

AMERICAN VETERINARY REVIEW

EDITED BY

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VOLUME XXXIX.

NEW YORK:

PUBLISHED BY AMERICAN VETERINARY REVIEW,
509 WEST 152d STREET.

597754

7. 12. 54

SF

601

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v. 39

cop. 2

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Journal

v. 39

Vol. 39, 1911
Apr - Sept

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AMERICAN VETERINARY REVIEW.

APRIL, 1911.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, February 15, 1911.

PROF. WILLIAMS' OPERATION FOR ROARING.—Our readers and every veterinarian in America knows all about it. Our journals, our societies, his own publications have made it popular in the United States and in Europe. It has been adopted by American surgeons for many reasons: Its simplicity, the results that it has given and possibly because it was from an American surgeon. Why not?

But Prof. Williams was probably not satisfied with the glory that his operation had gained for him in his own country, or, knowing as I do, more likely because of wishing to extend to all the benefits that the operation would give, he came to Europe, stopped in England and there demonstrated his *modus operandi*; initiated English veterinarians in the technic required, and he left for the Continent on other business.

Why he stopped in England was evidently a generous act. England has, right or wrong, the reputation of being, in roaring horses, richer than any other country, and if so, it certainly was a good place to test the value of the operation and do an immense amount of good by Williams' act of professional generosity.

The result was not to be doubted. It received a brilliant welcome and soon proved a grand success. The number of horses reported as having been operated and relieved of the infirmity so common among some breeds of English horses, either by Williams' operation or with the modified method of Hobday, being simply wonderful. Indeed several hundreds of operations, followed by an enormous number of wonderful successes (excellent or satisfactory), and the names of some English veterinary celebrities who received more booming advertising notices than they desired; I am sure, all that forms a record that I believe is without parallel in veterinary surgical archives. And finally, the success was such that it appeared then, that the time had come to attribute the paternity of the original operation to where it belonged.

It would have seemed at once that, of course, to Prof. Williams such paternity did belong. But there were doubtful opinions. These were expressed just in England where Williams had so generously shown how to operate. For some writers there, the operation was of German origin. For others it belonged to England. And I wonder that some did not claim it as French, as long as a veterinarian of that nationality had attempted it years and years ago. It is true that Gunther had performed it or something similar. It is true that Fleming has alluded to it; but experiments and trials, as long as they remain as such; as long as they are not made public, and as long as they have never entered general practice, even as experiments, can they come into competition against one which has been the object of initiative inquiries, of personal persistent efforts in making it perfect and available to all, and has had the extensive professional publicity as that of Prof. Williams' has.

In the presence of all that was written in several professional papers of England, the learned professor of Cornell University at last had his excessive modesty overcome. He felt the right to defend his own and he sent to the English press a letter where he has demonstrated that which he thinks his just claim and established his priority on that subject.

Further inquiries has been spoken of. It will prove useless. But at any rate it will be pleasant for our friend Williams to take good note of the paragraph ending an editorial notice of the *Veterinary News* where it is said: "This is a small criticism and it is dwarfed by the fact that for the present day introduction and practice an operation which is apparently of considerable value, Prof. W. L. Williams must be adjudged responsible. For that work he will deserve the thanks of the profession to which he belongs and of many horse owners in this and other countries."

Again in the *Veterinary Record*, "I maintain that the pioneer work that Doctor Williams, the American surgeon, has done, deserves the highest praise."

These, we hope, will close the incident in a satisfactory manner to our American friend and that the operation must and will remain to be known as Williams' operation. And, after all, what does it matter, if Gunther's, Williams', Hobday's or somebody else's as long as it is successful.

* * *

CHOROIDAL TUBERCULOSIS.—Tuberculous conditions of the eye can and do exist; the disease affecting either the essential or the accessory organs of sight and yet some pass unrecognized for some reason or another, either because of their peculiarities, their aspect, their specific location or the species of animals where they exist. For instance, choroidal tuberculosis has not been described, and probably when it existed, it seems generally to have been detected only at post mortem.

