæmia have arrived at that extreme degree in which the organic faculties cease to regenerate the blood; still less if at the same time they take preparations of iron and bitters. The experimental results of the action of divers substances on

the mature larvæ of the Anchilostomæ and the Anguillulæ, allow me to dissuade from the use of several common anthelminthics. The ethereal extract of male fern appears to me most adapted to kill the different parasitical species; only it must not be thought that one or two doses will be sufficient to liberate the intestines from thousands and perhaps millions of helminths that live on chyle and blood.

The medicinal substances, of whatever nature they may be, arrived in the stomach begin to dilute, and this dilution is still greater in the intestine. Hence the fact of the inefficacious action of an anthelmintic, even powerful, on great numbers of parasites. In such a manner is explained why the vermifuges employed till now have not produced all those results that were to be expected, and the necessity of repeated and frequent doses of those substances that have incontestible results. A young oligæmico of S. Gottardo, with an extraordinary number of Anguillulæ, tolerable quantity of Anchilostoma, and a certain number of ascarides, subjected to doses of ethereal extract of male fern, after the first draught experienced such relief that the intestinal Anguillulæ were soon reduced, and the strength of the individual was increased. A dose of santonin being administered (to combat the ascarides), the day after another of male fern, after having advised him to use plenty of generous wine, I let him return to the country and return to those exercises to which he was used; and though the diet at his home was not of meat, still ten days after he came to tell me how his physical state had gained, that he no longer felt tired as before, that he could walk freely, and had returned to work harder than ever at his trade of shoemaking. That his general health was greatly improved one could see from his face, that had become rosy. Proceeding to the clinical examination as to his helminthesis, according to the means adopted before, I perceived that the spawn and larvæ had greatly diminished. Nevertheless, I made him take two more doses of santonin and two of ethereal extract of male fern. After this second treatment I knew of his well-nigh complete cure, revealed to me by other young patients of S. Gottardo, who told me that the individual in question was in excellent health and had returned to his work.

SYNOPSIS OF CONTINENTAL VETERINARY JOURNALS.

By John Henry Steel, M.R.C.V.S., F.Z.S., Demonstrator of Anatomy at the Royal Veterinary College.

(*Continued from p.* 770.)

Summary.—"On a Flesh Diet for Horses," from the *Recueil de Médecine Vétérinaire.* "On Gangrenous Stomatitis," by M. Lenglen, from the same. "On *Filaria lachrymalis* causing Inflammation of the Eye of a Cow," by A. Perdan; "Paralysis of the Œsophagus of a Cow," by Dr. V. Ow; "Yellow Fever in Horses and Dogs," by Dr. Beauville; from the *Monatsschrift des Vereines der Thierarzte, in Oesterreich,* November, 1880.

The power of digesting animal matters of a doughy consistence, in a state of fermentation, had been discerned and examined by the Arabs of the desert, who—as our colleague, M. Laquerrière, teaches us in an interesting article on "Feeding the Horse with Horseflesh"—from time immemorial cooked cakes into which the flesh of camels largely entered. These were designed for their horses, and gave a highly nutritious diet in small bulk and very portable. This Arabian practice, proved useful by the experience of ages, and now explained by science, ought to encourage us to undertake and carry out experiments as to the use for food by the horse, and especially the army horse, of cakes in which the meat has been incorporated and *digested* during fermentation. In his article published in the *Abeille Médicale* (3rd June, 1879) M. Laquerrière recounts the trials he made, during the siege of Metz, to feed a certain number of horses on horseflesh, and he was able to determine by these experiments, which were interrupted by the disastrous capitulation of 28th October, "that the horse can perfectly eat, digest, and assimilate raw or cooked animal matter." Since, then, the horse can be transformed into a carnivore, nothing is more logical, in a besieged town above all places, where the supplies are daily decreasing, than that advantage should be taken of this special aptitude to maintain his strength by means of the flesh of defunct animals of his species, and thus to keep in good condition for work such an important "arm of war" as the horse. Such is M. Laquerrière's view, as explained in his note, and illustrated experimentally at Metz. His experiments, indeed, are conclusive. If, in

spite of the numerous imperfections necessarily present in his experiments, M. Laquerrière succeeded in making a horse eat meat, and especially horseflesh, how much easier would be the introduction of an animal regimen for solipeds, and perhaps for other herbivora, if the meat destined for this use, in place of being given in its natural state, had been incorporated into a fermentable mixture, and has undergone such changes as a result of fermentation as to now consist solely of proximate constituents, intermingled with those of the dough itself.

"In a note of the number of the *Abeille Médicale* for 31st May last M. Decroix tells us that M. Laquerrière's original article having been reproduced in the *Veterinary Journal*, M. Dünkelberg, Director of the Poppelsdorf Agricultural Academy, was persuaded by the results there cited to make experiments on horses of a squadron of English dragoons with American preserved beef, which had been incorporated with bruised oats to form a biscuit (?). A supply of this food was given daily, instead of a corresponding quantity of oats. According to the account of these experiments, given in the May number of the *Veterinary Journal*, the horses of this squadron showed a marked superiority at the autumn manœuvres of last year to those horses fed in the ordinary manner. In consequence of this the English Minister of War has ordered further experimentation with the "meat-meal biscuit." M. Dünkelberg suggested the use of this food for race-horses, since, though highly nutritious, it does not tend to the production of fat."

"M. Decroix, who a long time ago advocated the utilisation of the flesh of all animals which died naturally or artificially, even in spite of disease and decompositions, since cooking destroys all virulent properties, points out, as a great advantage of the introduction of meat into the *régime* of herbivora, the possibility of preserving, by the most perfect process, a considerable quantity of alimentary material, such as ordinarily goes to waste."

"Without adopting extreme views we may conclude that the time is come when a serious experimental investigation of the question of animal matters as food for the horse, and especially for the army horse. M. Scheurer's method happily removes all practical difficulties in the way of its application by permitting us to avoid all those manipulatory processes which the actual use of meat given raw or cooked would necessitate. If, as we are warranted in believing from the lengthened experience of the Arabs, a cake composed of flesh and flour can serve as food for the horse, it will be pos-

sible to store up in those cakes, the preservation of which is easy, that latent force which is contained in carcases, and to reserve it for utilisation at a selected time in the organism of herbivora. M. Laquerrière has done good service in showing by his experiments, so well adapted to the circumstances under which they were undertaken, and of so useful a bearing, the possibility of making the horse a *hippophagous animal*, and consequently, of making dead animals contribute to the preservation of the life and strength of the survivors."

On Gangrene of the Mouth in Young Calves, by M. Lenglen, of Arras.—"Authors on human pathology describe, under the name of 'gangrene of the mouth,' a mortification, spontaneous in appearance, of the buccal walls, affecting especially children subjected to prejudicial influences, to a diet incomplete or bad, debilitated by sickness, or, in a word, submitted to hygienic conditions which alter the constitution little by little. I have not found this disease described in any of the works on veterinary medicine which I possess; and, as I have often observed cases of it, I am about to bring it before the notice of my *confrères*. I am going to do so by reporting a number of cases noted recently. They will suffice, I hope, to enable attentive readers to obtain a correct idea of the conditions of its development, of its symptoms, progress, and the little success resulting from the treatment practised."

Case 1.—Female calf, Flemish; red in colour; eighteen days old; in possession of proprietor fourteen days. Had been judiciously changed from the milk-and-water diet given by the dealer to good milk. Pedigree absolutely unknown. It had drunk well since its arrival at the farm, and still continues to drink, but only in small quantity, and on opening the mouth might be seen on each side of the cheeks large greyish spots, which from day to day become much increased in size.

February 15th.—Appetite good; general health good, but animal a little dull; pulse normal; was taken very good care of by the owner. A small amount of saliva accumulates at the commissures of the lips. The buccal mucous membrane has its normal colour everywhere except at the level of the anterior molars on the left side and of the third right molar, where are two grey spots, about the size of a sixpence, and the tint of which singularly contrasted with the pinkish colour of the neighbouring parts. On close examination it becomes evident that this lesion is due to a necrosis of the buccal mucous membrane, and of the subsequent tissues, which are reduced to the condition of a tenacious putrid

mass, fairly consistent, and of a bad odour. On scraping the ulcerated surface with the finger we may detach material, of about the size of a small pea or bean, which yields between the fingers, and becomes a sort of confused mass by loss of all traces of organisation. The living tissues thus exposed are of a red colour, bleed readily, and here and there may be seen greyish points, indications of necrotic invasion. The centre of the mortified mass is strongly adherent to the tissues of the cheek, and in the cleansing of the wound, which was immediately performed, some difficulty was experienced in separating the deeper parts. Everywhere else the mouth is healing.

Treatment.—Cleanse the two ulcerations twice a day, removing as much of the necrosed material as possible without causing bleeding. Dress twice daily with solution of perchloride of iron. Nourish well, giving a little coffee daily, and exercise moderately in the fresh air.

February 19th.—The case has become aggravated. On the outer surface of the two cheeks and on a level with the ulcerations, are two hard tumours, and painful on pressure. The ulcerations much larger than on the 15th. They have become black, evidently in consequence of the chloride of iron used as a lotion, and showing no sign of cicatrization. The calf drinks well, but has fallen away in flesh considerably. Pulse 82, and rather small; conjunctivæ somewhat injected; considerable debility; prognosis unfavorable. The owner urged more energetic measures. Consequently six grammes of chloride of potash was administered daily in addition to the measures previously adopted. This was continued for five days, when there was evidently no longer any room for hope of a cure. The animal lay stretched out on its side, the mouth was filled with frothy saliva impregnated with greyish matter; respirations much accelerated; pulse imperceptible; conjunctivæ of a deep red colour. Severe diarrhœa had been present for two days and the posterior parts of the body were covered with filth. The calf was destroyed and autopsy proceeded with forthwith. It disclosed a sanguineous suffusion of the last part of the colon, pneumonia of the inferior two thirds of each lung; but the principal and essential lesions were found in the head. The trachea and larynx contained a little frothy mucus. The vocal cords were slightly œdematous and of a dark red colour. Mucous lining of the pharynx thickened, of a violet tint, but nowhere showing the slightest trace of gangrene. By means of a lens magnifying about four or five times, might be easily seen here and there some points

of darker colour than the neighbouring parts, but without the least trace of ulceration. In the mouth the mucous membrane of the tongue healthy. The only apparent lesions, against the first and second left molars and the third and fourth right, were two large deeply penetrating ulcerations extending even through to the skin, which is itself ulcerated.

The ulcerations covered with a black detritus of repulsive odour, and with difficulty separable from the neighbouring tissues, the gangrenous part about two millimètres in thickness, and tearing somewhat readily on traction. Underneath this dead layer a yellowish border, of about half a millimètre in thickness, very tenacious, in it. One can recognise with difficulty the presence of muscular fibres, cellular tissue, and the deeper structures of the skin. All the surrounding structures of the cheek are the seat of an intense congestion. The two ulcerations from 3 to 4 centimètres in diameter, and with their depth decreasing towards their margins. The gums also the seat of a violent irritation. Within the third lower right molar, and a little below the position where the gum has been pierced or rather cut by the free border of the tooth, which is scarcely cut, a small tubercle about the size of a lentil, of a whitish colour, solid, and adherent to the membrane. On raising this the dermis of the mucous membrane is exposed, which is of a bright red colour, from its circumference to the seat of mortification. This evidently is the commencement of a mortification which, had the animal lived, would have assumed the characters of the others. The pharyngeal glands are enormous, red, and have lost their firmness. Blood presents no marked features except its bright rose-colour, analogous to that which we always see in calves killed without being suspended by their hind limbs. Cicatrisation of the umbilical cord complete.

In Case 2 the free margin of the tongue on the left side was the seat of an ulceration, which had caused a deeply-penetrating lesion of the organ, large enough to contain a pigeon's egg; also the buccal mucous membrane and the gum of the left incisors, at the point where they correspond to the left anterior extremity of the tongue, in a state of mortification. There is, in fact, all along behind the incisors a greyish patch, limited in front by the teeth, behind by the openings of Wharton's duct. The buccal mucous membrane mortified throughout the whole of its depth, but offers some resistance to the separation of the slough.

Treatment.—Removal of the mortified parts, cauterisation

of the ulcers with the hot iron (the animal exhibited no signs of pain). Mouth injected twice daily with tincture of quinine, after the cavity had been carefully cleaned out; also fifteen grammes of chloride of sodium daily dissolved in the drinking-milk. Drink frequently given, and the cow-house to be kept in good order. After invading the whole length of the tongue, the ulceration (five days later) seemed inclined to limit its extent by the formation of a red line of demarcation. Seven days later the animal died. In this very severe case the superior maxilla was necrosed below the ulcer, and the retropharyngeal lymphatics were enlarged and soft. The patient was three days old when first affected.

Case 3.—Aged five days, belonged to the same lot as Case 2, and was simultaneously attacked. It was treated and *cured* within eighteen days by washings with salt and water, removal of the gangrenous parts, and dressings with solution of perchloride of iron twice daily.

Case 4.—A male calf, three weeks old, born on the farm, treated early with success. "The cause of the disease in this case was undoubtedly umbilical phlebitis," as also in Case 5, which died on the ninth day, presenting on autopsy the ordinary lesions of the mouth, liver increased in size, and suppuration of the umbilical vein, whence it terminates against that organ.

Case 6.—Female calf, aged 28 days, also suffering from umbilical phlebitis. Here an abscess traversed the cartilage of the inferior maxillary symphysis, and burst below in the chin. The patient died on the thirty-ninth day, having all the floor of the mouth diseased from the first molars to the incisors, the maxillary bone being exposed and covered with a layer of greyish caseous matter of a decidedly gangrenous odour. The lung was affected with *disseminated lobular pneumonia* invading the two lobes, and the liver was increased in size by congestion.

Case. 7.—Attributed to an attempt to rear the calf (aged one month, a female) on toast and water. Died.

Case 8.—Holland bull, aged about one month, kept in a most unhealthy house. Cured after twelve days' treatment.

Case 9.—Durham-Flemish calf, aged 22 days. Cured after fifteen days.

Case 10.—Female calf, Flemish, aged 15 days. Treated with sea-salt, coffee, and brandy. Cured after three weeks.

"These cases suffice to prove the occurrence in calves of the disease seen in children. It is not confined to bovines,

for I have seen it in two colts, one aged 15 days, the other about 5 weeks, and among lambs, averaging from 5 to 6 weeks, and placed under bad hygienic conditions." The paper is to be continued.

We summarise the excellent remarks of M. Lenglen, for on the morning when they first came under our notice we received from Mr. Nicholson Almond, M.R.C.V.S., the head of a calf, which seems to us to exhibit the lesions above described. This has been brought before the Veterinary Medical Association, and is at present under consideration.

Tear-Round-worm (Filaria lachrymalis) as a cause of Inflammation of the Eye in a Cow, by A. PERDAN, Government District Veterinary Surgeon. A cow was brought from one of the subdivisions of the District of Tschernembl, which, according to the statement of the owner, had for a long time been suffering from "weak eye." He was right to a certain extent, since on the near side the lids were so much swollen as to obscure the eyeball. The inflamed lids having been separated after a great deal of trouble, a number of small white thread-like worms (ten millimètres in length), in constant eel-like movement, could be observed on the surface of the cornea opaca, and also that of the cornea pellucida. The internal structures of the eye were sound and exhibited no pathological changes. Since these worms were present in large numbers, and could not be conveniently removed by the forceps, an endeavour was made to destroy them by means of a weak collyrium of *Lapis infernalis* with tincture of opium; this seemed to be effectual. "How these worms came into the eye cannot be definitely ascertained; the owner thought they had been obtained from the fodder."—*Monatsschrift des Vereines der Thierärzte in Oesterreich*, November, 1880.

Paralysis of the Œsophagus of a Cow, by Dr. V. OW.—The animal suffered from chronic tympany, considerable flow of saliva intermingled with mucus, and frequent vomition. Neither during life, nor after death, could any foreign body be found in the pharynx or gullet. Matters, liquid or solid, after ingestion were returned. The patient became much emaciated, and after death no satisfactory cause of the paralysis could be determined.—*Thierärztliche Mitheilungen*, No. 9, 1880.

Yellow Fever in Horses and Dogs, by Dr. BEAUVILLE. This author has inserted a communication in the medical organ of Havanna, in which he describes a sickness of horses and dogs, which is considered to be to a certain degree identical with the yellow fever of man. From the symptoms enume-

rated, may be selected "the yellow colouration of the Schneiderian membrane and bleeding from the nostrils, ecchymoses on the intestinal and renal lining membrane, ulcers in the alimentary canal, enlargement of the spleen, and crupous deposits on the respiratory mucous membrane." Although this disease prevails in association with yellow fever of man, this cannot be considered sufficient to establish their identity. Hitherto no cases of communication of yellow fever from man to animals have been observed, and we must wait for such a confirmation before we shall admit into veterinary science yellow fever to be classed with the contagious disorders.—*Repertorium der Thierheilkunde*, 4 Heft, 1880.

THE TRAINING OF VETERINARY STUDENTS.

By Professor WALLEY.

EDINBURGH; *Nov.* 16*th*, 1880.

SIR,—In the published reports of two meetings of the profession recently held, viz. that of the North of England Veterinary Medical Association, and that of the Council of the Royal College of Veterinary Surgeons, remarks of mine in reference to *the training of veterinary students* are reported, which without a little explanation may by some be taken in a light other than that which I intended; and, in passing, I would observe that I think in all reports of discussions of the kind there should be no curtailing of the statements made by those who take part in them, as such a proceeding is apt to lead to wrong inferences.

At the first meeting mentioned, I am reported to have said that "*as a rule* the sons of veterinary surgeons and practical men make the worst students." Now, I am not conscious of having made such a sweeping statement; certainly my intention was to assert that "*very frequently*, instead of as a rule, the sons of veterinary surgeons, &c.;" and at the Council meeting I distinctly said, "I had seen four and a half years' practice before entering college, and when I became a student I felt I had to a large extent commenced the wrong way, and that I had much to unlearn." The expressions attributed to me in the report would, if they were literally true, have been a poor compliment to my preceptors for whose instructions I have much to be thankful

in my professional career, and the value of which I have ungrudgingly acknowledged elsewhere.

In discussing the matter of veterinary education it must be borne in mind that there are several points of view from which to look at the question, viz. that of the town practitioner, the country practitioner, the teacher, and the teacher and practitioner combined; of these several individuals I think it will be conceded that the latter has the best opportunities of obtaining data upon which to base valuable conclusions.

What, in each of the discussions to which I have referred, I wished to impress upon the profession was, that in my opinion (founded on a large and varied experience) a *prolonged* period of pupilage prior to entering college is a disadvantage to students, and in the following ways:—(1) a student who has been engaged several years in practice does not, in the majority of instances, settle down kindly to the study of technical subjects; (2) he frequently imbibes ideas with reference to disease which are at variance with scientific pathological teaching; (3) after a prolonged period of activity in his profession, the sedentary life of a student acts injuriously (temporarily and sometimes permanently) upon his health; (4) during a three or four years' pupilage he will have spent a sum, in many cases of £300 or £400, add to this £200 or £250 for college expenses, and very frepuently another £300 or £400 to start him in practice, and he has spent a little fortune before he has had a chance of earning one penny; and further, after all this expenditure he finds that the parliament of his profession is powerless to prevent his own groom (whose education has not cost him a farthing) from actively opposing him, or adopting the title to which he alone has any moral (not legal) right.