Doctor Hancock, F.R.C.S., and Doctor George Coates, M.D., F.R.C.S., have, in the *Veterinary Record*, published their observations of five cases of tuberculous choroiditis in the cat, where they minutely described the clinical features, with the post mortem lesions and the results of their experimental inoculations. It is true that these cases were observed in cats, but as long as the veterinary literature seems to be silent on this subject, the

report of the English ophthalmologists is very interesting. Anyhow knowing the symptomatology, their presence will be valuable in the case of large animals suffering with such localization and it will be of great assistance in the diagnosis with smaller animals; cats and dogs, for instance, and will suggest the propriety of their being carefully looked for in those cases where at the post mortem of animals condemned by tuberculin, no lesions are to be found in their ordinary location. As proof of this, it may be mentioned that at the post mortem of five out of the six cases reported in the *Record*, in one the affection of the two choroids was the only tuberculous lesion to be found. In all the remaining four, the lungs were diseased; in one, the kidneys; in three, the liver, spleen, suprarenal capsulae and mediastinal glands in one. The meninges and brain were invariably normal.

To confirm the nature of the lesions, thus found in the choroids, experimental inoculations were carried out and proved positive. Koch bacilli being detected at the autopsies of all the animals dead with inoculation.

As taken from the five cases, the clinical features may be briefly résuméd as follows: The first thing noticed is that the animal is blind, one or both eyes are affected, more generally the latter. The animal may be in good condition or much emaciated. The temperature has ranged between 102 degrees and 104 degrees Fahrenheit. At first there are no signs of inflammation in the anterior parts of the eye. The pupils are widely dilated, not reacting, or if so, sluggishly. At times there is contraction. "With the ophthalmoscope, extensive areas and smaller discrete spots of a yellowish exudation are seen beneath the retinal vessels." These may be normal or enlarged and very tortuous. Retinal hemorrhages are seldom absent. "Early in the disease, detachments of the retina are found; they may become complete or the retina may be adherent to the main areas of exudation and detached elsewhere. The vitreous is usually free from floating opacity, but extensive fibrous webs may stretch into it from the fundus."

“In the last stages the inflammation began to appear in the anterior parts of the eye. The brilliant golden color of the iris becomes dull and more greenish. The pattern is less sharp, and new vessels may form on the surface. A peculiar vascular lace-work spreads across the pupil on the anterior face of the lens. * * * Sometimes little vascular plexuses are formed on the surface of the lens giving rise to easily visible red patches. * * * Posterior synechia may or may not be present. * * * Along with these changes there is pericorneal congestion, and the periphery of the cornea becomes vascularized by the spreading in of fine vessels. In one case the intraocular tension became low and the eye showed signs of shrinking. In another the iris was bulged forward and the tension although normal, had evidently been raised since the globe was expended and buphthalmic.”

The animals which were the subjects of the important observations of the English surgeons were: a male cat, eight months old, with lesions in the anterior mediastinal gland and in the liver; a black cat, four or five years old, which at autopsy showed old and recent pleurisy, nodules in the lungs, spleen, kidneys and suprarenal capsula; a prize black kitten of five months, with renal and pulmonary lesions; a black pedigree Persian cat, aged twelve months, in which, with the exception of some hemorrhages in the thymus, no lesions were found in any of his organs. He had tuberculous choroiditis of both eyes; a tabby cat, full grown, blind in both eyes, had tuberculous deposits in the lungs and the kidneys.

* * *

INTRADERMICULTURE IN VARIOUS INFECTIONS.—Under the name of abscesses of fixation I have alluded some months ago to a method of revulsion, which since seems to have been gaining admission in human medical practice on the Continent, but in a much more extensive application. To-day indeed, I may be permitted to consider it under different lights, viz.; that of its application to the diagnosis, the prognosis and the treatment of

infections in general; all valuable facts which I find under the heading of "Practical Medicine" in one of the best medical journals here, the *Presse Medicale*.