I conscientiously and earnestly urge upon my professional brethren the advisability of allowing their protégés to intermix the practical with the theoretical. If they think it best that they should have a pupilage first, let it be only for a period of a few months (six or eight), then have a session at college and pass the three subjects of the first examination, followed by a few months' practice, and after the second examination a still further period of practice. By the adoption of a plan of this kind students would not look upon study as a bore, they would be trained to habits of study and scientific observation, their practical lessons would be enlightened by the teachings of science, and they would get more out of one case than they otherwise would

out of twenty. Furthermore, in the course of time a body of men would be raised up calculated to improve the position of our noble and beloved profession in the eyes of the world. Scientific inquiries into veterinary pathology would not be handed over to the human pathologist, and the animal creation would be the first to benefit most largely by the system.

If the general body of the profession were in harmony with the teaching of the schools, this matter would wear a different aspect; but that such harmony does not exist is proved by remarks often made in communications to the journals as to what is and what is not taught in the schools, and still more forcibly by the fact that the uses of such adjuvants to practice as the subcutaneous injection of drugs, the administration of chloroform, the employment of the écraseur, &c., are frequently discussed at association meetings as if they were matters new and rare, instead of growing grey with the hoar of age.

I might say much more on this subject, but I think I have said sufficient to indicate the views I hold upon it, and as I have freely given so I hope I shall receive.

ON PLANTS IN RELATION TO ANIMALS.

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

(*Continued from p. 775.*)

THE remaining species of clovers now to be considered are those with yellow flowers, consisting of the following (*flowers yellow*):

1. *Trifolium filiforme* . . Lesser Yellow Clover. Heads, of from three to five lax flowers, small.
2. „ *minus* . . Medium Yellow Clover. Heads compact, of many flowers.
3. „ *procumbens* . Hop Clover. Heads of flowers persistent and compact, simulating the strobiles of hops on a small scale.

1. The lesser yellow clover is remarkable for its smallness of size and complete prostrate habit. It is at once distinguished from its few lax flowers. It is a plant which may

at once be distinguished as an annual; at the same time there is reason to conclude that, when prevented from flowering by the constant cropping of sheep, it may continue its growth even beyond a second year.

This, and perhaps the next species, have been recommended for cultivation under the name of suckling clover, as all young stock eat it down very readily; indeed, it is stated that cattle and sheep are so fond of it that a specimen can scarcely be had in any pasture to which they have access.

It is very partial to calcareous soils; the Oolitic beds grow it in profusion, the absence of which may be the reason why it is so seldom met with in Scotland.

2. The medium yellow trefoil is at once distinguished by its denser head of flowers, and generally larger parts. It is capable of yielding a greater amount of produce, and hence, on calcareous soils, we should recommend a slight admixture of its seed in laying down permanent pastures, as also in those mixtures which are employed for renovating old pastures. If it be desirable to grow this plant for young stock on other than calcareous soils it can be encouraged by a dressing of lime, which, indeed, should always form a part of the composts of pond and ditch scrapings, which are so commonly collected for the dressing of permanent pastures. In districts where the road metal consists of mountain limestone, as in parts of Gloucester, Worcester, and Dorset, or in others, in the same counties, where Oolitic limestones are employed for road making, the road scrapings should be carefully collected for adding to the compost heaps, which, indeed, should always be preparing as dressings to pastures.

This plant, like the former, bears clipping remarkably well, for though it would be difficult to find a specimen in a field while being depastured, it soon branches out and grows up all the stronger when left for a period of rest. Like the preceding, it is common on limestone soils and in limestone districts.

3. The hop clover, when the flowers begin to wither, is distinguished by the compact brown head, with the persistent striated standards so conspicuous as to appear like a bunch of hop blossoms, whence the name.

It is larger in all its parts than the *T. minus*, though in other respects it bears a somewhat close resemblance to it. It is a common plant in hedge-rows and by way-sides, when it sometimes attains a size which would render its cultivation advantageous. On this account it was formerly grown in mixtures of grasses called "seeds" by the farmer, and,

therefore, its seed is to be obtained from the seedsman, but the truth is the section of clovers now described do not yield enough herbage, as a rule, to make them profitable as crop plants, and hence their places have been supplied by some clover allies, and notably that of a plant known by the same trivial name, namely, hop trefoil; its botanical name, and with generic and specific characters, is very distinct.

This plant has been referred to before under the head of *Medicago lupulina*, the hop trefoil of the farmer, but not of the botanist.*

At present we pen a few remarks on this medick, with the view of establishing its differences when compared with the true clovers, as also to furnish some additional notes upon its value as a fodder plant:

Characters of Hop Clover.	Characters of Nonsuch Medick.
Trifolium procumbens.	*Medicago lupulina.*
Stem procumbent; leaves trifoliate; flowers yellow, persistent, turning brown when ripe; pod straight, and covered over by the dried floral membranes; seed kidney-shaped.	Stem procumbent; leaves trifoliate; flowers yellow, deciduous; pod incurved, green at first, but black when ripe; seed ovoid.

When seen together in a growing state the difference is very marked, as the rounded or ovate head of the clover has the appearance at first sight of a small strobile or bunch of hops, being, when ripe, of a yellowish-brown hue, like the hop; whereas the hop trefoil, medick, or nonsuch, in the ripe state, shows a bunch of black incurved legumes.

The black medick is one of the most extensively used of the clover allies; the yellow clovers, indeed, were more grown until this plant was tried, when it was found that in cultivation it increased both in size and in succulency. It is much relished by all kinds of stock, both in the fresh and the dried state.

It is usually sown with ray-grass in the barley crops, in which much of it will seed the first year; such seed being sown, thickens the crop next season, or it may be that sheep may lightly graze the young seeds, and this will not do the injury to the medick as it would to common clovers.

As a wild plant, the black medick will be found everywhere, especially on calcareous soils, for, like its allies the clovers, it is partial to soil with lime in its composition, and hence all cases where it is grown lime should form a part of any top dressing.

* See *Veterinarian*, vol. liii, p. 471.

PARTURIENT ECLAMPSIA IN THE BITCH.

By Harold Leeney, M.R.C.V.S., Brighton.

This affection appears to have attracted so little attention in England that I venture to offer a few remarks upon cases which have left no doubt, at least in my mind, as to the existence of such a malady in the dog, although so eminent an authority as Mr. Woodroffe Hill says he sees no analogy between eclampsia of Mauri and parturient apoplexy proper.

That the condition described by Mauri follows upon parturition, and is the result of increased vascularity of the cord, there can be no doubt, and although in many important respects the symptoms differ from those usually seen in the cow, yet for the above reason it bears, I think, considerable analogy.

In the cases I have attended it has not occurred sooner than the fourth day after the birth of the pups, nor later than the fourteenth, but more frequently between those dates, and in bitches which have had large healthy pups drawing very vigorously at the mammæ.

Case 1.—The patient, a fox terrier bitch, was the property of Dr. Kebbell. She had given birth to four strongly developed puppies on the 25th September, and suckled them so well that they were as fat as little moles when I was called to see her on October 1st. I found the bitch sitting on her haunches, with a fixed eye and very rapid, noisy, respiration; so rapid indeed that it was impossible to count the number. The pulse also was correspondingly quick. Temperature 103°. Frothy saliva dribbled from the mouth, which she made occasional and apparently unsuccessful efforts to swallow. She appeared not to recognise her owner, and would now and again make an effort to rise, sometimes sinking down again on her haunches, and at others succeeding in walking round the room with a staggering and uncertain gait, falling down after a few seconds from loss of power over the hind extremities. The muscles would then become rigid, and indeed so far simulate poisoning by strychnia that the owner had a difficulty in believing that such was not the case.

The treatment consisted of a hot bath, to which some mustard was added, and an enema of the following emulsion:—Ol. Ricini, Muc. Acaciæ, and Syr. Rhamni. This was soon involuntarily passed out of the rectum, and a second quantity being injected, had the effect of bringing away some

hardened fæces. The paralysis became greatly diminished and the power to expel the contents of the rectum was the signal for a rapid recovery. I gave her 10 grs. of chloral, after which she fell asleep, and awoke apparently in good health next morning, and has so remained ever since. I should have added that I allowed one pup to remain with her all the time, but removed those of the others which were the strongest.

Case 2 was also the property of a medical man (Dr. Philbrick). I was called to see this animal (a pug bitch of the large Willoughby breed) at 10 p.m. on May 30th. The attack had commenced about an hour before I saw her, and in every respect it resembled the previous case described, with the exception that she seemed to recognise those about her, and showed great anxiety to find something, walking with the irregular gait of Case 1, and appearing very much disappointed that the object she sought was not in either corner of the room.

The warm bath with mustard and enema was used, and 10 gr. doses of the bromide of ammonia at intervals of one hour. Recovery was almost as rapid as in the other bitch. The puppies were ten days old, five in number, and all well nourished. One only was allowed to remain with her.

Case 3 was a black and tan terrier, the property of a tradesman. I was called to her on the 19th of April, and found my assistant in the act of taking her out of a warm mustard bath. How long she had been ill was not known, as she had a hamper to lie in, in the cellar, and had not attracted attention. She was quite calm and free from paralysis a few minutes after the bath.

This poor animal was endeavouring to bring up nine puppies, and they were all well nourished.

THE STATUS OF THE PROFESSION.

By the Same.

One of the things which tend to throw discredit upon our profession, and even to expose us to the ridicule of the dispensing chemist—who has often a good deal of weight with his customers—is the lamentable fact that few veterinary surgeons can or do write a prescription in decent Latin, even though they make abbreviations, and thereby save themselves the trouble of case endings.

The following is a prescription, not only *written* but *published,* in a recent veterinary work by a F.R.C.V.S.

"Tinct. Opii	20 drops.
Essence of Anisi . . .	30 „
Liquorice Extract . . .	1 ounce.
Linseed Tea	2 ounces."

If this were intended for amateurs why Latinise in part the first two ingredients? If intended for the profession what a compliment to us as educated men.

A few hours devoted to such a work as 'Selecta e Prescriptis,' would save many from the imputation of ignorance in other matters.

STRANGULATION OF INTESTINE OF A DOG, ASSOCIATED WITH INTUSSUSCEPTION.

By Samuel Gill, M.R.C.V.S., Hastings.

October 21st.—I was sent for to see a Newfoundland puppy, two months old, suffering from hæmorrhage of a bright colour from the rectum. On examining the patient, the visible mucous membranes were found to be blanched, the body and the extremities very cold, and the pulse weak and rapid. Perceiving that the case was hopeless I informed my client that the animal could not possibly survive many hours. I made every inquiry as to whether the dog had been ill before, and was told that he was always "lively and well and appetite good;" but that he suffered from an offensive diarrhœa, "and on going up steps he would give a growl as if in pain."

For the purpose of affording temporary relief beef tea and arrowroot were given every half hour, with doses of Liquor Arsenicalis.

22nd.—Messenger came to my residence early in the morning with a request to see the animal at once. On arriving I found him unable to swallow, in consequence of which I gave an anodyne enema with arrowroot. He expired 1.30 p.m.

Post-mortem examination.—Intussusception, some eight or nine inches in length was found, which it was impossible to liberate until a section of the intestine was made close behind the part. In doing this I discovered a large tumour, oblong in shape, and as large as a duck's egg. On cutting into it a dark coloured blood oozed out, and showed that the substance was attached to the mesentery, and that its pedicle was twisted around and caused semi-strangulation of the bowel, resulting in or leading to intussusception.

PARTURIENT INSTRUMENTS.

Note from Mr. Astley M. Metherell, M.R.C.V.S., Brighton.

Sirs,—I noticed in a recent number of the *Veterinarian*, that at a meeting of the "Yorkshire Veterinary Medical Association," Mr. Benson exhibited some instruments of his own invention for use in cases of difficult parturition. One of these, I venture to say, from an extended experience, is of peculiar value; I allude to the "clamp" for seizing the ear of the calf or foal.

The thanks of the profession are certainly due to Mr. Benson for this instrument, and I think that every practitioner will find it of great value in effecting delivery in the cases of preternatural presentation in mares and cows.

I am, &c.

Pathological Contributions.

CATTLE PLAGUE.

Since our last report no further information has been received as to the existence of the disease in Europe, with the exception of those provinces in Russia which border on Austria and Germany, and those adjoining the Black and Baltic Seas, where the disease still continues.

PLEURO-PNEUMONIA.

The measures which have been taken against the spreading of this disease at Brooklyn (America) and its vicinity, where it recently existed among cows in an aggravated form, are said to have had a beneficial effect, and that the disease is gradually diminishing.

This disease is reported to have appeared in some of the communes of the Department of the Somme in France, but not to be at present very prevalent.

In the Netherlands, from 5th September to 2nd October, only one case of pleuro-pneumonia occurred in the Province of South Holland.

FOOT-AND-MOUTH DISEASE.

This disease, which was reported to have lately broken out in a virulent form in the North of France, has now appeared among the cows in several of the communes of the Department of the Somme.

The disease is also gradually extending in this country.

SHEEP-POX.

This destructive malady, which lately appeared in the Grand Duchy of Mecklenburg-Schwerin, has now become epizootic in character, and is reported to be extending towards the western districts, although inoculation and isolation of infected herds are being practised.

Facts and Observations.

Melbourne Social Science Congress.—We have received the *South Australian Register*, from which we learn that Mr. Thomas Chalwin, M.R.C.V.S., has been elected, at a meeting of the General Council of the Melbourne Social Science Congress, a member of that body in the Department of Agriculture.

Effect of Feeding-cakes on Milk Production. By G. I. Hengefeld (*Bied. Centr.*, 1880, 233).—The author carried out his experiments at the Royal Veterinary School in Holland upon five cows, which for a while received 1 kilo. of maize cake in addition to their ordinary fodder, and in the second period the same quantity of linseed cake. There was no difference in the quantity of milk; the mean of six analyses showed the following variations in composition percentages:

	Water	Dry sub.	Fat.	Milk-sugar.	Albumin.
Maize . . .	86·35	13·65	4·40	4·13	5·12
Linseed . .	89·915	14·085	4·56	4·01	5·515

Both kinds of food produced milk of excellent quality, but the author states that the milk, butter, and cheese, after the feeding on maize, were of a more agreeable flavour than after the other fodder; the same should hold true of the flesh of maize-fed sheep.—J. F.—*Jour. Chem. Soc.*

THE VETERINARIAN, DECEMBER 1, 1880.

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

INFECTION AND RECEPTIVITY.

PATHOLOGICAL INQUIRIES are year by year tending more and more definitely to the conclusion that infective matter is a material thing, and not a mere property of morbid products, and the directors of future investigations must necessarily be in the way of identification of the material which is proper to each form of infection. This result once gained, the isolation and destruction of the infective material would, in all probability, present no serious difficulties.

In direct relation to the power of infective matter stands that state of system which enables the infective matter to act, a state which may be termed receptivity. How different this state is in different individuals of the same family even may be demonstrated by very simple experiments. We need only refer to a few well-known diseases to establish this proposition beyond question. Foot-and-mouth disease finds a receptive state of system for its special infective matter in a large number of animals of different species; others, such as the members of the equine family and the carnivora, are incapable of being acted upon. Pleuro-pneumonia of cattle appears to meet with the receptive state only in the ox tribe, and among them there are many instances of insusceptibility to the influence of the virus, while the receptivity to the poison of anthrax would seem to be almost universal.

Under varying climate, and other conditions which are not well understood, the degree of susceptibility to infective matter differs much among animals which are known to be susceptible to the influence of a particular virus. This peculiarity is evidenced in outbreaks of many infectious maladies, foot-and-mouth disease among them. This affection, under some circumstances, progresses slowly, and the

animals attacked soon recover, while at other times its spreading is rapid, and its victims suffer severely from its invasion.

Occasionally it has happened, as in the experiments at the Brown Institution a few years ago, that animals have been infected with great difficulty and only after repeated attempts, although large quantities of virus were employed; at other times, as recently at the Foreign Cattle Market at Deptford, the landing of a single cargo of animals, among which the disease appeared, the virus appears to cling to persons and substances so tenaciously that the disease continues to break out, notwithstanding all the precautions which were taken to prevent it.

Both in man and in the lower animals it is certainly the case that the spreading of an infectious disease depends more upon the degree of receptivity in individuals who are exposed to its influence than upon the presence or even the quantity of the infective matter.

Considerable importance must be attached to the circumstances, to which reference has been made, both from a pathological and sanitary point of view. It must, in fine, be evident that when a disease manifests a tendency to extend its area by mediate contagion the receptivity of susceptible animals must be unusually great, and, therefore, that all available sanitary measures have need to be imposed with more than common severity. Ordinary regulations which affect merely the movements of diseased animals are, under the new conditions, found to be insufficient, and restrictions have to be insisted on in regard to individuals not susceptible to the disease; and substances which may act as carriers of the poison agents, it may be remarked, are all the more dangerous, because they are likely to escape suspicion; and in dealing with outbreaks of the contagious maladies the sanitarian is always required to be on his guard, or his most elaborate precautions are rendered nugatory through the subtle influences of mediate contagion.

Extracts from British and Foreign Journals.

REMARKS ON MICRO-ORGANISMS: THEIR RELATION TO DISEASE.*

By Joseph Lister, F.R.S., Professor of Clinical Surgery in King's College, London.

The relation of micro-organisms to disease is a subject of vast extent and importance. If we compare the present state of knowledge regarding it with that of twenty years ago, we are astonished at the progress which has been made in the interval. At that time bacteria were little more than scientific curiosities; whether they were animal or vegetable, few people knew or cared; but most regarded them as animals on account of the active movements which they often exhibited. That they were causes of putrefaction, or other fermentative changes, was a thing not thought of; and the notion that they had special relations to disease would have been regarded as the wildest of speculations. Now, however, a mass of information has been accumulated regarding all these points, of which it would be hopeless for me to attempt to give even a brief sketch in the time at my disposal; and all that I can do is to present to the Pathological Section a few examples illustrating the progress which is being made in this department of research.

First, I will mention some examples of the labours of Dr. Koch, of Wollstein, in Germany. Though a hard-worked general practitioner, Koch has continued to devote an immense amount of time and energy to his investigations; and by a combination of well-planned experiments, ingenious methods of staining bacteria out of proportion to the tissues among which they lie, a beautiful adaptation of optical principles to render the coloured object discernible by the human eye, and, further, by a most successful application of micro-photography, he has succeeded in demonstrating the presence of these minute organisms in a manner never before attained.

The *Bacillus anthracis* is now universally recognised among pathologists as the cause of splenic fever, so fatal among cattle in this and other countries, and capable of being communicated to various other animals, and, among the rest, to the human species, as has been lately illustrated by the so-

* Address delivered before the Pathological Section in opening a discussion on the subject at the Annual Meeting of the British Medical Association in Cambridge, August 12th, 1880.