The method of abscesses of fixation has entered practical medicine to the therapeutic point of view that we have considered before, but its admission to the semeiological point of view has remained much discussed. And if agreement has been reached as far as the bactericid action of oil of turpentine, upon internal media and for the stimulus caused by the subcutaneous injection upon the defensive organs of the individual, authors still disagree upon the presence of the microbial germs in the pus of the abscess. But if, instead of oil of turpentine for the intradermic injection, croton oil is used and injected in animals infected with various microbes, the result is different. First a serous swelling, of congestive nature, takes place, and is soon followed by the pullulation of the infecting microbes, which gather in, at the point of the hydrophlegmasia and the formation of an abscess with pus in which the microbes still are present. Hence the application of the method to the diagnosis by the detection of the infecting microbes.

The reaction that follows the infection serves to establish the prognosis. It is indeed by the conclusions of the cases experimented with and closely watched, that these were established, viz.: when the reaction obtained by the injection at the point where the operation has been made, is well marked, then the prognosis is favorable, and on the contrary is unfavorable, if the primitive hypodermic reaction has not been present or has been very slight. For the application of the intradermic therapeutic results in the treatment of infections a special preparation is needed, viz.: the collection of the pus of the primitive abscess, its thorough sterilization and then its injection directly in the subcutaneous tissue.

The technic of these various operations need explanation. The preparation to be injected so as to obtain the first primary abscess is as follows: *One single* drop of a mixture of one part of croton oil with two of oil of sweet almonds is injected with

all possible antiseptic care. The operation is very painful, is made with the bevelled part of the syringe turned upwards. After a few minutes of contact of the oil with the tissues, it is aspirated again in the syringe, which had been left in place and extracted. The abscess takes place towards the fourth day, when the pus can be collected in a sterilized syringe.

For the therapeutic application, to each cubic centimeter of the sterilized pus (that of the first abscess), five drops of iodine solution at one to ten, are added, and one-quarter, one-half, and exceptionally, one cubic centimeter of this mixture is injected. The operation being renewed more or less often according to the degree of infection.

The practical results so far obtained and recorded after experiments and observations on cases of generalized furunculosis, septicemia, influenza, pneumonia, broncho-pneumonia, rheumatisms, and so forth, have permitted us to conclude that every patient which had an hypodermic reaction less marked and small, with pus containing a number of phagocytes inferior to that of the other white corpuscles, or a secondary abscess as marked as the first, with a tendency to ulceration of the primary abscess, was a patient whose condition was very low and for which a fatal prognosis was to be given.

In relation to the therapeutic application, the effects that have been obtained so far seem to have been very encouraging; but yet demand further investigation.

For the present, then, two important practical points are gained, viz.: the detection of the germs circulating in the blood of an infected individual and the possibility of establishing in a rational manner the prognosis of the ailment.

* * *

THE COMMON METHOD OF INFECTION IN TUBERCULOSIS.—Our English contemporaries, the *Journal of Comparative Pathology and Therapeutics* and the *Veterinary News*, have published lately on this interesting question, an address from Sir John McFadyean, who, everyone knows, is an authority on any question

relating to tuberculosis; where after considering some generalities of secondary importance, such as the direct introduction of the bacilli into the skin, the subcutaneous tissue, genital entrance and so forth—he states that, leaving aside those possible tracts of infection, upon which no discussion exists, the matter in dispute is narrowed down to the question of the relative frequency of infection by inhalation and infection by ingestion. These modes of infection being indeed the most important and both having their advocates, the solution of the problem rests on this point, viz.: “What is the path of entrance of the bacilli in cases of primary intrathoracic tuberculosis?” It is on that point that the opinion is mainly divided.