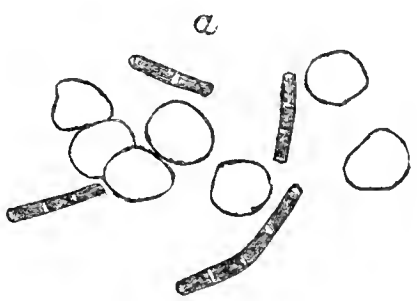
called woolsorters' disease, in the North of England. The *Bacillus anthracis* is a large form of bacterium, as is shown at *a* in the accompanying woodcut. It is there shown along with red blood-corpuscles of a mouse, and the rods of which it is composed are seen to be in diameter nearly one-fourth of that of the red corpuscles. Koch's method of staining the sections shows in the most beautiful manner that these bacilli are not only present in the spleen and some other organs, but that they people the blood in the minute vessels of all parts. Koch has thus added to our conviction that the bacillus is the cause of the symptoms, seeing that, as he remarks, it is impossible to suppose that an organism can develop in such enormous numbers at the expense of the vital fluid, without exerting a serious influence upon the system.

But the most striking and important results of Koch's method of investigation are those which relate to organisms of much smaller dimensions. He found that, if putrid liquid is injected under the skin of a mouse, the animal may die in the course of a short time, as the result of the chemically toxic effects of the products of putrefaction absorbed into the circulation; but, if it survive this primary disorder, it may succumb in the course of about two days to blood-disease. If the point of a lancet be dipped into the blood of the heart of a mouse which has died in this way, and a scratch be made in the skin of a healthy mouse with the envenomed instrument, the second mouse dies with similar symptoms to those of the first, the poison being absolutely certain in its virulent operation; and the same thing may be continued indefinitely through any series of animals. If now sections be made, and stained, and examined by Koch's procedures, it is found that the entire blood of the diseased animal is peopled with bacteria, resembling those of the *Bacillus anthracis* in the enormous multitudes in which they are produced, and also in their rod-like form, but differing from them in being exquisitely minute and delicate, as is shown at *b*, drawn on the same scale as *a*, where it is seen that the diameter can only be represented by a slender streak not one eighth of the diameter of the *Bacillus anthracis*, and such as, before the introduction of Koch's method, would have escaped notice altogether. Now, this disease is totally distinct from pyæmia, being not accompanied with multiple abscesses or embolism; and thus it has been shown by Koch that septicæmia may exist as a deadly blood-disease, caused by the development of micro-organisms, being equally distinct from pyæmia and from the chemically toxic effects of septic products.

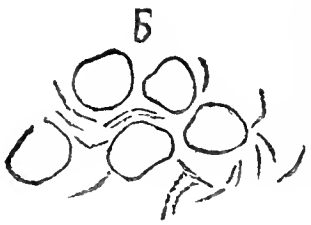
On some occasions, as the result of the introduction of

putrid fluid under the mouse's skin, Koch found, besides septicæmia, a local affection of the seat of inoculation, in the form of spreading gangrene; and, on investigating the part, he discovered in it, exactly corresponding with the extent of the local affection, another organism very differently formed from that of the septicæmia—viz. a micrococcus, consisting

Magnified 700 *Diameters.*



Bacillus Anthracis after Koch.



Bacillus Septicæmiæ, House Mouse—Koch.

Chain Micrococcus, Gangrene in the Mouse. Koch.

Bacterium of Fowl Cholera. Camera lucida sketch.

of minute spherical granules arranged in linear series, like strings of exquisitely minute beads, as represented at *c* in the woodcut. Believing that this locally developing organism must be the cause of the gangrene, he tried to separate it from the bacillus of the septicæmia, and succeeded through an accidental observation of great interest. Having till that time employed the house-mouse in his experiments, he happened to try the inoculation of a field-mouse. This animal, though so closely allied, proved not susceptible of the septicæmia. The bacillus of that disease was unable to grow in the blood of the field-mouse, but the micrococcus of the gangrene could develop among its tissues. The new organism

was thus obtained in an isolated form, and, when now inoculated into the house-mouse produced in that animal gangrene pure and simple, extending for an indefinite period among its tissues.

Thus the animal body, which had previously been an obscure field of labour in this department, in which the pathologists did little more than grope in the dark, was converted by Koch into a pure cultivating apparatus, in which the growth and effects of the micro-organisms of various infective diseases could be studied with the utmost simplicity and precision.

One more example I must take from Koch's work. On one occasion, as the result of inoculating putrid liquid into a rabbit, he observed a spreading inflammation having all the clinical character of erysipelas; and, on examining stained sections of the part, he discovered another exquisitely delicate bacillus resembling the micrococcus of the gangrene, in being local in its development, while its exact correspondence in extent with that of the disease led fairly to the conclusion that it constituted the *materies morbi*.*

I will next refer to a disease occasioned by a micro-organism discovered by the eminent pathologist Professor Toussaint, of Toulouse, whom I am proud to see present in this Section today. This disease has been somewhat inappropriately termed *Cholera des poules*, or fowl-cholera, for it is not attended with diarrhœa or any other of the symptoms of cholera; but, as it happened to be extremely destructive among the poultry-yards of Paris at the same time that an epidemic of cholera was raging in the city, the disorder that prevailed among the fowls was also given the name of cholera. The lesions by which it is chiefly characterised are great swelling of the chains of lymphatic glands in the vicinity of the trachea, pericarditis accompanied with great effusion, and congestion, and it may be ulceration, of the mucous membrane of the duodenum. It is a blood-disease, and highly infectious. If some of the blood of a chicken that has died of it be mixed with the oats with which healthy chickens are fed, a considerable proportion, perhaps four out of six, are affected and die; and similar results are produced by mixing the intestinal excreta of diseased fowls with the food. It is an interesting question how the virus thus administered enters the circulation. The invariable affection of the lymphatic glands of the throat suggests to M. Toussaint the idea that some accidental

* See 'Untersuchungen über die Actiologie der Wundinfectionskrankchiten.' Von Dr. Robert Koch. Leipzig, 1878. A translation is about to be issued by the Sydenham Society.

abrasion of the epithelium in the mouth or pharynx is probably the channel; and this view is confirmed by the fact that a similar affection of the lymphatic glands, together with other symptoms of the disease, is produced by inoculating the chicken in the mouth; and further, by the circumstance that such chickens as fail to take the disease when fed with the infected food are liable to it when inoculated, implying that it was merely some accidental circumstance which secured their previous immunity. This disease has been made the subject of special investigation by M. Pasteur. He found that the micro-organism could be readily cultivated outside the body of the fowl. It was, indeed, somewhat particular as regards the fluid in which it would grow; thus, yeast-water, in which the *Bacillus anthracis* grows readily, proved an unsuitable medium for this organism, but it grew luxuriantly in chicken-broth, and, indeed, in infusion of other kinds of meat; but chicken-broth proved peculiarly convenient for the purpose. M. Pasteur has been so kind as to send me some tubes in which the organism has been cultivated, and a drop of the liquid has been placed under a microscope on the table. It will be seen that the organism is a minute form of bacterium, oval-shaped, tending to multiplication by transverse constriction, and very frequently seen in pairs, and occasionally in chains. Its transverse diameter is from 1-50,000th to 1-25,000th of an inch; so that it resembles very closely the *Bacterium lactis* (see *d* in the woodcut taken from a *camera lucida* sketch of the organism sent by M. Pasteur). So far as I am aware this is the first time this bacterium has been shown in this country. Now, it was found by Pasteur that the organism could be produced in chicken-broth in any number of successive cultivations, and to the last retain its full virulence; so that, if a healthy chicken were inoculated with it, the fatal disease was produced as surely as by inoculation with the blood of a fowl that had died of the complaint. This was pretty conclusive evidence that the organism was the cause of the disease, and that it constituted the true infective element; because any other material that might be supposed to accompany it in the blood of the diseased animal must have been got rid of by the successive cultivations in chicken-broth.

The growth of the organism occasions no putrefaction in the liquid, so that this is a good example of a bacterium which is most destructive as a disease, but which is at the same time entirely destitute of septic property, in the primitive sense of that term as equivalent to putrefactive. After the bacterium has grown for a certain time in a given portion of chicken-broth, it ceases to develop further; and when this is the case,

although the broth has lost only a very small proportion of its substance by weight, and although, as aforesaid, it has not undergone putrefaction, and still constitutes an excellent pabulum for ordinary forms of bacteria, the bacterium of the fowl-cholera, though introduced from some new source, is incapable of growing in it. This fact certainly seems highly suggestive of an analogy with the effects of vaccination, or those of an attack of measles or scarlatina in securing immunity from the disease for the future. Here we have a certain medium invaded by a virus capable of self-multiplication, as is the case with those diseases in the animal body; the medium itself little affected chemically by the growth of the virus within it, nevertheless rendered unfit for the development of that virus for the future. But something more than the suggestion of analogy with vaccination has been effected by M. Pasteur. By cultivating this bacterium in a particular manner, which he has not yet published, he enfeebles the organism, as he believes, and produces such an alteration in it that, when inoculated into a healthy fowl, it produces only a modified and no longer fatal form of complaint, but the bird is thereby rendered secure against taking the ordinary form of the disease. It has been really vaccinated, if we adopt M. Pasteur's extension of the term vaccination to other similar cases; for just as we speak of an iron milestone, we may, if we please, apply the term vaccination to the use of a virus other than the vaccine obtained from a heifer. But though the vaccination with the modified bacteria and the fowl-cholera does not occasion the fatal disease, it produces pretty severe local effects. If inoculated on the breast of the fowl it causes a limited gangrene of the pectoral muscle, the affected part falling off in due time as a dry slough. Through the great kindness of M. Pasteur, I have now the opportunity of showing to the Section a hen which has been treated in this way. You observe a slough on the breast of the bird, about as large as a penny piece; it is dry, and obviously old. The fowl has been some days in my possession subsequently to its journey from Paris; but though more than enough time has elapsed since the inoculation to have caused its death, had the disease been in the ordinary form, it is, you see, in good health, bright and active, and it both eats and sleeps well.*

I will now return to the *Bacillus anthracis*, with regard to which I shall have again to refer to the labours of M. Toussaint. First, however, I must allude to the work of some of my own

* M. Pasteur's researches on this subject are related in the *Comptes Rendus de l'Académie de Science*, February, April, and May, 1880.

countrymen. In March, 1878, an experiment was made at the Brown Institution, at the suggestion of Dr. Burdon Sanderson, of inoculating a calf with the blood of a guinea-pig which had died of splenic fever, which is exceedingly fatal to rodentia. The result was that the calf took the disease, but in a mild form, and recovered from it; and a similar fact was observed in two heifers treated in the same way.*

This line of inquiry has since been followed up by Dr. Sanderson's successor at the Brown Institution, Dr. Greenfield, with the view of ascertaining whether the milder form of the disease in cattle, resulting from inoculation with the blood of rodentia affected with it, confers upon the cattle immunity from the complaint in its fatal form; or, to use again M. Pasteur's expression, whether the cattle have been vaccinated with reference to anthrax. And I have great pleasure in being able to inform the Section, by Dr. Greenfield's permission, that the question has been answered in the affirmative; and that one bovine animal, inoculated seven months ago with virus from a rodent, has proved itself, on repeated inoculations, entirely incapable of contracting splenic fever, remaining free from either constitutional or local manifestations of it.

And now to return to M. Toussaint, who has made observations with regard to this same subject of vaccination against anthrax fraught with the very deepest interest. The question arises, with regard to effective vaccination, using the term in Pasteur's general sense: Is it essential that micro-organisms should develop in the blood of the animal in which immunity from further attacks of the disease is to be secured? or is it possible that the necessary influence upon the system may be exerted by merely chemical products of the growth of that organism in some other medium? With the view of approaching the solution of this question, M. Toussaint has performed experiments of injecting into the blood of healthy sheep blood taken from an animal affected with splenic fever, but deprived of the *Bacillus anthracis*. Taking blood from a sheep just on the point of death, when the bacillus has presumably produced all its possible effect upon the vital fluid, M. Toussaint proceeds to deprive it of the living bacillus in either of two ways—by filtration or by destroying the vitality of the organism. The former he effects by mixing the blood with three or four parts of water, and then passing it through about twelve layers of ordinary filter-paper. The bacillus, in con-

* See "Report on Experiments on Anthrax by Dr. Sanderson" (*Journal of the Royal Agricultural Society of England*, vol. xvi, s.s., part 1).

sequence of its large dimensions, is entirely retained by this form of filter, as is proved by the fact that the filtrate no longer gives rise to the organism in a cultivating liquid or in a living animal. Nevertheless, if injected in considerable quantity into the circulation of a healthy sheep, it produces a true vaccinating influence; that is to say, secures immunity from splenic fever. But, what is further extremely interesting, in order that this change in the constitution of the sheep may be brought about, the lapse of a certain time is essential. If a vaccinated sheep be inoculated with anthrax within a few days of the operation, it will die of splenic fever; but if from twelve to fifteen days be allowed to elapse, complete immunity is found to have been produced. Similar results followed from the injection of anthrax blood treated by M. Toussaint's other method, which consists of maintaining it for a considerable time at a temperature of 55° Cent. (131° Fahr.), which has the effect of killing the bacillus; after which half per cent. of carbolic acid is added, to prevent putrefaction of the liquid. The blood treated in this way having been proved to be free from living bacilli by negative results of an experiment upon a rodent, about four cubic centimétres are injected into the venous system of a sheep, with the effect of producing the same protective influence against splenic fever as is ensured by the filtered blood. These experiments are still in progress; but M. Toussaint informs me that he has already ascertained the existence of immunity against anthrax for three months and a half in both sheep and dogs treated in this way.

I need hardly remark on the surpassing importance of researches such as these. No one can say but that, if the British Medical Association should meet at Cambridge again ten years hence, some one may be able to record the discovery of the appropriate vaccine for measles, scarlet fever, and other acute specific diseases in the human subject. But even should nothing more be effected than what seems to be already on the point of attainment, the means of securing poultry from death by fowl-cholera, and cattle from the terribly destructive splenic fever, it must be admitted that we have an instance of a most valuable result from the much-reviled vivisection.

I have yet one more example to give of researches in this domain of pathology; and this also has reference to the *Bacillus anthracis*. The investigator in this instance is Dr. Buchner, assistant physician in Munich. It is well known that the *Bacillus anthracis* is morphologically identical with an organism frequently met with in infusion of hay, which

may be termed hay-bacillus. Such being the case, it occurred to Dr. Buchner that they might be merely one and the same organism modified by circumstances. For my own part, I am quite prepared to hear of such modifying influence being exerted upon bacteria, having made the observation several years ago that, when the *Bacterium lactis* had been cultivated for some time in unboiled urine, it proved but a feeble lactic ferment when introduced again into milk. Its power of producing the lactic fermentation had been impaired by residence in the new medium. In the case before us, indeed, the physiological difference between the two organisms seems, at first sight, so great, as to forbid the idea of anything other than a specific difference. The *Bacillus anthracis* refuses to grow in hay infusion in which the hay-bacillus thrives with the utmost luxuriance; and conversely, the hay-bacillus is utterly incapable of growing in the blood of a living animal, whether introduced in small or in large quantities. The hay-bacillus is remarkable for its power of resistance to high temperatures, which is not the case with the *Bacillus anthracis* The latter is destroyed by a very slight acidity of the liquid of cultivation, or by any considerable degree of alkalinity, whereas the former survives under such conditions. Both will grow in diluted extract of meat, but their mode of growth differs greatly. The hay-bacillus multiplies rapidly, and forms a dry and wrinkled skin upon the surface, while the *Bacillus anthracis* produces a delicate cloud at the bottom of the vessel, increasing slowly. Nothing daunted by these apparent essential differences, Dr. Buchner has laboured with indomitable perseverance by means of experiments carried on in Professor Nägeli's laboratory, to solve the double problem of changing the *Bacillus anthracis* into hay-bacillus, and the converse. Having devised an ingenious apparatus by which a large reservoir of pure cultivating liquid was placed in communication with a cultivating vessel, so that any cultivation could be drawn off by simply turning a stop-cock, and further cultivating liquid supplied to the organisms remaining in the vessel by a mere inclination of the apparatus, Buchner proceeded to cultivate the isolated *Bacillus anthracis* in extract of meat for several hundred successive generations. As an early result of these experiments, he found that the bacillus lost its power of producing disease in an animal inoculated with it. Up to this point he is confirmed by Dr. Greenfield, who has found that, when the bacillus anthracis is cultivated in aqueous humour, after about six generations it loses its infective property. Then, as Buchner's experiments proceeded, the appearance of the growing organism was found to undergo

gradual modification. Instead of the cloud at the bottom of the vessel, a scum began to make its appearance—at first greasy-looking and easily broken up—constituting, so far as appearances went, an intermediate form between the two organisms; and in course of time the scum became dryer and firmer, and at length the modified *Bacillus anthracis* was found to be capable of growing in an acid hay infusion, and to present in every respect the characters of the hay-bacillus. The converse feat of changing the hay-bacillus into the *Bacillus anthracis* proved very much more difficult. A great number of ingenious devices were adopted by Buchner, who was, nevertheless, continually baffled till at last he attained success in the following manner. Having obtained the blood of a healthy animal under antiseptic precautions, and defibrinated it also antiseptically, and having arranged his appparatus so that the pure defibrinated blood, which was to be the cultivating medium, should be kept in constant movement, so as to continually break up the scum, and also keep the red corpuscles in perpetual motion so as to convey oxygen to all parts of the liquid—in this way imitating, to a certain extent, the conditions of growth of the *Bacillus anthracis* outside the animal body, within which the hay-bacillus could not be got by any means to develop—he proceeded to cultivate through numerous successive generations. A transitional form soon made its appearance; but the change advanced only to a limited degree, so that further progress by this method became hopeless. The modified form hitherto obtained failed entirely to grow when injected into the blood of an animal. On the contrary, it was in a short time completely eliminated from the system, just like the ordinary hay-bacillus. It had, however, been observed by Buchner that spores had never been formed by the bacillus growing in the defibrinated blood; and it occurred to him that, perhaps, if it were transferred to extract of meat, and induced to form spores there, the modified organism might yet grow in the blood of a living animal. The carrying out of this idea was crowned with success; and, both in the mouse and in the rabbit, Buchner succeeded by injecting various different quantities containing the organism in different animals. When large quantities were introduced, the animals died rapidly from the merely chemical toxic effects of the injected liquid; but, in some instances, after the period for these primary effects had passed, a fatal disease supervened—attended, as in anthrax, with great swelling of the spleen, the blood of which was found peopled as in that affection with newly formed bacilli; and the spleens affected in this way were found to communicate

anthrax to healthy animals, just like those of animals which had died of ordinary splenic fever.*

Supposing these results to be trustworthy, and the record of them bears all the stamp of authenticity, I need scarcely point out to a meeting like the present their transcendent importance as bearing upon the origin of infective diseases, and their modifications as exhibited in epidemics.

I trust that these examples may suffice to convey some idea of the work now going on with reference to the relations of micro-organisms to disease.—*Brit. Med. Journ.*

INFLUENCE OF STEAMING ON THE DIGESTIBILITY OF HAY.

By Hornrerger.

These experiments on feeding oxen with steamed hay have as yet yielded no favorable result, the nitrogenous constituents of the steamed hay being present in a less digestible form than in ordinary dry hay; only 68 per cent. of the digestible nitrogenous constituents were assimilated (J. K. C. —*Journ. Chem. Soc.*

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The Monthly Council Wednesday, November 3rd, 1880. Mr. William Wells (President), in the chair. H.R.H. the Prince of Wales, K.G., the Earl of Feversham, General Viscount Bridport, Lord Chesham, Lord Moreton, M.P., Lord Vernon, and many other noblemen and gentlemen were present.

VETERINARY COMMITTEE.

The *Hon. W. Egerton, M.P.* (Chairman), reported that the following report on Anthrax Experiments had been received from Dr. Greenfield, Professor-Superintendent at the Brown Institution:

I have continued the experiments, which I commenced at the end of last year, in the same direction as indicated in my last report—viz., the inoculation of cattle with the virus of anthrax, modified in various ways, with the view of protecting them from subsequent attack.

These experiments have been entirely successful, and have established, in the most conclusive manner, the fact that an animal which has been successfully inoculated is protected from the effects of future inoculation with the unmodified virus.

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* See 'Ueber die experimentelle Erzeuguug des Milzbrandcontagiums aus den Heupilzen.' Von Hans Buchner, München, 1880.

By a fortunate coincidence, I have also been able to expose some of the animals to a known and very virulent contagion, and they have escaped unharmed.

I have detailed in my report the successive tests to which these animals were subjected.

I have, moreover, by experiments on smaller animals, been able to demonstrate the possibility of modifying the virus by successive steps, in such a way as to be able to attain, with a fair degree of certainty, an extreme dilution of the poison, of all grades of intensity up to the most virulent.

Hitherto, owing to the necessity for establishing the fact that complete protection can be conferred by inoculation, and the expenses consequent upon that part of the inquiry, I have not been able to make any complete series of experiments with the view of determining the mode of inoculation which shall be easiest of practical adoption, and which, while affording a high degree of protection, shall be productive of little constitutional disturbance and be unattended with risk. The experiments which I have made in this direction lead me to believe that it will be possible readily to attain the desired end; and I propose to make this my object in future experiments.

The Committee gave notice that at the next meeting of the Council they will apply for the renewal of the veterinary grant of £250 for the ensuing year.

A letter had been received from Professor Simonds, in reference to reports by Professor Axe on investigations made by him relative to outbreaks of disease among cattle. The Committee recommended that the one on Splenic Apoplexy be published in the *Journal*.

The following report has reference to an eruptive disease which manifested itself among cattle, the property of Sir Henry Allsopp:

On the 8th of October I visited Hindlip Park Farm, and inquired into the circumstances of the outbreak of disease herein referred to.

The herd consisted chiefly of Shorthorns, with a few small cattle of the Shetland bred. In all, there were originally 184. The disorder first appeared on the 8th of September last, and continued to spread until the 30th, by which time the entire herd, from the youngest to the oldest, were more or less affected. The first animal to suffer was a yearling heifer located in a pasture at Martin Farm. On the following day (September 9th) two others at pasture a mile and a half distant from Martin Farm also showed signs of the disease. The former was removed to Hindlip and placed in a box. The latter were turned into a pasture adjoining the Hindlip farmstead. On the same day several others were found affected in a lot of sixteen, located about a mile from the first place of attack. On the 10th, 14th, and 15th fresh cases appeared, and on the 11th the disorder had spread to the yards and boxes at Hindlip, and subsequently became general throughout the herd. The first symptoms observed were more or less swelling at the back part of the knee-joint, associated with morbid heat and tenderness, and an oozing of watery matter from the swollen surface. The swelling, as a rule, extended upwards sometimes as high as the shoulder, causing great lameness, and in some instances severe constitutional disturbance—occasionally, death. In some cases abscesses were found to form in the leg or on the breast, or deep in the tissues of the neck, which, when broken, discharged a thin, offensive, purulent fluid, interspersed with masses of disintegrated connective tissue. Similar formations had sometimes been noticed in remote parts, as the thigh, back, &c. *Post-mortem* examination reveals marked changes of a destructive character, among which may be

mentioned plugging and obliteration of the veins, and various textural alterations in bones, muscles, and joints, and other tissues and organs of the body. Notwithstanding the formidable character which the disease in many cases assumed in the Hindlip herd, the treatment applied by Mr. Perrins, of Worcester, was eminently successful, as out of the 184 cases only one animal was lost. The curative measures adopted consisted in the administration of laxative medicine, followed by stimulants and antiseptic agents. This was supplemented with local fomentations and poulticing and the timely evacuation of abscesses where occasion required it.

With regard to food, I was informed that at the time of the outbreak the cattle at pasture were living exclusively on grass, while those under cover were receiving a mixed diet, consisting of cabbage, green clover, hay, chaff, and linseed-cake. In the case of the calves, some were receiving milk direct from the dam, and others were pail-fed. It should be mentioned here, that the milk of the diseased cows continued to be supplied to the calves in the usual way throughout the attack, but whether in any case the disease arose from this circumstance, or altogether from the more general cause, could not be satisfactorily ascertained. The water supply was derived from two sources.

1. From ponds fed by surface water. 2. From springs at the foot of distant hills. Water derived from the latter source was pumped into large tanks, and from thence dealt out in the usual way, not only to animals in the yards and sheds, but likewise to many others in adjoining fields. In the appearance and general character of the pond water there was nothing unusual, and the salubrity of the spring water was affirmed by its somewhat extensive use in the households about the farm. The sanitary arrangements of the sheds and yards were all that could be desired.

In endeavouring to discover the origin and nature of the disease, I had the advantage of conferring with Mr. H. Perrins, to whom I am indebted for much valuable information and assistance. I should state that prior to my visit to Hindlip, I had been consulted by several veterinary surgeons respecting similar outbreaks in various parts of the country, and from Mr. Wilson, veterinary surgeon, of Berkhampstead, I had received the two fore extremities of a cow which had died from the disease. It was admitted by all that the malady presented very exceptional pathological features, and various views were expressed as to its nature and origin. By some the malady was attributed to long immersion of the legs in water, by standing in ponds and pools, while others regarded it as a consequence of the continuous irritation of the legs by flies. With regard to the former, it need only be stated of the herd in question that in no instance had the cattle access to water beyond being able to drink it. In the case of the ponds referred to, they were so fenced round as to prevent the ingress of cattle, allowing, at the same time, every facility for taking water; while the stock in the yard was in no way unduly exposed to moisture. The suggestion concerning flies cannot be thus summarily dismissed. That they were instrumental in the causation of the malady seems highly probable, first, on account of the large numbers which suddenly appeared, and infested the cattle during the hot weather which preceded the outbreak; and, secondly, on account of the situation and nature of the primary disease. In the latter connection, I am informed that in every instance the disorder first manifested itself on the back part of the knee-joint, where flies usually congregate in large numbers. Having regard to the nature of the lesions, which were such as follow the inoculation of putrid animal matter, I was particular to inquire as to the possibility of any such means of infection.

In this direction I gathered that no animal matter of such a description was to be found upon the farm. In answer to my inquiry as to the disposal of fœtal membranes, I was informed that, in all cases of parturition, they were buried as soon as discharged. So far as extraneous putrid matter was concerned, there did not appear to be any evidence of its existence on the farm in any form. Still, regarding the affection as having its origin in the inoculation of some putrid substance, there appeared to remain but one other source whence such matter could be derived, and that was from the cows themselves. Early in the attack a copious discharge of serous fluid issued from the enlarged knees, and soon became putrid and offensive. That the discharge was the consequence of irritation set up by flies, may, I think, be admitted, for the reasons above stated. The extension of the disease, and the peculiar nature subsequently assumed by it, depended on, I believe, the transference of the putrid exudation from one cow to another by flies.

J. Wortley Axe,
Professor of Pathology and Morbid Anatomy at the Royal Veterinary College.

Professor Simonds further reported that besides these cases many others of the same kind came under the notice of the officers of the Royal Veterinary College, during the hot weather which prevailed from about the middle of August to the middle of September, and added:

Besides these investigations, several communications, some from Members of the Society, relating to parasitic diseases among sheep and lambs, have been received. None of these cases, however, call for any special report, as they have been of the ordinary kind, in which emaciation and death of the animals depended on worms in the windpipe, or stomach and intestines, or in some instances in both. The cases had mostly yielded to the free use of tonic and anthelmintic agents, conjoined with a full supply of nutritive food.

The parasitic disease of sheep known as the *fluke disease or rot*, has been prevalent to a greater or less extent from the beginning of the year, and in some flocks which were thought to have escaped the outbreak of last year serious losses have occurred. Doubtless these losses were mainly due to the almost continuous wet weather which prevailed throughout the spring and down to the middle of August.

With regard to the development of the flukes within the body of the sheep and other animals, it may be remembered that Dr. John Harley, in a letter to *The Times*, affirmed that the entozoa had their origin in the sheep having swallowed with their food mature flukes whose generative organs were filled with perfected ova. Dr. Harley disputed the opinion that the embryos of the parasite passed through transformations out of the bodies of animals, prior to their being sufficiently perfected to develop into flukes within the body. In his communication of April 3rd, he thus wrote:—"This error may be disproved by any farmer who will take the trouble to feed a new-born lamb with a few flukes taken direct from the body of a recently killed sheep, and before they have discharged their eggs; and, keeping the lamb free from further infection for a few weeks, then examine the alimentary canal and liver, when he will find the parasite in increased numbers in the body of the lamb."

It might perhaps have been thought unnecessary to put these statements to the test of experiment, but, nevertheless, I determined to do so. The following particulars will show the result:

April 16th, 1880. Procured a sheep far advanced in rot, for the purpose of having it killed, that some flukes might be given to two

young lambs which had been born in the College, and were still living entirely on the milk of their dam.

On opening the purchased ewe, the liver was found to be extensively diseased, and the biliary ducts to be filled with fully matured flukes.

Fifty of the flukes, whose generative organs were distended with perfected ova, were selected, and *twenty-five* of them given to each lamb in a little milk.

The lambs were kept with the ewe, and carefully watched day by day. No ill effects were observed.

On July 25th, five weeks and five days after the flukes had been given, one of the lambs was killed. The liver was found to be perfectly healthy, and not the slightest indication of a fluke having entered the biliary ducts existed. Every other organ also of the body was in a healthy condition.

August 6th.—Killed the other lamb, which, like the first one, was entirely free from disease, and not a single fluke, young or old, or any ova, were to be detected.

The Committee had received from the local authority of Cumberland the following copy of a letter addressed to the Veterinary Department of the Privy Council:

Clerk of the Peace's Office, Carlisle, October 30th.

Sir,—At a special meeting of the Executive Committee of the Local Authority of Cumberland, held this day, I was directed to make a representation to the Veterinary Department of the Privy Council, setting out that the County of Cumberland had been free from pleuro-pneumonia from the month of May last until the 22nd of this month; that on that day a cargo of about 370 cattle were landed at Silloth in this county from Ireland, *ex Caledonia* steamer.

That Mr. Bell, the veterinary inspector of the said Local Authority, examined the cattle, and found one heifer stirk suffering from disease which he believed to be pleuro-pneumonia, and which animal, by his direction, was detained by the police. That the said animal died the following day (Saturday the 23rd October), and that he made a *post-mortem* examination, and found that it had died of pleuro-pneumonia. A copy of his report has been already forwarded to the Privy Council. The remainder of the cattle landed from the same vessel were removed from Silloth by train to Carlisle and Northumberland, and some of them which had been in actual contact with the animal which died were sold on Carlisle Sands. The attention of the Privy Council having been called to this matter, an answer was received from them, stating that the attention of the Irish Government had been called to the case by the Privy Council.

I have further to state that on the 26th of this month Mr. Bell again attended at Silloth, and examined 314 cattle brought from Ireland by the same vessel, when he found seven of them without any official brand of inspection upon them.

That this day (the 30th October) he again attended at Silloth, and examined 136 cattle and 72 pigs, brought over by the same vessel and that four of the cattle were without any official brand, and this, on both the last-named days, after the special attention of the Irish Government had been called to the lax examination of their officials.

The local authority, under these circumstances, and considering the danger which must arise from animals suffering from the disease being moved about the county, would press upon the Privy Council the propriety, if not the necessity, of making an order, giving the local authority

power to declare the port of Silloth, or any other port in this county where Irish cattle are landed, an infected place, when pleuro is found there, in the same manner as a farmstead may now be declared an infected place, and subject to the like rules and restrictions.—I am, Sir, your obedient servant.

(Signed) T. H. Hodgson
Clerk to the Local Authority.

The Clerk of the Council, Veterinary Department, Privy Council Office, London.

Mr. Wakefield said he desired to ask the co-operation of the Society in the matter alluded to in the letter from the Cumberland Local Authority. It had been very frequently before owners of cattle in Cumberland and Westmoreland, but they were perfectly powerless. He thought it was generally known and admitted that the inspection on the other side of the Channel was merely a delusion and a sham, and he earnestly hoped that all possible assistance would be given to arouse the Government to the necessity of seeing that the officers on the other side performed their duty.

Mr. Dent stated that there had recently been five outbreaks of pleuro-pneumonia in the West Riding of Yorkshire; and he had been informed that in each case they were traceable to Irish cattle which had been bought for feeding. Undoubtedly more stringent regulations ought to be enforced. The evil was very great, and ought to be stopped by the Government; but he was afraid that no more stringent regulations could be carried out without the consent of Parliament. He was sorry that Professor Brown had been obliged to leave the Council, as he might have been in a position to give some useful information; but with regard to foot-and-mouth disease, perhaps Professor Simonds could tell the Council where it came from, and where and to what extent it is in existence.

Professor Simonds said that so far as concerned the power that the Local Authorities have, or the Government has, with reference to animals landed from Ireland, it was simply that the animals already subject to disease could be killed, but they had no power to detain animals which had been in contact with those so affected. This was doubtless a blot in the Act, and if they could possibly find a way to have it remedied it would be right to do so. He believed it was generally admitted that foot-and-mouth disease had found its way from the cattle market at Deptford. Some animals landed there were affected and killed, and as this was one of the diseases conveyed by mediate infection, it was by that means that the disease made its escape from Deptford, the infection having been carried by individuals. There could be no doubt that the Local Authority would make use of all possible precautions so as to arrest the progress of the disease; but unfortunately it always happened in this country that when these outbreaks occurred they assumed a very serious form—a fact which clearly demonstrated the importance of exercising all the restrictions permitted by law.

The *Hon. W. Egerton, M.P.*, expressed his opinion that the Council should call the attention of the Privy Council to the letter addressed to them by the local authority of the County of Cumberland; and after some further discussion, it was unanimously resolved, on the motion of *Mr. Dent*, seconded by *Mr. Wakefield*,—

That the President of the Society be requested to call the attention of the Privy Council to the letter received from the Clerk of the Peace of the County of Cumberland relative to an outbreak of pleuro-pneumonia,

which occurred in a cargo of cattle lately landed at Silloth, and that he urge upon the Privy Council that more stringent regulations and more careful inspection of imported Irish cattle are requisite both at the ports of embarkation and arrival.

The report of the Committee was then adopted.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF THE COUNCIL, HELD OCTOBER 27TH, 1880.

The President, GEORGE FLEMING, Esq., in the chair.

Present:—Professors Robertson, Axe, and Pritchard; Messrs. Batt, Collins, Cox, Dollar, Dray, Dun, Gowing, Greaves, Harpley, Taylor, Woods, and the Secretary. The notice was read convening the meeting.

The minutes of the previous meeting were read and confirmed.

Letters were read from Professors Walley and Williams; Messrs. Coates, Freeman, Blakeway, Whittle, and Morgan, expressing their inability to attend the meeting.

A letter was read from the Norfolk and Eastern Counties Veterinary Medical Society, offering their assistance in procuring the Penal Act. The Secretary was directed to thank them for the offer of their support.

A letter was read from Mr. Archibald Robinson accepting the appointment as Examiner, and expressing his thanks to the Council for the honour conferred upon him.

House Committee.

The report was received, and assent was given by the Council to the request contained therein.

Winter Examinations.

The *President* said it had been notified by the Principal of the Royal Veterinary College that the first week in January would be a convenient time to commence the Examinations, and that they would occupy about six nights in London.

Notice of Resignation.

The *President* said he had given notice of his resignation as a member of the Court of Examiners. He had done so on two grounds. In the first place, there had been an agitation since he was elected President with regard to a second Examiner being appointed at the Final Examination. The matter was brought on in a rather hasty and informal way at the meeting for the election of President and Vice-Presidents, and, of course, could not be then considered. When the matter was brought forward at a subsequent meeting he expressed his views on the subject, and stated that he thought a personal reflection was cast upon himself; and after referring to the rumours which had been promulgated in a certain quarter of late, said that if a second Examiner were appointed he should consider it a slur upon himself, and should resign. The mover of the motion then brought forward another resolution, leaving it to the Financial Committee to consider whether a second Examiner should not also be appointed at the First and Second Examinations, but that Committee reported at the last meeting that the funds of the College would not allow of these second Examiners. The mover

of the motion, who, unfortunately, was absent, then expressed his dissatisfaction with the state of the Examining Board, and expressed his intention to have a Committee appointed to inquire into its condition. In a subsequent conversation he added that he had no particular desire to have second Examiners appointed at the First and Second Examinations, it being the Final Examination that he considered unsatisfactory. Before the close of the meeting he (the President), to obviate discussion on the matter, mentioned that the present Examiners would cease to hold office next year, but he afterwards found that their term did not expire till June, 1882. That being so he thought it better to resign his office at once, and accordingly placed his resignation in their hands, thanking the Council for the honour conferred upon him by his appointment to this very responsible office, and assuring them that he had endeavoured to the utmost of his ability to carry out the duties appertaining to that high and honorable position. With regard to the question itself he could not help thinking that a second Examiner was not desirable, and was unnecessary. There had been no complaint as to the Examiners or the examinations that he was aware of, and if there was any grievance it would, most assuredly, be heard and considered by the Council. The mover of the motion himself knew little with regard to the procedure of the Examination or of the subjects which were examined upon at the table at which he wanted to have a second Examiner appointed; his information, therefore, must have been derived from others, and if the rumours which were afloat were true, that source of information was most unreliable. Standing in that position he felt it necessary to place his resignation in their hands. The Examining Board should be beyond all blame or suspicion, it should suffer no stain whatever upon its reputation for impartiality or efficiency. Their College existed almost entirely as an Examining Body, and if any fault was found it should be remedied immediately. He had, therefore, decided to pursue this course, in order to enable the Council at once to deal with the matter.

Mr. Dray said the announcement made by Mr. Fleming of his intended resignation as an Examiner would be received with unfeigned regret. His competency to perform the functions could not be impugned. When he (Mr. Dray) was President of the Council, he took opportunities of hearing Mr. Fleming examine the students, and could bear testimony to the kind and firm manner in which he treated the aspirants to veterinary honours. Why then should the Council accept the resignation of a gentleman whose attainments were unsurpassed, and whose indomitable perseverance and industry could not be equalled, and who was constantly and assiduously applying his energies to the furtherance of the interests of the profession of which he is so distinguished a member? (Applause.) He should, therefore, propose the following resolution:—"Resolved, that the intended resignation of Mr. Fleming, one of the Examiners of the Royal College of Veterinary Surgeons, be not accepted, he having fulfilled the duties with great satisfaction to the whole of the profession and justice to the students. The Council therefore hope and trust Mr. Fleming will reconsider his intention and not abdicate a position for which he is so eminently qualified."