“Indeed,” writes Sir John, “for those who favor inhalation as the common natural method of infection, the case may be briefly stated as follows: In both species (human and bovine) the commonest seats of the primary lesions are the lungs and the bronchial glands, and it is a reasonable deduction from this localization of the primary lesions within the thorax, that the bacilli which determined those lesions, gained the pulmonary tissue with the inspired air. *A priori*, this explanation of the origin of primary intrathoracic lesions is to be preferred to any other, because it is the simplest.”

This view is confirmed by the results of experiments, which show: that when susceptible animals are caused to inhale tubercle bacilli, the primary lesions develop within the thorax and that primary intrathoracic lesions cannot readily be set up by causing animals to swallow tubercle bacilli or by infection through any other channel than the air passages.

To those reasons, the advocates of the infection by ingestion answer that “experimental infection has been proved more certain when the bacilli were swallowed than when they were inhaled, and that in cases of experimental tuberculosis set up by feeding the primary lesions are frequently and generally intrathoracic.” Again, “that the occurrence of such primary lesions in natural or experimental cases of tuberculosis, resulting from the ingestion of bacilli is explained by supposing that the bacilli

which reach the intestines may, after absorption into the lymphatic vessels, be carried rapidly through the bowel wall, and mesenteric glands and then gain the lung tissue by way of the thoracic duct" and finally that "it is difficult or impossible to determine tuberculosis, with lesions primary intrathoracic by causing animals to inhale tubercle bacilli."

This concise, but complete résumé of the conclusions supporting the two methods of infection of tuberculosis present the question fully to the readers and now Sir John enters into the solid part of his article.

* * *

To come to a solution of this important problem, three heads have to be taken into consideration: 1. What is the most common seat of the primary lesions? 2. The relative ease with which animals may be experimentally infected by causing them to inhale or to swallow tubercle bacilli, and the distribution of the lesions in animals so infected, and 3. The results of experimental attempts to introduce minute inanimate particles, such as carbon, carmine, etc., into the lungs by inhalation or ingestion; that is, to obtain pulmonary anthracosis.

Sir John McFadyean gives to these set of evidences a careful review, relates many of the experiments which brought their weight in favor and against, and after considering and criticizing the work and conclusions derived from the investigations of Koch, von Behring, Calmette and Guerin, those of the Royal Commission on Tuberculosis, also the articles of Findel and Reichenbach and again of Vansteenbergh, and Grysez, of Kurtz and Lobstein, Arloing and Forgeot, etc., etc., the author ends his address by the following conclusions which résumé the entire question and seem to be justified after such a complete review of all the available evidence:

"I. The inhalation of tubercle bacilli suspended in the atmosphere is a very certain method of infection in susceptible animals even when small doses of bacilli are employed.

" 2. Experimental infection with tubercle bacilli by way of the alimentary canal is comparatively difficult to realize even in highly susceptible animals, and success is certain only when very large doses of bacilli are administered.

" 3. With few exceptions, in animals experimentally infected with tuberculosis by way of the intestine the primary lesions are intra-abdominal, and the intrathoracic lesions when present are secondary.

" 4. Inhalation is probably the commonest natural method of infection in those species (man and cattle) in which the primary lesions of tuberculosis are usually intrathoracic.

" 5. Naturally contracted cases of tuberculosis in man and other mammals can be ascribed to infection by ingestion only when the lesions revealed at the post-mortem examination are confined to the abdomen, or when the existing abdominal lesions are recognizably older than those present elsewhere in the body."

As an addition to his endorsing these conclusions, Sir John adds: "In formulating these conclusions I have endeavored to evade the reproach to which Calmette and his supporters have laid themselves open, viz.: that of drawing far-reaching inferences from a small number of experiments, and assuming that the results obtained in animals under the conditions realizable in experiments may be immediately applied to explain the method of infection in cases of natural tuberculosis in man. That is why the word 'probably' has been introduced into the fourth of the conclusions. The whole of the experimental evidence on which the theory of the intestinal origin of pulmonary tuberculosis in man was built up has been swept away, and valuable new support has been provided for the older inhalation theory, but one ought to avoid the mistake of denying any importance to infection by ingestion either in man or in cattle, or of asserting that tubercle bacilli which enter the body by way of the alimentary canal are never the cause of tuberculosis with lesions apparently primary in the lungs."