Mr. Taylor seconded the motion. He assured Mr. Fleming that in retaining his office he would have the support of the whole Council, and not only of the Council but of the whole of the profession.

Mr. Greaves said he could reiterate every word uttered by Mr. Dray. They looked upon Mr. Fleming as one of the most efficient Examiners they could appoint. He believed the gentleman who had brought for-

ward the motion, to which allusion had been made, had taken the steps he had from no feeling of disrespect to their President, or from the least wish to injure his high character. He (Mr. Greaves) was one of those who entertained the opinion that it would be well to have two Examiners, but finding that they could not afford two, must be content with one. There was no one man in the profession that he would choose in preference to Mr. Fleming. The honour of the profession was perfectly safe in his hands, and he hoped that the resignation would be withdrawn.

The *President* thanked the Council for their kind expressions. He did not bring forward the motion entirely on his own behalf, but because he felt that a grave professional question had arisen, and one very much affecting the honour of their whole corporation. He altogether exempted himself specially from the motion, and spoke entirely on behalf of the Royal College of Veterinary Surgeons, and on behalf of the best interests of the profession. (Hear, hear.) No man that was incompetent was wittingly passed by the Examiners, and any word of reproach on the Examiners was a great injustice to the Royal College. With these feelings he had brought the matter forward, and could only do so by tendering his resignation. He would willingly withdraw that resignation (applause), enjoying, as he did, their confidence; but only upon one condition, namely, that students presenting themselves for examination, should come up by numbers only, and not by name. That course was adopted by the Royal College of Surgeons, and if it were adopted no one would then be able to say that the Examiners could have any partiality or enmity with regard to any particular school.

Professor Robertson seconded the suggestion. The fact was that the Examiners in Edinburgh had never been able to point out the students belonging to one school more than another. He was exceedingly pleased with the reception which the Council had given to the President's resignation, for certainly no man was better qualified than Mr. Fleming to act as an Examiner to the Royal College of Veterinary Surgeons.

Mr. Dray said he was delighted that the President had withdrawn his resignation; at the same time he should like, with the permission of the Council, that his resolution should appear on the minutes.

The resolution was then put and unanimously adopted.

A resolution was also agreed to, on the motion of the *President*, seconded by *Professor Robertson*, "That hereafter students, instead of being admitted to examination by name, be admitted by number."

Mr. Taylor read a paragraph from a Manchester paper of Sept. 22nd, copied from the *Times* relating to the new building of the Royal College of Veterinary Surgeons, and wished to know if the statement contained therein was correct.

The *President* said he was in utter ignorance of the source of the report, the latter portion of which was certainly incorrect.

SECOND SPECIAL MEETING.

The *President* said the first motion for confirmation was as follows:—"That no student receive the diploma of the Royal College of Veterinary Surgeons till he shall have attained the age of twenty years."

Mr. Taylor moved, and *Mr Dray* seconded, that this be now confirmed. The resolution was agreed to.

The next business was the confirmation of the bye-law, with regard to the pupilage of the candidate:—"That in and after the year 1884 no candidate present himself for the diploma until he shall have given

proof of having received at least one year's pupilage from a qualified member of the profession."

Mr. Dray moved that this be confirmed.

Mr. Greaves seconded the motion.

Professor Robertson said he did not think the Council had power to take such a step. He believed the schools would protest against it, and take legal advice upon it.

The *President* said the Council was not acting without advice. In December, 1878, an opinion was given by an eminent lawyer that the Council had power to enforce anything that was necessary with regard to the education of students.

Professor Robertson said the Council certainly had power to examine the candidates as they chose, but he thought they had no power to prescribe how they were to obtain their knowledge.

The *President* said the subject was fully discussed at the last meeting. If the Council had been acting on an erroneous opinion the bye-law could be cancelled.

The resolution was then agreed to.

Professor Axe then moved as an instruction to the colleges:—"That all students entering the several colleges after the 1st January, 1881, be required to produce a register of birth, or other satisfactory evidence of their having attained the age of twenty years, before receiving the diploma of the Royal College of Veterinary Surgeons."

The resolution was seconded and agreed to.

On the motion of the *President*, the Council directed that copies of these bye-laws be sent to the principals of each of the schools.

A vote of thanks to the President brought the proceedings to a close.

EDINBURGH VETERINARY COLLEGE.

Opening of the Session, 1880—1.

[We extract the following from the *North British Agriculturist*, as up to the time of preparing for press no official report of the Inaugural Address delivered at the Edinburgh College had reached us.]

The Lord Provost of Edinburgh presided at the opening proceedings of the college (Dick's) in the Council Chambers.

After a few appropriate remarks by the Provost,

Principal Walley delivered his introductory address, the subject being "Veterinary Quackery, and the Relation of the Veterinary Profession to the Public." He first referred to the various kinds of veterinary quacks, who, he said, were found amongst stockowners, coachmen, grooms, shoeing smiths, shepherds, saddlers, and others, who had no real knowledge how to cure the ailments of animals as they pretended to do. The profession was also invaded by certain chemists and druggists, manufacturers of artificial food, and even by medical men. The result of the operations of the quacks was that both directly and indirectly they destroyed more lives than they saved, and caused more pain than what they alleviated. With regard to the veterinary surgeon as a protector of the public, he performed, for example, an important function in the examination of horses as to their soundness, and in the detection of diseased meat and vitiated milk. He also rendered valuable services in the reduction of the number of contagious diseases in cattle. It was an important circumstance to observe that there was no contagious disease to which animals in this country were liable that could not be

effectually got rid of if prompt and energetic measures were taken on its first appearance. Veterinary sanitary science ought to be more encouraged than it was. In no country had this science been so undervalued as in the United States, and the consequence was that many flocks had been ravaged by disease. In speaking of the condition of the dairies of Edinburgh, he said that the proprietors of them were always ready to accept any suggestion from him with a view to their improvement. At the present moment he was glad to say that there was not a single case of contagious disease in any of the dairies. (Applause.) He concluded by giving some advice to the students.

Convener Williams moved a vote of thanks to Principal Walley for his address, which was heartily accorded.

NEW VETERINARY COLLEGE.

Opening of the Session, 1880—1.

The New Veterinary College, Gayfield Square, was opened by an address by Principal Williams. Captain Mitchel occupied the chair. Principal Williams advised those entering the College to cherish a feeling of deep responsibility for their professional career. He said that they had great influence in war, as the efficiency of cavalry and artillery depended upon the condition of the horses. Of the importance of this subject the war in South Africa had given striking examples; and he pointed out that this had not received a fitting recompense; only one reward, and that a good service pension of £50 had been bestowed. In the course of a short history of the veterinary science, he stated that there were at present three schools in Scotland and one in England. Without entering into a discussion as to what preliminary education was necessary for a student, he yet strongly recommended them to study French and German. The profession, he considered, had now reached that stage when it could apply for a penal clause in order to prevent those who had no diploma passing themselves off on the public. Contagious diseases were on the decrease in this country, and the Contagious Diseases Act of 1868 had been to a great degree successful. The County of Edinburgh might be stated to be free of pleuro, whilst foot-and-mouth disease had for a long time disappeared. After some reference to the arrangements recently effected between the Highland Society and the veterinary profession, Professor Williams alluded to the harmony and good feeling which prevailed during his year of office as President of the Royal College of Veterinary Surgeons. That harmony he attributed in a great measure to the fact of his having avoided the introduction of anything likely to cause discord, but he regretted to find that no sooner had his year of office expired, than innovations were being introduced which, if persisted in, would go far to destroy the unity of the profession so recently obtained, though long desired.

With reference to matters more particularly of interest to the public, the lecturer proceeded to say, It was not my intention to refer to the American cattle question, upon which, as some of you are aware, I differed in opinion with the veterinary advisers of the Privy Council in 1879; but in the last Blue-Book issued on August 31, 1880, my name is brought forward in connection with the researches of Mr. Lyman, an old student of this College, who was sent over by the United States Government during this summer. It appears from this Blue-Book that the Agricultural Department at Washington received a letter from Mr.

Lyman, dated the last week in July, in which he asserted that he had examined infeeted American cattle arriving in Liverpool since he came; that he finds many infected with what is known here and in England as pleuro-pneumonia (although, he adds, Professor Williams, of Edinburgh, does not consider it pleuro-pneumonia); that the disease was in most cases fresh; that the lungs were but slightly affected; and that three fourths of the cases were Western cattle exported from Boston. You will notiee that this letter of Mr. Lyman is said to have been sent in the last week in July. Now I never saw any of the lungs reported on by Mr. Lyman until the 20th of August, a few days before Mr. Lyman sailed for America. How it can be stated that I considered the disease was not pleuro, when I never saw it, is beyond my comprehension. It is, however, right that the public should know the merits of the ease.

Seeing, then, that my name has again been brought up in this matter, I take the opportunity of repeating that the American disease which I had the opportunity of studying in 1879, was not pleuro-pneumonia, but bronchitis, and that it was of a non-contagious nature, brought on by the vicissitudes of travel.

I do not for a moment deny that pleuro exists in the United States; nor would I wish to see the restrietions upon the importation of States cattle into this country removed, so long as the Government of that country do not enforce a sufficient security against the spread of disease, or so long as there is no legal line of demareation which would prevent the movement of animals from the Eastern to the Western States.

Mr. Lyman, I am told, examined the lungs of over 10,000 American cattle slaughtered at Birkenhead, and found that in most cases of those diseased the lungs were but slightly affeeted. Now, if the disease were pleuro, every man who has had experience of it will agree with me that, amongst so many animals, some at least would be found with their lungs in an advanced state of disease, although the cattle of themselves appeared in perfect health; for it is a well-known fact that many animals regain the best of health after having suffered from pleuro, become fat, and when slaughtered, perhaps months afterwards, present lesions of an unmistakeable nature. I have seen scores of such, and I have no doubt that every praetical man who has opportunities will agree with me.

One writer, who had the opportunity of seeing the same lungs as myself at Liverpool, but differs with me in opinion, states, "Granted that the neeroscopical appearances were not exactly identical with those we are accustomed to see in dairy cows, or, in fact, in any class of cattle where the disease runs a rapid eourse, the departures from the ordinary characteristics were not so great as to leave even the slightest doubt in the mind of the author as to the true nature of the disease, and these departures were no more than are produced by local circumstances—as breed, sex, and age of animals, mode of feeding, condition, strength of constitution, intensity of the disease, rapidity of its progress, and the primary localization of its origin, *i.e.* whether in the bronchial membrane, the pulmonary structure, or the pleura."

Now, pleuro-pneumonia is a specific disease, and presents specific lesions, as speeific and distinct as the smallpox pustule. It is very true that an ordinary lung inflammation in eattle leads to a condition very similar to that seen in pleuro, and it is an easy matter to eonfound one with the other; but when we have thousands of lungs examined, and none of the diseased ones present signs of the disease exeept in its fresh state, I think we are at liberty to conclude that the matter at least requires a thorough reinvestigation.

I have in the next place to draw your attention to what is just now agitating the public mind, namely, the Texas or splenic fever, which is said to have been discovered at Birkenhead in American cattle.

This, according to the description and history, is a most remarkable disease, and differs from all other known maladies in being communicated by apparently healthy Texan cattle to cattle of other breeds with which they may come in contact, or which may feed on pastures contaminated with the excreta of the Texan beasts. "Animals which are thus infected," says Professor Brown in his last report, "suffer and die at the rate of 90 per cent.; but they are not capable of infecting other cattle"—in other words, Texan cattle in the most robust state of health communicate a disease which proves fatal to 90 per cent. of other than Texan cattle; but here the matter ends, for these diseased cattle are incapable of further propagating the malady, or, according to Professor Brown, "The poison is rendered harmless by entering the system of any but a Texan beast, or probably it may be more correct to say that only Texan cattle have the power of excreting the poison of the disease."

The above opinion is founded upon a report by Professor Gamgee, who studied the disease in 1868; but there are some remarkable facts brought out in evidence, one of which I will venture to bring before you; 211 Texan cattle were driven to a farm in the vicinity of Francesville, Indiana, arriving there on the 26th May, 1867, in fine condition. They were brought in immediate contact with the native cattle on the farm, and allowed to mingle and intermingle in grazing for about six weeks, no disease making its appearance.

"About this time a Mr. Blair purchased another lot of 337 Texan cattle, which were immediately driven to his farm in this country. They were also from the frontier, and were in excellent condition. Like the others, they were placed upon old grazing ground, and native cattle were permitted to mingle with them and to graze upon the same ground with and after them. This herd was placed for quite a number of days in a large pasture which was reserved for milch cows. After they were removed therefrom the milch cows were immediately returned thereto, and have been grazing therein ever since, and no disease has made its appearance as yet (September 23rd, 1868).

"On the 1st July this herd was moved on to a ground opposite to that on which the lot of 211, already mentioned, were grazing, a small brook, which becomes nearly extinct in dry weather, only intervening. About two weeks after Mr. Blair's cattle had been placed on this ground, the weather became extremely hot; and the season being previously very dry, the water was speedily dried up in the creek, except where it stood in stagnant pools, from which the cattle had to drink it, and the grass became dry and parched, unfit for food. Cattle suffered greatly from the extreme heat, and received but little nutriment from the dried grass which they ate and the stagnant water which they drank. Their systems being thus depressed by these adverse causes were rich resorts for any disease, the germs of which were present.

"On the 27th July a number of native cattle sickened; some died suddenly, others lingered for six or eight days. From the day on which the disease first manifested itself it appeared successively among all the cattle that were allowed at any time to wander and graze over the ground whereon Texan cattle were kept; and nothing could save the cattle after the fearful symptoms of the disease had made their appearance. The only positively safe remedy was soon found to be a preventive—namely, confining Texan cattle closely upon their grounds, not allowing them to be moved about from one place to another, and to

carefully prevent all native cattle from coming into contact with them or the pastures upon which they grazed. This judicious course, together with several fine heavy rains, followed by a cooler atmosphere, better water and pasture, occurring about two weeks after the first appearance of the disease, had the happy effect of checking the prevalence of it. No new cases occurred, except upon the farms where it already existed. Even amid the cattle most severely affected a marked change for the better was immediately observed. Many of them began to recover slowly, and have finally reached a complete recovery" (*Blue-book*, August 31st, 1880).

You will observe that in this outbreak three factors, in addition to the presence of Texan cattle, were in operation—namely, very hot weather, short supply of water and that in a stagnant condition, and grass so parched as to be unfit for food. To most men conversant with cattle diseases these causes would have appeared to be quite sufficient of themselves to induce a pestilence amongst stock; but neither the writer of the report nor the chief inspector of the Privy Council seem to attach any importance to them, although the disease seems to have discontinued when these causes were counteracted by heavy rains, cooler atmosphere, and more abundant pasture. No remedy was of avail whilst the three causes were in operation, but immediately upon their disappearance "the most severely afflicted" became convalescent and finally recovered.

Gentlemen, I am not in a position to contradict the conclusions of the chief veterinary adviser of the Privy Council, but to my mind there are great grounds to doubt their correctness; and seeing that our welfare very greatly depends upon a supply of cattle from America, where they can be reared and delivered in this country at a much cheaper rate than they can be bred, I think the whole question, not only as it applies to pleuro but also to Texan fever, should be reopened and thoroughly investigated.

It is very true, fat cattle are landed here and our beef supply thus materially increased; but this is not what is required. The farmer wants to be supplied with cattle ready for feeding, at a price that will leave him some profit, a want which cannot be supplied unless American store stock are allowed access to our inland markets. Two years ago home-bred lean stock, bought in the autumn, cost as much, and in many cases more money, than they sold for beef in the following spring, leaving nothing to the farmer but the manure. Can we wonder, then, at the extreme depression which has proved so disastrous to our agriculturists?

On the motion of *Dr. Dycer*, a vote of thanks was accorded to Principal Williams for his lecture; and a similar compliment having been awarded to the chairman, the proceedings terminated.

GLASGOW VETERINARY COLLEGE.

Opening of the Session, 1880—1.

The Introductory Lecture to the Winter Ssssion of Glasgow Veterinary College was delivered yesterday afternoon by F. W. Clark, Esq., L.L.D., Sheriff-Principal of Lanarkshire.

Principal M'Call occupied the chair; and in addition to the students, who were present in large numbers—the lecture-room being crowded—the following gentlemen among others were present:—Professor Young, Glasgow University; Dr. Marwick, City Chambers; Rev. D. Johnston,

Cambuslang; Rev. Mr. Storry, Carmunnock; R. Walker, Esq., Lethamhill; Mr. Johnson, Letterick; and Mr. Young, junr., Greenlees; Professors Knox, Cooke, and Macqueen, Glasgow Veterinary College. The following Veterinary Surgeons were also present:—Mr. M'Gill, London; Mr. Dunlop, Belfast; Mr. Kidney, Belfast; Mr. M'Intosh, Dumfries; Mr. Thomas Campbell, Kirkcudbright; Mr. Chivas, Corbridge; Mr. Thomson, Inverness; Mr. Spreull, Dundee; Mr. Crockatt, Dundee; Mr. Lindsay, Alloa; Mr. Robinson, senr., Greenock; Mr. Robinson, junr., Greenock; Mr. R. Rutherford, Edinburgh; Mr. M'Farlane, Greenock; Mr. Pottie, Paisley; Mr. M'Geoch, Paisley; Mr. Houston, Paisley; Mr. J. M'Call, Govan; Mr. Weir, Airdrie; Mr. Weir, Glasgow; Mr. Blackie, Bellshill; Mr. Bryce, Stirling; Mr. Pollock, Hamilton; Mr. Jarvie, Carluke; Mr. Brackenridge, Holytown; Mr. Gardner, Helensburgh; Mr. Neil, Dumbarton; Mr. Prentice, Glasgow; Mr. Mitchell, Cranstonhill; Mr. Pollock, Parkhead; Mr. Mitchell, Glasgow; Mr. J. B. Macqueen, Glasgow; Mr. Wm. Anderson, junr., Glasgow; Mr. Dickson, Glasgow; Mr. Currie, Glasgow; Mr. Wyper, Glasgow; Mr. Blue, Mearns; Mr. Allan, Clarkston; Mr. Panton, Blairgowrie, Mr. Constable, Inchture; Mr. George Hill, Glasgow; Mr. Clark, Dalserf; and Mr. Peddie, Cathcart.

Sheriff Clark, who was introduced by the chairman, said—When I was asked to deliver the Introductory Lecture at the Winter Session of this admirable Institution, which is now rapidly attaining deserved celebrity, it was with no little hesitation that I accepted the honour. My almost entire ignorance of veterinary medicine—except in so far as reading may have given me some small acquaintance with its theory and history—seemed to forbid the hope that I could be of any real service. Yet as I am warmly interested in the progress of a profession fraught with so much practical utility and promising so much towards the advancement of science, I could not refuse to accede to the solicitations of your Principal, to make some general observations that might tend in some degree to stimulate your labours. Veterinary medicine must have come into existence as soon as man began to domesticate the inferior animals; and that this took place at a very remote era is amply proved by the remains of the horse, the ox, the goat, the dog, &c., being found in ancient *tumuli*, lake-dwellings, and caves, intermingled with the bones of primeval man. It is also established by the fact, that among all the members of the Aryan race the names of the domestic animals still bear the marks of a common origin at that distant pre-historic period when, before their separation into Greeks, Celts, Goths, Sclavs, Hindoos, Persians, the common ancestry dwelt together and spoke the same language in Northern India. From the Greek writers we can see that the veterinary art was studied in ancient Egypt. From thence it would seem to have passed into Greece, where the great care bestowed on the breeds of cattle, and particularly of horses and hunting dogs, and the great success with which that care was rewarded, incontestably prove that the veterinary profession had at least made great progress as an art. From the notices of Greek writers we see that many treatises existed on the diseases of domestic animals,—that by Hippocrates, a celebrated physician of Cos, was deemed the best. We must regret that most of them have been lost; yet any one who reads Xenophon's work on the horse cannot fail to see that he lived in an age when the veterinary art had been carefully studied. During the flourishing period of the Roman Empire, veterinary medicine made great progress, as might be expected among a people eminently practical, whose vast military establishment required continual remounts for the cavalry service, and who were un-

weariedly employed in improving the breeds of domestic animals. That awful catastrophe in the history of the human race known as the fall of the Roman Empire, and the night of darkness that followed, have deprived us of the greater part of ancient literature. Among other losses, we have to deplore that of many works on veterinary medicine, the names of whose authors alone remain. Yet enough remains to show how carefully the art had been studied, and what progress it had made towards the dignity of a science. Upon this subject I would refer to the treatises of Marcus Cato, of Terentius Varro, of Columella, of Palladius, of Vegetius, and the fragment of Gargilius Martialis—all of which, directly or indirectly, deal with the veterinary art. The celebrated work of the elder Pliny—Plinius Major—on natural history may also be consulted, as throwing light on the veterinary medicine of his day ; so also may the philosophic poem of Lucretius—"De Rerum Natura." Everyone has seen the earlier work of Virgil, in which in immortal verse he treats of the breeding and rearing of cattle and horses among the other cares of the husbandman. Many have wondered how a poet should know so much of such a subject. The wonder abates when we find it recorded by Donatus that, after completing a course of medicine and mathematics, the youthful poet studied veterinary surgery for a considerable time, was employed in the stables of Augustus Cæsar, and was ffrst brought under the notice of that emperor by his skill in the art. On the fall of the Roman Empire, veterinary medicine, like other departments of science, ceased to be cultivated, and for a long period fell into the position of a handicraft, in which smiths, shepherds, or herdsmen empirically practised such treatment as tradition taught or experience suggested. It was about this time that the blacksmith or farrier came to the front and began to assert himself as the great depositary of the veterinary art. In classic antiquity, horses were not usually shod with iron ; and even when metal was used for that purpose, it was commonly fastened to the hoof, not with nails, but with thongs or latchets like a sandal. It was among the barbaric hordes which overran the Roman Empire, that the iron shoe, fastened with nails, came into vogue, much about the same time that the tree saddle, with stirrups, was invented. How such obvious improvements in the equestrian art should not have been earlier adopted, is one of those curious facts in the history of mankind that have never been fully explained. The fact is certain that the classic languages of antiquity contain no words for horse shoes, saddles, or stirrups, in their modern sense. Now, the saddle throughout the middle ages—at least, when used for military purposes—was formed of steel or iron, and was consequently the work of the smith. To the smith also belonged the forging of the iron shoe and the driving of the nails. The last operation, as we all know, required no small skill, and the smith often caused injuries to the hoof, which he had to do his best to cure. About the same time, also, the use of the actual cautery became common, and from these combined causes it is easy to see how the farrier came to be regarded as an authority in veterinary medicine. Nor were the ancient farriers the rude blacksmiths into which they ultimately degenerated. They were the forgers of armour, both defensive and offensive, at a time when that art was much more highly cultivated than it has ever been since the invention of gunpowder. They were men often of great attainments in metallurgy and chemistry. As time wore on, a great change took place in the military art. The armies of Greece and Rome had been mainly composed of a highly-disciplined infantry. With the institution of chivalry, this (about the ninth century) was entirely changed. The strength of the mediæval armies

came to consist almost entirely of heavy cavalry, in which man and horse were completely covered with defensive armour, so that the medium weight to be carried by the knightly charger was no less than thirty stones. A peculiar kind of horse called a "destrier," and now lost, was required for this purpose—combining great strength with still greater energy—not, indeed, for speed, but for rapid evolution, so that the knight might wield his heavy lance and battle-axe with advantage in close combat. These horses were procured at vast expense in Spain and Italy; and, when procured, were subjected to an elaborate training of years, until they obeyed the slightest movement of wrist or heel, and played nearly as important a part in the melée as did their riders. This severe training, and the exertions they had to make on service, subjected them to continual strains and diseases; but as their value was great, every means of prevention or cure was eagerly sought after. The practice of covering the horse in every part with defensive armour also drew after it important consequences. His ears were cropped out close to the head to permit the covering of mail to fit closely; and for the same reason his tail was not docked but dug out close to the croup. Moreover, this heavy panoply of iron exposed the horse to alternate sweats and chills that proved highly destructive. Such things necessitated some knowledge of surgery and medicine. And here came in the important part played by the riding-masters or maréschals of the day. It was the profession of these gentlemen to procure and train such horses, and afterwards to direct their treatment. Hence they carefully studied the nature and constitution of the horse, and generally possessed the highest degree of veterinary skill known at the time. In Spain, Italy, France, and Germany riding schools, called academies, were established. Some of them obtained a world-wide celebrity. Numerous works on the manége, that is, military riding, emanated from them, and to each was always attached a treatise on the veterinary art. In so high estimation was this combination of riding-master and veterinary surgeon held, that it was exercised by the highest of the military nobles. It is a very significant fact that the French word "maréschal," which denotes the highest military officer in France, originally meant a veterinary surgeon, and is still used as the name for a farrier. With the introduction of gunpowder chivalry was extinguished, heavy cavalry fell into disuse, and the armies of Europe came to consist mainly of infantry. This revolution brought about the decline of the old maréschals with all their science and traditions, and that art which kings and nobles had loved to teach, fell into the hands of obscure practitioners with little more science than that possessed by a huntsman or trainer for the turf. The Marquis of Newcastle, whose celebrated work appeared about 1680, was the last of the great military riding-masters; and though after his time his humbler brethren made a gallant struggle to maintain their ancient renown, they steadily declined, and the science of the riding school gave way to that of the turf. The result of this was that the veterinary art was fast passing into the hands of blacksmiths, now no longer armourers, and was in danger of tumbling from a profession to a trade. Coincidentally, however, with the decline of the professors of military equitation, arose the first pioneers of the science of veterinary surgery, properly so-called. In Italy, as early as 1618, appeared the work of Carlo Ruini, on the diseases of the horse, profusely illustrated with superb engravings. This was followed in France by the 'Grand Maréschal François,' a work of great erudition. Soon after appeared 'Le parfait Maréschal,' by Sollysel, and this was translated into English or rather Scotch by Sir William Hope. From that time numerous treatises appear all over

Europe, all having for their object to rescue the veterinary art from obscurity, and bring it into the form of a science. Several of these writers, such as Gibson, Bracken, La Fosse, and Osmer, were medical men of eminence. They did much to free the veterinary art from blind empiricism. Yet their practice and prescriptions, though vast improvements on those of their day, are tinged with cruelties and puerilities at which an ordinary strapper would now stand amazed. At this we need not be astonished. Those were the days when medicine and surgery, even as applied to the human patient, were of such a kind that we do not marvel that so few were cured, but that any one escaped alive from the hands of the learned faculty. At length, as ordinary medicine began to improve, veterinary science followed in its wake. In Italy some veterinary colleges, of which little is known, were in existence in the beginning of last century. But it was not till 1761 that the first veterinary college was founded in France, at Lyons, under the well-known Bourgelât. This was followed by the now celebrated school of Alfort, founded in 1766. In 1792 the Veterinary College of London was founded, Charles Vial de Sainbel and Delabere Blaine being the first professors; and the work of the latter, which has passed through numerous editions, is still highly prized. Since then veterinary colleges have been formed in every European capital and in many of the principal cities. In Scotland, Professor Dick founded a Veterinary School at Edinburgh, and in Glasgow our worthy Principal has succeeded in establishing this College, which has already become an honour to the kingdom, and for which a great future is, I doubt not, reserved. (Loud applause). Veterinary medicine has now reached a position to which even in the most brilliant days of Greece and Rome it certainly never attained. It is no longer a mere art; it has become a science, and a science of vast range and vast importance. It has passed out of the stage of empiricism. Its professors are no longer content to do or prescribe what they have seen done or prescribed before. They wish to know the reasons of the practice they adopt; they wish to interrogate nature by experiment and observation; they seek to collect and arrange facts over the widest areas and by every variety of means, and they labour to evolve from the materials so collected the concealed laws or tenors of action by which nature may be supposed to work. They do not reject theory, but they insist on bringing the most plausible theories to the test of experiment. Unlike their predecessors, they do not compel fact to square with a favourite theory; they regard theory as valuable only when it harmonizes with and serves to explain fact. There is in the present day a circumstance that at once extends the bounds of veterinary science, and gives it an importance never felt before. You are all aware of the modern theory of evolution, based on what is termed natural selection or survival of the fittest in the continued struggle for existence. Its most ardent and advanced votaries claim for this theory the real explanation—not of the origin of creation, as some have supposed—but of the origin of species; in other words, the real cause of the various types of life heretofore and now existing on the earth. I cannot say that I am a convert to this notion. I do not think that the ascertained facts are a sufficient basis to support the vast theory which is attempted to be reared on them. But whether I am right or not in this view, one thing, I think, has been clearly established, and that is, that among all the vertebrates—man included—the materials, organs, and structure of the body are so connected in accordance with some underlying plan or law, that all are in strict analogy, and are only adaptations of one common set to the wants and requirements of each

separate species. This adaptation appears to be brought about by the processes of development, as though the great Creator had utilized certain typical organs for every purpose comprised within the beneficent scheme of animal life. Thus, to take two of the most divergent instances —the horse and man—the stifle joint of the horse is the analogue of the human knee, the hock of the heel, the single toe on which the horse walks is the analogue of the central digit in the human hand or foot, the other digits being represented in the existing horse by the splint-bones, which in the earlier equine species carried hoofs, and in still earlier forms appear to have reached the typical number of five. These, and thousands of similar analogues, do not to my mind prove community of origin, but they prove unity of plan, and strongly point to this, that if ever the sciences of life and curative medicine are to be prosecuted in an exhaustive and effectual manner, it must be by comparative anatomy, comparative physiology, comparative science, in short, universally. Veterinary science has thus assumed vast importance, and has come into line with human medicine and surgery. Neither of those two sciences can hereafter stand apart. The veterinarian has much to learn from the medical man, and the medical man from the veterinarian. Indeed, the time cannot be far distant when for all the higher purposes the two provinces of medical science must coalesce. If I am at all right in the views I have been indicating, it follows that not only is the profession to which you have devoted yourselves one of great importance, but important duties devolve upon you who are now its students, but will hereafter become each in his sphere its pioneers and advancers. Permit me, therefore, to give a few words of counsel which experience in a different line has impressed on my own mind. Every man should seek so to learn his profession that he may live by it. He who fails to do this may be said to fail in a primary and important duty. But if any man resolves to know only as much of his profession as shall enable him to maintain himself, his object in life is a very humble one, and the probability is that he will not even attain that object, humble though it may be. To succeed in any walk of life whatever requires it to be prosecuted with enthusiasm. But this is specially the case where the calling chosen is a profession—that is to say, not merely an art but a science. The veterinary profession has now definitely entered the circle of the sciences, and must therefore advance with increasing acceleration. He, therefore, who should cultivate it merely as an art, however well skilled he might be in the art when he left the College, would find in a few years that he was left high and dry by those who, perhaps, though with inferior abilities, had chosen to follow the scientific stream. Nor is there any excuse for the veterinary student who does not prosecute his science with enthusiasm. The mere lawyer, after he has laboriously cultivated his profession for years, may find much of his laboriously acquired learning swept away by a new Act of Parliament. The veterinarian deals with the eternal verities of nature. Whatever truths he can attain to remain truths for ever, and become new points of departure for still more important verities. Small as the contribution may be which he may make to his science, if only it be truth, it is so not relatively but absolutely. Again, let me advise you to cultivate a habit of reading in your leisure hours, so that it may become not a duty only, but a source of the highest enjoyment. In old times the veterinarian could advance only by personal observation, or the suggestions of such friends as were in his immediate neighbourhood. Now-a-days, the press brings the experience and discoveries of the whole scientific world within the reach of those who avail themselves of its aid. A man may, therefore, learn more

in a month than he could of old have learned in a long life. Do not, however, allow the habit of reading to supersede that of practice and observation. He who knows his profession by books only, runs the risk of being a mere *dilettante* theorist. A theoretical veterinarian, like a theoretical lawyer, is a most dangerous member of the community. Science is as helpless without art as art is without science. Though I should read up so as to pass a creditable examination, yet should I certainly fail if I attempted to perform the simplest operation which an ordinary farrier would execute with instinctive ease. Some of you may be defective in those preparatory acquirements without which you will always find yourselves handicapped in your professional career. Among them may be mentioned a knowledge of Latin and French. There is no great difficulty in acquiring a knowledge of both sufficient for your purpose, provided only you devote an hour or two daily to their acquisition for a sufficient length of time. The difficulty is to make a beginning. But observe this, that the longer you delay the more difficult will it become, until at last you will neither have the inclination nor the aptitude for such studies. Only get over the initial stages while yet young, and you will find that in your leisure hours afterwards you may insensibly push such studies to any extent you may desire. The same is true of mathematics and kindred sciences. In the initial stages only is the difficulty felt. Lay the foundation while yet young. The superstructure may afterwards be easily raised. Some of you are come from the country, and are probably for the first time exposed to the temptations and the distractions of a large and populous city. That the dangers of these are great—very great—cannot be denied. It is painful to think how many young men of promise, from whose exertions science might have gained much, are thus annually lost, or form habits that eventually lead to ruin. As a guard against such disastrous results, I would counsel you to hold fast by those religious sentiments which you have received in your early homes. Such impressions are always the most valuable treasures we inherit. I would not inculcate asceticism, yet it is well to remember the apostolic precept, "Avoid the very appearance of evil." It is also well for youth rather to flee temptation than to trust to resisting it when exposed to its power. One important advice given by the ancients, and fully approved in modern times, is to make sure to a certain amount of physical exercise every day. Not only does this preserve *mens sana in corpore sano*, but it indirectly promotes regular living by sending a man early to bed. I do not mean that you should cultivate athletics, which often do more harm than good, but that by walking and the like you should take as much exercise in the open air as shall keep you in good condition for mental labour. It is well always to bear in mind that, as young men of the present day, you are in reality the heirs of all the ages that have preceded you. All that science has with untold efforts and struggles secured now lies before you to acquire, by simply making it your own. By the accumulated efforts of those who have gone before you, you stand on a vantage ground such as the greater scientists of the past never possessed. The wealth of a Roman emperor could not have procured for him that scientific teaching that is now spread before you. For this rich inheritance that is bequeathed you from them into whose labours you enter, some return is due by you to the future. And that return can only be made by strenuous exertions on your part to add still more to the stores of learning that will fall to those who come after you. Every school of learning depends for its celebrity not only on the abilities of its teaching staff, but on the application, the loyalty, and the enthusiasm of its

students. The youth of this country, particularly of Scotland, have always been characterised by a desire for learning even under the greatest difficulties. Each one of you would, I doubt not, desire that this institution should flourish. Now, one of the most effectual means to that end consists in the diligence with which you prosecute your studies. And remember, that in thus promoting the welfare of this College, you are really promoting your own.

Professor Young thought the Principal and students were greatly to be congratulated on the choice of the person by whom the session was inaugurated, for seldom has an institution of the kind been opened by an address so valuable in itself, so useful, so well worthy of being borne in mind by those to whom it was addressed, and also by the entire profession of which they desired to become members. The admirably succinct views afforded of the history of the profession made the address a historical document of some value, seeing that it showed what seemed to be too much forgotten at the present day, namely, that the veterinary art had fallen from the high position it had once occupied by a mere accident, and had not been restored to its due position because of the unworthy jealousy and suspicion with which it had been regarded by members of the profession to which he himself belonged. It was to such institutions as the Glasgow Veterinary College they must look in the future for the restoration of both human medicine and veterinary medicine to their proper place—the restoration of the due proportions which were to exist between them; and he thought Sheriff Clark had foreshadowed very well what was the ardent desire of all who had the slightest interest in the progress of medicine in its most comprehensive sense when he suggested that human medicine and veterinary medicine should ere long form one indissoluble whole. (Applause). He himself had long looked forward to a combination of the two kinds of medicine as a necessity that must come if pathology was to be put on its proper footing. He asked them simply to bear in mind this important point, the necessity for the careful study of comparative pathology; for those of them who happened to have read the discussions upon some of the legislation recently proposed before Parliament would doubtless have come to be aware of the fact that but for the labours of the veterinary surgeon they would still be in the dark as regards the character of some of the diseases which played such terrible havoc in the human race. (Applause). As regards the sound advice tendered by the Sheriff, he would say nothing, but he should like to make an addition to what the Sheriff had said in speaking of what might perhaps come before the students as the ruling ideas of their studies regarding the development of the horse and other domestic animals. They would doubtless hear a good deal about evolution, and Sheriff Clark would pardon him if he reminded him that they were long past the days of natural selection; that evolution, as it was called—a title claimed by one particular class of observers, he thought, somewhat unfairly, and to the prejudice of others who were equally entitled to claim it—had now added codicil after codicil to the right theory of natural selection, until they had a vast multiplicity of possible causes, each new explanation being needed to meet the case of some new difficulty. It was therefore superfluous in him to add anything regarding the danger of trusting to any one theory; but, if necessary to insist upon it, he should put it upon this ground—that there were so many additions needed, sometimes scarcely reconcilable with each other, it was best for them to confine their labours in the meantime to actual observation, trusting to the future calmer thought, and wider experience, before any one particular doctrine of evolution

should be adopted. (Applause). He moved a cordial vote of thanks to the Sheriff for his discourse.

Dr. Johnstone seconded the motion, which was warmly responded to.

VETERINARY MEDICAL ASSOCIATION.

The First General Meeting of the Forty-fifth Session of the members of the Veterinary Medical Association was held in the Lecture Theatre of the Royal Veterinary College on Tuesday, 19th October, 1880, at 6.30 p.m.

The *President*, Professor Pritchard, occupied the chair.

A general invitation to this meeting had been issued by order of the President to all students at the Royal Veterinary College. Thirty-one visitors responded to this. Twenty-two members also attended.

The *President* having announced that urgent private affairs necessitated the absence of the Secretary, and having read that officer's letter of apology, called on Mr. Pemberthy, as *pro-Secretary*, to read the minutes of the last General Meeting of the Forty-fourth Session, which were received.

The Secretary's "Report of the Proceeding of the Association during the Forty-fourth Session" was then read and accepted. It had been previously received by the Council.

The awards of the past session were then announced, and the prizes distributed.

Messrs. C. C. Clarke, James Smith, Albert Hassal, and Wm. Harold Leeny, M.R.C.V.S., of Brighton, were then proposed as fit persons to become members of the Association.

The following gentlemen were then elected *Student Vice-Presidents* for the coming session:—Messrs. Bennett, Huband, Fletcher, Pemberthy, Edgar, and Redford.

The *President* then announced the subjects for prize competition, as decided by the Council, for the coming session, strongly urging all student members to send in essays and anatomical specimens. During the course of some general remarks he warmly eulogised the suggestion thrown out in the Secretary's report as to publication of the work of the Society; also drew attention of the members to the value of taking part in the discussions following the reading of essays, &c., and the visiting of knackers' yards in search for morbid specimens.

The names of gentlemen prepared to read essays at the General Meetiug were then received, and after votes of thanks to the Chairman and Mr. Pemberthy for their services, the meeting terminated with the announcement of Mr. Hurndall's paper, "On the Feeding and Management of Dairy Stock, as it is and as it might be," for the next night.

(Signed) John Penberthy, *pro-Secretary*.

Report of the Proceedings of the Veterinary Medical Association during the Session 1879-80, *being the Forty-fourth Session of the Association, as presented to the Council by the Secretary.*

Mr. President and Gentlemen,—During the session which has passed the Association has been pursuing its course in a satisfactory manner. It has, in so far as circumstances permitted, tended to advance veterinary science by the reading of professional papers, with free discussion of the views advanced therein, by the examination and exhibition of specimens of professional interest, and by the awarding of prizes of

various kinds to such persons as have been deemed worthy. Also by the free circulation of library books and periodicals. In all, twenty General Meetings have taken place during the Winter Session of collegiate studies, the opening meeting having been held on the 14th October, 1879, and the final meeting on the 16th March, 1880.

The first General Meeting was public, and at it the President delivered his introductory remarks, and the Secretary read his "Review of the Session 1878-79." Then Mr. G. A. Banham, M.R.C.V.S., Spooner Gold Medalist, read a paper, "Introductory to the Study of Disease." At the same meeting the President announced the temporary agreement between the Council of the Association and the Governors of the Royal Veterinary College whereby the library of the Association is now available for use by all students.

The following gentlemen were elected *Student Vice-Presidents*, and have satisfactorily performed their duties as such during the session:—Messrs. Slipper, Magor, Lepper, Villar, Gregory, and Talbott.

The following is the list of essays which have been read at the General Meetings:

1.—14th October. "Introductory to the Study of Disease," Mr. G. A. Banham, M.R.C.V.S.
2.—28th October. "Pleuro-pneumonia Epizootica," Mr. Ed. Slipper, V.P.
3.—4th November. "On the Stomachs of the Ox," Mr. T. W. Cave.
4.—18th November. "Anthrax," Mr. F. C. Toop.
5.—9th December. "Tuberculosis in Cattle," Mr. F. W. Lepper, V.P.
6.—16th December. "On Horse Shoeing," Mr. S. Villar, V.P.
7.—13th January. "Laminitis," Mr. E. R. Harding.
8.—20th January. "Rot in Sheep," Mr. J. I. Crowhurst.
9.—3rd February. "German Veterinary Schools," Mr. G. A. Banham, M.R.C.V.S.
10.—10th February. "The Prospects of Veterinary Students," Mr. J. H. Steel, M.R.C.V.S.
11.—17th February. "Diphtheria," Mr. W. H. Beach.
12.—24th February. "Typhoid Fever in the Pig," Mr. J. W. Carlisle.
13.—9th March. "On the Antiseptic System," Mr. E. E. Bennett.

Thus, though the meetings were fewer by one, the papers brought forward have been more numerous by the somewhat larger number of three as compared with the Forty-third Session. They have for the most part also been of high character and great professional interest, reflecting to a marked degree the history of the prevalence of disease and of the progress of medical thought during the past year. Thus, the papers by Messrs. Bennett and Beach may be associated with the discussions in medical journals and at the Pathological Society on the same subjects. The papers by Messrs. Lepper, Toop, and Carlisle bear upon the questions concerning specific disorders, which have been brought prominently forward during the past year by the researches of Greenfield, Cheyne, and Lister, in this country, Pasteur, Toussaint, Bollinger, and others, abroad. Mr. Slipper's paper on the "Lung Disease" was particularly *à propos*, as reminding us of the important questions hinging upon the prevalence of this disorder in the United States of America, where, as well as in this country, it has been necessitating legislative measures, and compelling the attention of the Government and public of the two nations to the usefulness and progress of the veterinary profession. Mr. Crowhurst's paper reminded us of the disorder which was exterminating our flocks and cutting off an important source of meat supply. It

brought forth good fruit in the hints and observations which it contained, and also in those which its discussion elicited. The essays of Messrs. Harding, Villar, and Cave were characterised by a marked practical bearing, and serve to prove that at our meetings we do not in scientific enthusiasm forget that the duties of the members of the veterinary profession are in most intimate relation with the every-day life around us. Such papers are at once refreshing and useful, and while they prove most interesting to those hearers who have some professional experience, must tend to give the inexperienced student accurate notions of the work he will have to undertake. Mr. Cave's paper contained some interesting physiological suggestions, which were searchingly questioned in the discussion which followed the reading of it. The kindness of Mr. Banham in preparing a paper was only equalled by the excellence of the matter which he brought forward. English students listened with keenest interest as he told them of the grand scientific opportunities which the Berlin School affords, and it was with much satisfaction that the opinion that the English veterinary surgeon is "second to none" in the practical exercise of his profession was received. The paper which the Secretary had the honour to read before the Association may be considered as of very great importance to all student members, and, we have heard, proved of interest to those who have become members of the profession. It endeavours to facilitate the reply to the question which urgently presents itself to every student, "What shall I do when I get my diploma?" Thus, with reason, I urge that the general meetings have proved successful in keeping the members *au courant* with professional history and professional progress. The Association has every reason for self-gratulation in this respect for the Forty-fourth Session. Also at the General Meetings pathological specimens and appliances have been exhibited and examined. The following list will show the amount of work done in this respect:

The *President*.—Cases of Epithelioma Vesicæ; Ramollissement in the Sheep; A Foal born without Fore Limbs. Also exhibited a Bradawl which had been swallowed by a Horse, and a Tracheotomy Tube which had fallen into the Trachea and remained there.

Mr. W. Almond.—A case of Pseudo-fracture; Separation of the Ulnar Epiphysis.

Mr. Lepper.—A Photograph of the Fauces of a Pig suffering from Diphtheria, and a portion of the Bladder of Favonius, with the Calculus which it contained.

Mr. Slipper.—The Genital Organs of a Cryptochord, together with some of the Abdominal Viscera, being a case of Encephaloid Growth (forwarded by Mr. Shipley, M.R.C.V.S., of Yarmouth).

Messrs. Leeny, M.R.C.V.S., and *Steel*.—A Tumour in the Spleen of a Dog, recorded in the *Veterinarian*.

Messrs. Beach and *Toop*.—Cases of Primary and Secondary Heart Disease.

Messrs. Fletcher and *Cattrall*.—Cases of Obscure Disease of Abdominal Viscera.

Mr. Steel, M.R.C.V.S.—A Mouse affected with Honeycomb Ringworm ("Tinea favosa").

Among these we may specially note the calculus from Favonius, on account of the considerable amount of attention which the case of this celebrated horse received from the public. Mr. Lepper's remarks, as entered in the minutes of the Proceedings of the Association 11th November, 1879, are as follows:—"The presence of the calculus, was diagnosed by Mr. Lepper, senior, three years before the patient suc-

cumbed to an epizootic. This gentleman distinctly felt the stone at the neck of the bladder, and to this attributed retention of urine from which Favonius was suffering. It was then about the size of a nutmeg, but is now as large as a goose's egg, lobulated on the surface, and apparently very hard. The horse was of a very nervous temperament, and was always irritable when his hind limbs were touched. The urine had been sent to an analyst in London, who found no indication of calculus; that which was first passed was thick, but subsequently the flow became thin and translucent. There was some question as to whether lithotomy should be performed, but the horse was a sure stock-getter of very high value, so the idea of the operation was abandoned. Hydrochloric acid was administered internally for three months, but without any appreciable effect, for pains were manifested periodically. So belladonna extract was placed in his drinking water in the morning, Liquor Potassæ in the evening. The benefit of this was proved by the fact that if it were ceased pain recurred. Incontinence of urine reappeared before the animal died."

Mr. Slipper's case was most interesting, as being very similar to one which he submitted to the Association the session before. As the two animals came from the same place it was suggested the encephaloid might be due to hereditary influence. The specimen was submitted for examination to a committee of the members, and was reported upon at the next meeting. It seems that this method of referring to a committee work which would take up too much of the time of the Association as needing somewhat minute investigation is a matter which ought to be encouraged, as tending to the more thorough performance of the work of the Association, to the training of members to the system adopted in our leading learned societies, and to the preparation of elaborate records for preservation or publication. The report, as submitted by Mr. J. Gartside Mayor, Chairman of the Committee, is placed before you.

The question of publication of Proceedings of the Association is one of urgency, so that I venture to bring it under your notice. The circumstances of the Society have much changed since the time when it produced its own journal, *The Veterinary Transactions*. The growth of veterinary societies in various parts of the country has converted ours from a general to a special Association.

As I expressed it last year, the Veterinary Medical Association, while still having wide sympathies with its members who have become qualified practitioners, is now the "Student's Society of the largest British Veterinary schools." Thus, we are no longer in a position to produce a journal; it is not desirable that we should do so, but it may well be asked why the proceedings of the Association are brought under the notice of the professional public only in the form of an annual report? In reply, it may be urged that the papers of students are seldom original, and their discussion not often profound and measured. Still, as our work of the past year shows (*a*), some of the papers read at our meeting are well worthy of publication, as might be expected, since their student authors have time and opportunities at their disposal such as are not permitted to the busy practitioner; also (*b*) with fresh theory at our fingers' ends, and with an unconventional mode of looking at professional matters, we not unfrequently at our discussions strike out new lines of thought and leave the beaten track; we are also (*c*) collected together from various parts of the country, and thus specially have the characters of a central society; and (*d*) especially, our supply of morbid and other specimens is rich and varied, also our prize essays ought to be published in justice to their authors, to unsuccessful competitors, and to the profession. Having

such an amount of material at our disposal, it seems to me that different courses of procedure are possible.

1. The Association might publish annually a small volume of Proceedings. This would be adopting, on a small scale, the method of such societies as the Zoological, Pathological, &c. It would prove advantageous by enabling the Association to exchange proceedings with other students' societies, and in other ways, but it would prove expensive and onerous to the officers; it would necessitate the formation of a "Publishing Committee."

2. The Association might appoint a working "Publication Committee" to prepare reports of the work of the Society (and also essays) to be forwarded to editors of veterinary periodicals, who be requested to, if possible, give them a place. The less important essays might be "extracted," and thus their most useful matters retained.

3. The Secretary might be instructed to forward for publication all reports of committees on professional matters, all accounts of cases, and all prize essays, using his discretion in the selection of material. This is the system adopted by most veterinary societies, with, however, the regular record of meetings and discussions, not always interesting. On this system the details of the meetings and discussions would remain in the minute book and then be available for reference. A further consideration of this matter seems to me to be necessary for the advancemoni of the Association. We ought also to consider the question of occasional co-operation with other students' societies, especially those of other veterinary and of the metropolitan medical schools, but this matter is at present rather prospective. Another question which members of the Association, as well as its officers, ought to consider is that of the collection of specimens for the use of the members, such as parasites, materia medica objects, forage plants, microscope slides, &c.; in the future the Association will admit of great development in this direction, perhaps some day our opening meeting may attain to the dignity of a soirée or a professional conversazione. I thus give "free reins to my fancy" of the future of the Association, because I am now desirous of impressing upon our student members that we *must* have recruits to carry out any of these marked advances. An annual increase of twenty-one members out of the large number of students who enter the College is rather small, and if our members were more urgent in explaining the advantages of the Association, doubtless most of the students entering the College would become members. The advantages at present offered comprise the chance of prizes and awards, the benefit of discussion and essay writing (voluntary), the practical and theoretical information conveyed by papers and impressed on the mind by discussion, the privilege of examination of morbid specimens, the importance of each of which is carefully explained, and special reading-room privileges. The enumeration of these leads us to the question of prizes and awards made during the past session. The "Essays Committee" of the Council has given the following list of awards for essays read at the General Meetings:

General Meetings Prize.—Mr. Theodore Chas. Toop, for his essay on "Anthrax."

Honorary Fellowship Certificates.—Mr. G. A. Banham, M.R.C.V.S., on "German Veterinary Schools;" Mr. R. Harding, "Laminitis;" Sidney Villar, "Horse Shoeing;" W. H. Beach, "Diphtheria;" E. Bennett, "Antiseptic System;" J. W. Cane, "Stomachs of the Ox;" T. W. Lepper, "Tuberculosis in Cattle."

The *Spooner Prize Examination* was held in the College on Thursday,

25th March, at 7 p.m. The Council constituted the Examining Board, and the tests were oral in Medicine and Surgery, written in Botany, Chemistry, and Anatomy. The following were the questions submitted to be answered in writing:

1. *Botany.*—Give a short list of the grasses which are of most frequent occurrence in hay, and point out which are the best adapted for feeding purposes.

2. *Chemistry.*—What are the modes of preparation and uses of chlorine? Describe how it acts therapeutically on the animal system.

3. *Anatomy.*—Enumerate the muscles which clothe the front of the femur, and state the sources of their nervous supply.

The answering of the written questions was above the average, and Messrs. Caudwell, Toop, and Villar gained high marks in the oral part of the examination. On opening the sealed envelopes accompanying the papers, the Board made the following awards:

Spooner Gold Medal,—Mr. Theodore Chas. Toop.

Spooner Certificate of Merit.—Mr. Wiliam Caudwell (8 candidates).

Of the *Association Silver Medals* the anatomical has not been awarded, there having been no specimens sent in to the Secretary before the end of the Winter Session. Two essays on "Glanders" were sent in, and these having been examined by the "Prize Essays Committee," it has been decided that the medal be awarded to Mr. Theodore Chas. Toop, whose zeal for the progress of the Association had thus met with its reward.

The Council of the Association, besides being busily engaged in regulating the affairs of the Society, has especially found occupation in carrying successfully through, to a temporary agreement, the Libraries Amalgamation scheme, the particulars of which are given in the Library and Reading-Room Report. By this have been secured to the members an increased number of periodicals available for reference, increased facilities of access to all periodicals taken in, and the use of a Reading Room. Also, at a meeting held on 10th of December in reference to a question which had been raised at the General Meeting of 5th November, it was decided that Rule XVII be taken to explicitly state "that every essay, when read, is the property of the Association." When Professor Pritchard retired from the Anatomy and Surgery Chair at the Royal Veterinary College, a special meeting of the Council was convened, and it was unanimously decided that Rule XXX be modified by the expunging of every word after "year." Thus, the President remained in office to the general satisfaction of the members. A valuable member of the Council, Mr. J. Roalfe Cox, forwarded his resignation to his colleagues, "expressing his regret at having been compelled voluntarily to sever his connection with the Association as member of Council after so long holding that post. He had done so fearing that he might be hindering the interests of the Association by preventing the infusion of fresh energy, but he had never flagged in his interest in the Association, nor in any other matter connected with the profession." The Council reluctantly accepted Mr. Cox's resignation, and elected Mr. Matthew Clark, M.R.C.V.S., of Wimbledon, to the vacancy thus created. At the same time, advantage was taken of the opportunity to bestow the highest honour in the power of the Association, that of *Honorary Associateship*, on Mr. Roalfe Cox, as well as on Mr. Hartley T. Batt, the member of Council who has for the longest time performed the duties of that office, and on Professor Wm. Pritchard "for having performed the duties of Secretary and President at different times with much zeal, and having thereby materially contributed to the welfare of the Association."

It is many years since this honour has been conferred, and its revival must be a source of congratulation to all who wish well to the Association.

Certificates of Membership have been distributed to nineteen gentlemen who have obtained the diploma of the Royal College of Veterinary Surgeons during the past year. Their names are as follows, and will now be added to the Register of the Association :

	F. G. Rugg (V. P.).
H. F. and F. G. M. P. A. S. M.	W. Almond (V. P.).
H. F. and F.	W. H. Beach.
F.	J. J. Crowhurst.
H. F. and F.	G. G. Magor (V.P.) II.
F.	E. Slipper (V. P.) II.
	H. Talbott (V. P.).
F.	T. W. Cave.
	F. L. Gooch.
	D. Gregory (V. P.). II.
	T. J. Rippon.
	T. Skilton.
	A. S. Angler.
F.	T. W. Lepper (V. P.) II.
Sp. Ct. M.	F. W. Caudwell.
	F. E. R. Harding.
G. M. P. Sp. G. M. E. S. M.	F. T. C. Toop.
	F. S. Villar (V. P.).
	F. J. W. Carlisle.

The Secretary, during the year which has passed, has succeeded in collecting from the Annals of the Association such information as is contained in the Revised Register and Record. The laborious nature of this work, and the length of time which had elapsed since it was last done, rendered thorough accuracy a matter almost of impossibility, but the work, as produced, has proved useful to facilitate the business of the Association, and but few lapses have been indicated. As Librarian he has practically supervised the working of the "Libraries Amalgamation Scheme," and drawn up a report thereon, together with a record of the Library state. Thus, gentlemen, we may conclude our review of the sessional year 1879-80.

JOHN HY. STEEL,
Secretary and Librarian.

Report of a Committee of Members of the Veterinary Medical Association appointed to examine a Specimen submitted at the General Meeting, held 18th November, 1879, by Messrs. Slipper and Shipley, M.R.C.V.S., of Yarmouth.

The specimen comprises certain abdominal viscera, together with the genital and urinary organs of the "Rig" Horse.

Rectum.—Lining membrane congested, and muscular walls hypertrophied posteriorly. Atrophy of anterior part. Hæmorrhoidal veins largely distended.

Bladder.—Neck constricted, with a remarkably distended condition of its veins. Muscular walls of an unusually dark red colour; contents milky and scanty. *Prostate* and *Vesiculæ seminales* atrophied.

Testis (right) weighs $\frac{3}{4}$ to 1 lb.; withdrawn by atrophy to considerable distance from epididymis. Secreting structure atrophied, but the organ presents the advanced stages of growth of a sarcomatous medullary character, including even caseous and fatty changes. No disease of the spermatic cord, which is simply atrophied.

Spleen abnormally soft, and in some parts apparently atrophied; presents on various parts of its surface small, somewhat flesh-coloured growths. These are especially marked against the hilum, and similar growths, but of a somewhat lighter colour, load the omentum major and

the gastro-splenic omentum, causing hypertrophy of these, and giving them a weight of 16—17 lbs.

A rupture of the spleen seems to have existed near its basal extremity of the hilum. The growths in the omentum were found, on microscopical examination, to present the encephaloid character, and to be illustrative of the various phases of growth and degeneration of tumours of this stamp. An enormous compound and lobulated encephaloid growth occupied the sublumbar region, extending to, but not involving, the kidneys and blood-vessels of the part. It pressed on the left ureter and thus obliterated its passage and caused atrophy of the corresponding kidney, which was soft and pulpy, and almost devoid of cortical portion. The right kidney was somewhat soft, and the right ureter free. Probably the milky contents of the bladder resulted from encephaloid matter passing through the vesical portion of the atrophied left ureter. This sublumbar mass weighed 12 lbs.

Conclusions.—We are not in a position to determine whether the disease of the testis was primary or secondary. The lymphatics of the spermatic cord not being involved would seem to indicate the testis as an independent seat of encephaloid growth, and a manifestation in this direction of a constitutional tendency of the patient's system. The omental growths are secondary, doubtless, and in the absence of the greater portion of the mesentery, bowels, &c., we are hardly prepared to report on the nature of the sublumbar growth. We may suggest that microscopical examination of the urine would have proved diagnostic in this case. We would also draw attention to the fact that this is the second case of the kind submitted to the Association by Messrs. Shipley and Slipper from Yarmouth, and would associate it with the well-known ill effects of "Rig castration," as recently practised in that neighbourhood. This suggests inquiries as to the hereditary character of the disease in these cases.

(Signed) Geo. Gartside Mayor, *Chairman of Committee.*
Nicholson Almond, } *Members of Committee.*
John Hy. Steel, }

YORKSHIRE VETERINARY MEDICAL SOCIETY.

The concluding Quarterly Meeting for the year was held at the Queen's Hotel, Leeds, on Wednesday, 27th October; the President, Mr. W. G. Schofield, in the chair. The following members were also present: viz. Messrs. M. E. Naylor, J. S. Carter, Anderton, Ferguson, Lodge, Peter Walker, Pratt, Deighton, Spillman, and the Secretary. Messrs. E. Faulkner, Manchester, F. A. Kirke, Huddersfield, and Fraser, Leeds, were present as visitors.

Apologies for non-attendance were received from Messrs. Greaves, Jas. Freeman, Josh. and Jno. Freeman, Danby, J. M. Axe, and R. L. Robertson.

The minutes of the previous meeting were read and confirmed.

The *Secretary* proposed, and *Mr. Walker* seconded, the election of Mr. W. C. Lawson, Leeds. Carried unanimously.

Mr. Deighton proposed, and *Mr. Ferguson* seconded, the election of Mr. H. Snarry, York. Carried unanimously.

Messrs. B. Smith, Barnsley, and F. A. Kirke, Huddersfield, were nominated for membership.

The *President* read a letter that he had received from Mr. Geo. Fleming, President of the College, kindly volunteering to read a paper before the members of the Society. After some discussion, it was unanimously resolved to invite Mr. Fleming to the ensuing Annual Meeting and Dinner.

The *President* gave the details of a case of constipation, with subacute inflammation of the intestines of a horse. Along with the usual symptoms of the disease, the pulse rose to the extraordinary height of 130, and continued so for three days, the pain diminishing as the pulse increased. The patient died upon the fifth day from exhaustion. In consequence of a misunderstanding no *post-mortem* examination was made. In the discussion that followed, Messrs. Walker, Faulkner, Broughton, and the President took part.

In consequence of the unavoidable absence of Mr. T. Greaves, his paper for discussion upon the advantages to be derived from the adoption of the "Penal and Apprenticeship clauses" was read by *Mr. E. Faulkner*. As might be expected, the author's views upon these exceedingly important subjects were presented in an energetic, lucid, and highly practical manner.

Mr. Naylor said, the required preliminary education of the veterinary pupil was far behind the requirements of the present day; even boys of twelve years of age in the Board schools were in advance of the required veterinary standard. He was decidedly of opinion that a scientific literary education was essentially necessary if a student really intended to follow the profession of a veterinary surgeon. He also thought that to admit a young man at the early age of twenty into the profession was really a very great mistake.

Mr. P. Walker thought that a penal clause ought not to include a non-member, unless he had practised for twenty-five years. He was also of opinion that an apprenticeship of two or three years should be compulsory.

Mr. Pratt said a man could not possibly become a scientist without a knowledge of Latin and Greek, and therefore the required education of the veterinary pupil was of a very inferior standard.

Mr. Broughton concurred generally with Mr. Greaves' views, and strongly advocated an apprenticeship of three years' duration.

The *President* was of opinion that a high-class standard of education was undoubtedly required; also that practical tuition, apart from the schools, was of paramount importance, as the practical education at the schools was of necessity limited.

Mr. Faulkner agreed with Mr. Naylor that a scientific literary education, with sound practical tuition, constituted an essential requirement of the veterinary surgeon; but he was, nevertheless, of opinion that the veterinary surgeon of the present day was far in advance in general knowledge than were many of his predecessors.

Mr. Naylor proposed, and *Mr. Anderton* seconded, a vote of thanks to Mr. Greaves for his very able discourse; also to Mr. Faulkner for his kindness.

Mr. Faulkner returned thanks.

The *Treasurer* presented the financial account, showing a balance in favour of the Society of £96 9s. 4d.

The election of officers for 1881 then took place, Mr. J. H. Ferguson, Leeds, being unanimously elected *President;* Messrs. W. G. Schofield, T. Greaves, and J. M. Axe, *Vice-Presidents;* Mr. Broughton, *Hon. Sec.;* and Mr. Ferguson, *Hon. Treas.*

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

A MEETING of the Scottish Metropolitan Veterinary Medical Association was held in Edinburgh on the 1st September last, when some interesting cases, of which the following are the notes, were brought before the members. The following three cases were by Mr. Cunningham, Slateford:

1. Deformed or malformed fore legs in a foal.

The foal was the offspring of a Clydesdale dam and sire, both, as far as known, free from hereditary defect or malformation. It was allowed to live two hours, and was strong and perfectly healthy, except in respect of the following deformity:—The near fore leg was flexed at the fetlock and turned inwards, the off limb was flexed at the knee. The principal metacarpal bone with its phalanges in each limb was imperfectly developed, while in each the internal small metacarpal carried a still less perfect digit. The hind limbs were normal, and the act of parturition had been comparatively easy, one of the limbs only requiring to be put straight a little. The case is one of great interest, as showing a tendency towards the typical complete development of parts, of which the normal structure of the horse's *manus* may be regarded as an arrested stage.

2. Diseased eye—the result probably of specific ophthalmia.

The crystalline lens was opaque. The vitreous humour was organised and consolidated, being of a fibrous structure and enclosing a small piece of bone in its centre. The cornea, aqueous humour, and iris were fairly healthy, but the whole eye seemed as if it had a good many years previous been the seat of severe specific ophthalmia, the deeper structures having been most involved. The notable feature of the case was the partial conversion of the vitreous humour into bone.

3. Fracture of the os suffraginis (horse).

A van-horse took fright at a railway train, gave a violent plunge, and then stood still, with the near fore foot held up. *Post-mortem* examination showed a remarkable fracture of the os suffraginis. The inner half of the bone was almost intact, while the outer half was shattered into at least a dozen fragments, owing probably to the doubling in of the fetlock at the moment of impact.

The notes of the following case of tumour on the brain were read by Mr. C. Rutherford, M.R.C.V.S., 21st Hussars, Piershill Barracks:

On the evening of the 19th June last, a bay mare, twelve years old, of seven years' service, was admitted to the sick lines, showing the following symptoms:—Unsteady movement of all four legs, occasionally stretching forward her fore legs and at the same time reining back. She would stand, with nose poked out, staring at the wall in front of her; pulse was full, 40 per minute; respiration normal. I immediately bled her and gave her a dose of physic, kept wet cloths at her head, and put her in a loose box without any food. Up till the morning of the 21st there was no alteration for the better, excepting that the bowels had at last responded to the physic; but in the evening I found her knocking herself about madly, eyes staring and glazed, pupils widely dilated, and trembling violently when touched. At times she stood quietly, pressing her nose against a corner of the box; pulse when quiet was 100 per minute, full and firm, mucous membrane injected, respirations accelerated—symptoms which lasted with more or less remission till the early

morning of the 22nd, when she perambulated her box almost constantly, moving always to the left and very unsteadily, unconscious of knocking her head against the walls; pulse had fallen to 86 per minute; fæces firm. A strong cantharidine blister applied (on the 23rd) to the poll and around the base of the ears produced scarcely any result, and mustard to the abdomen without effect. I kept cold water applied to the head and wet swabs on the feet, removed the urine, and gave enemata. On the morning of the 23rd she fell on the near side and could not rise from it; insensible to the prick of a pin on the body and legs, but not on the face; unconscious paroxysmal movements of the limbs occurring frequently; fæces soft. On the 28th she could stand quietly, though rather unsteadily, and often for an hour at a time with her head outside the box, the neck pressed firmly against the lower half of the door—a most pitiful object, with eyelids closed from œdema, the near one discharging sanguineous pus, and with large sores here and there over the body. Subsequently she gradually improved, having more command over her movements; ate fairly well, partaking of hay, gruel, bran, and oats, walking exercise twice daily being allowed.

On July 5th she again appeared stupid, bowing her head in a corner, off feed, and moving about much more unsteadily than before, symptoms which lasted nearly a week. I again applied a blister to the poll and around the ears, this time producing vesication.

On the 12th July she was furiously delirious, reeling and dashing about unconsciously, insensible to outward impressions, the eyes glazed and staring, pupils dilated, the muscles of the neck spasmodically contracted, pulse small and rapid, about 130 per minute, respirations irregular, mucous membranes intensely injected. Next day she fell and could not rise with help, nor could she have stood if she had been able to get up. All that could be done when so unmanageable was to apply ext. belladonna and tinct. accnite to the tongue, and keep the bedding about her. Destroyed by pithing. Medicinally, during the disease, I had given small doses of tincture of aconite, tartar emetic, and nitrate of potass, with the addition of calomel or aloes, or sulphate of magnesia, as was thought best.

Post-mortem examination revealed hydrocephalus of the ventricles and base of the brain. The dura mater around the medulla (where it is normally pretty thick) was much thickened, soft, and pale yellow in colour. A tumour, racemose in appearance and of a pale red colour, was found attached firmly to the pia mater, stretching across the posterior face of the cerebellum, in the space between the cerebellum and medulla posteriorly, and separated from the fourth ventricle by the valve of Renault. Detached and placed in water it branched out like sea-weed. On closer examination one could readily detect three firm glistening portions, small and closely resembling tendons, not grating on section. Their composition I am not exactly aware of.

JOHN MCFADYEAN, *Secretary.*

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THE usual Quarterly Meeting of this Society was held in the Veterinary College, Glasgow, on Wednesday, October 20th. The President, Professor M'Call, in the chair.

Present the following members:—Messrs Robinson, sen. and jun., and M'Farlane, Greenock; Messrs Dunlop and Kidney, Belfast; Mr. R. Rutherford, Edinburgh; Mr. Campbell, Kirkcudbright; Mr. M'Intosh, Dumfries; Messrs. Spreull and Crockat, Dundee; Mr. Thomson, Inverness; Mr. Lindsay, Alloa; Messrs Pottie, M'Geoch, and Houston, Paisley; Mr. Bryce, Stirling; Mr. Chivas, Corbridge-on-Tyne; Mr. Gardener, Helensburgh; Mr. Neil, Dumbarton; Mr. Blackie, Bellshill; Mr. Brackenridge, Hollytown; Mr. Pollock, Hamilton; Mr. Jarvie, Carluke; Mr. Clark, Dalserf; Mr. Allan, Clarkston; Mr. Blue, Mearns; Mr. Panton, Blairgowrie; Mr. Constable, Inchture; Messrs Mitchell, Weir, Anderson, jun., M'Queen, Prentice, Mitchell, Dickson, Hill, Pollock, Currie, and Wyper, Glasgow; Mr. Weir, Airdrie.

After some formal business, Mr. R. Rutherford, Edinburgh, read an interesting and exhaustive essay upon "Inoculation for Contagious Pleuro-pneumonia." It was agreed to reserve the discussion till next quarterly meeting.

The members and friends afterwards dined together in the Royal Restaurant, where a most enjoyable evening was spent.

J. Macqueen, *Secretary.*

MONTREAL VETERINARY MEDICAL ASSOCIATION.

This Association held its opening meeting for the Winter Session 1880-81 in the lecture room of the Veterinary College, Union Avenue, on Thursday evening last, October 14th—the President, Dr. Osler, in the chair. The President opened with an address to the members, before retiring from office. The meeting then proceeded to the election of officers for the ensuing session, with the following result:—President, C. J. Alloway, V.S.; 1st Vice-President, James Bell, M.D.; 2nd Vice-President, M. C. Baker, V.S.; Secretary-Treasurer, E. J. Carter; Librarian, B. D. Pierce.

Mr. Alloway then took the chair, and addressed the meeting, followed by Professor McEachran, Honorary President, who expressed his satisfaction upon the prosperous condition of the Association and the library connected with it, which is now one of the most valuable on this continent, containing all the oldest and the most recent works on veterinary and collateral sciences. He also pointed out the benefits to be derived by the members of the Association from their meeting together for the purpose of hearing papers read and discussed.

The following gentlemen were proposed as members of the Association:—A. W. Clement, Geo. W. Goetz, T. J. O'Connol, Alfred W. Mears, James Brodie, J. A. Duncan, P. Paquin, F. Paquin, P. A. Pomroy, L. W. Bergeron, C. B. Robinson, Pierre Gadbois, V. T. Daubigny, V.S., R. T. Whittlesey, and William Lemay.

A vote of thanks was passed to the retiring officers.

At the next meeting, on the 28th instant, Professor McEachran will read a paper on the important subject of "Tuberculosis of Cattle and its relation to Public Health." A communication will also be read on "Purpura Hæmorrhagica," by Mr. Chas. H. Ormond.

Veterinary Jurisprudence.

A GLANDERED HORSE.

EDGWARE PETTY SESSIONS.—*November 10th.*

(PRESENT: C. D. Fortnum, Esq., J. Charles, Esq., and A. R. Johnson, Esq.)

John Roberts, horse dealer, of Cricklewood, was summoned by Mr. Charles Offer, county inspector, for that on or about the 13th of October he had, in a field near the Welsh Harp, and in his possession, a horse affected with glanders, and neglected to give notice of the fact to the police of the district, and David Dore, of Lisson-grove, was also summoned for removing the carcase of the above-mentioned animal, contrary to the regulations of the county authority.

John Coxon said he was ostler at the Welsh Harp, and on or about the 13th October, he bought a dark bay mare of the defendant Roberts, that was in his field. He bought it for a knacker for 25s. It was poor and lame, but he saw nothing the matter with it. He sold it to Dore for 30s., and he believed it was killed in the field. He did not go close enough to it to see if it was diseased.

By *Mr. Boydell.*—Mr. Roberts had his own hunter, worth £50, and other valuable horses in the same field with the horse in question.

Caleb James Hunt, parish inspector, said he lived at No. 4, Belle Isle, King's Cross, and knew Dore. He saw him on the 13th of October, when he brought a dead horse into Mr. Harrison's yard. As soon as he saw it he told Dore it had got glanders, and asked him where he got it from, and he replied, "From Johnny Coxon, of the Welsh Harp." Dore said he had killed it because it was lame. It was in good condition, and, but for the glanders, would have been fit for work had it not been lame.

Francis Henry Ridler said he was a M.R.C.V.S., and Government inspector, and on the 13th October he was at Mr. Harrison's, when Mr. Hunt asked him to make a *post-mortem* on a horse that had just been brought in. He saw Dore there, who brought the horse in for sale; it was a bay horse. He examined it, and found it had suffered from glanders. He stated the appearances, and said he thought it had suffered for about three weeks. The disease must have been apparent before death. Dore said it came from the Welsh Harp.

John Roberts was called for his own defence, and said he had the horse in question about a week. He exchanged it with a man named Read, and examined it at the time, and there was nothing the matter with it then. He had not had glanders on his premises.

Mr. Roberts's foreman, name *Davis*, also stated he examined the horse when it first came there, and did not observe any symptoms of glanders.

Dore also was called, and said he had no knowledge whatever that the horse had glanders, or he would not have had anything to do with it.

Roberts was fined £5, and £2 8s. 3d. costs, and Dore £1, and £2 8s. 3d. costs.

CRUELTY TO HORSES.

WEST HARTLEPOOL POLICE COURT.

MONDAY, Nov. 15th.—Before Capt. Young, Messrs. Pyman and R. C. Walker, and Dr. Gourley.

Robert Batty was charged by Sergeant Bowman with cruelty to a horse on the 5th inst.

Sergeant Bowman deposed to finding the defendant working a horse which was in an unfit condition.

Mr. Peele, veterinary surgeon, deposed to examining the horse, which was in a very emaciated condition, and was totally unfit for even the lightest work.

The *Bench* strongly condemned the practice of cruelty to helpless animals, and they had been half inclined to send the prisoner to gaol without the option of a fine, but they had decided to fine him £5 and £1 10s. 6d. costs. The fine was heavy because the defendant had been fined for a similar offence within the last twelve months.

George H. Burrell and *James King* were charged by Sergeant Cowan with a similar offence.

Mr. Peele found the horse in poor condition. The knees were cut from falling, and the upper part of the shoulders also wounded. The latter wound might have been caused by lying in a stall too narrow for it.

Defendant said the horse had fallen when drawing the empty cart on the day in question.

Mr. Peele thought the knees might have been hurt on that morning, but the hip wound was an old one. King was the owner of the horse, and Burrell, a youth, the driver. Burrell was dismissed, and King fined 40s. and £1 10s. 6d. costs.

THE FITZWYGRAM TESTIMONIAL.

We are requested to give insertion to the following circular letter, which has been forwarded by Mr. Greaves to members of the profession. A hearty response will, we hope, be given to the appeal.

Dear Sir,—Referring to my circular respecting the above Testimonial I have much pleasure in informing you that a large number of the Members of the profession have cheerfully responded to the appeal. About £240 have been subscribed and deposited in the bank. The Committee, however, are about £180 short of the amount required, and I am, therefore, under the necessity of respectfully inviting you to kindly join in carrying out the object we have in view, viz. of presenting Major-General Sir Frederick Fitzwygram, Bart., with his Portrait, a duplicate of which is to be hung in the Council Room of the Royal College of Veterinary Surgeons.

The Members of the profession must not forget the strong claims that Sir Frederick has upon them, and I trust they will feel a pleasure in showing that they fully appreciate his great services.

Will you kindly forward the amount you are disposed to subscribe as early as convenient to the *Treasurer*, Mr. Henry Joseph Cartwright, Wolverhampton?

I am, dear Sir,

Yours most truly,

Thomas Greaves.

Hon. Sec.

Knott Mill, Manchester;
Nov. 10th, 1880.

INDEX.

A

B

C

D

E.

F.

G.

H.

I.

J.

K.

L.

M.

N.

O.

P.

Q.

R.

S.

T.

U.

V.

W.

Y.

Z.

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