ADRENALIN AND MALIGNANT TUMORS.—German papers have reproduced a series of experiments carried out by Professor Reicher relating to the use of adrenalin in the treatment of malignant tumors. The learned professor made subcutaneous injections of adrenalin in the tissues surrounding, in rats sarcomatous growths, and in mice carcinomatous. In a lapse of time varying between three and four weeks, he observed that the tumors had considerably reduced in size and represented merely necrotic remains, as big as a bean or even a small pea.

Besides, when after the inoculation of a malignant tumor, the animals were, previous to the development of the neoplasm, treated with adrenalin, the percentage of the animals in which the inoculation was positive, was much lower than among the controlling animals. For instance, in a series of controls inoculated with sarcomas after three weeks, he had obtained four tumors as big as a hen's egg, two as big as a nut and three negative results; while in a series treated with adrenalin, in the same length of time, there was obtained only one tumor as big as a French nut, eight as big as a hazelnut and ten were negative in their results. During the fourth week of this last series the tumor retroceded.

Still more satisfactory results were obtained with inoculations made in series of carcinomas.

By opposition, however, the preventive inoculation of adrenalin, or that made at the same time as the neoplastic inoculation, has given no favorable results.

At the microscopic examination the development of a centre of necrosis was found in the middle of the neoplasm, without any inflammation. When the necrosis has spread, one will observe on the periphery a zone of infiltration of microcytes and a vascular dilatation.

Adrenalin promotes the constriction of the blood vessels and it can be supposed that it thus reduces the nutrition of the tumor. In fact the retrocession of the growth seems to be so much marked that its development, subsequent to a peculiarly intense nutrition, has itself been more rapid.

These experiments might find their practical application in veterinary surgery in cases of malignant tumors of small animals, which for one reason or another could not be treated by surgical interference.

* * *

BIBLIOGRAPHIC ITEMS.—This month they will consist in acknowledging the receipt of "Bulletin 120 of the Bureau of Animal Industry, on the Bacteriology of Commercially Pasteurized and Raw Market Milk," by S. Henry Ayers and William T. Johnson, Jr.; of "Sporothrix and Epizootic Lymphangitis," by C. G. Page, M.D.; Langdon Frothingham, M.D.V., and James B. Paige, B.Sc., D.V.S., and a report of the Montana State Live Stock Sanitary Board and State Veterinarian, by Dr. M. E. Knowles, and circular 165 from the Bureau on "Methods for the Eradication of Gid," by Maurice C. Hall, of the Zoological Division.

A. L.

VOLUME THIRTY-NINE.

This number of the REVIEW reaches its readers with the twittering of the birds and the budding of the trees; *i. e.*, the opening of spring; the season filled with the hopes and promises of the entire year, when all nature rejoices. With the REVIEW it is the opening of a new volume; and surely one that promises much to the profession it aims to serve. With this number, among many other things of unusual merit by some of the foremost men in the profession, a series of articles is begun by Professor D. E. Salmon, Director of the Veterinary School at Montevideo, and a serial article by Dr. Schwarzkopf, of the United States Army, as well as a *continuation* in the succeeding numbers of this volume of the valuable contributions from the pen of our esteemed collaborator, Dr. D. Arthur Hughes. These articles are of unusual

interest to the profession, and no veterinarian in America can afford not to read them.

And while all nature rejoices at the coming of spring, the veterinarians of America are rejoicing at the accomplishments of the committee on Army Veterinary Legislation through its chairman, Dr. J. P. Turner, whose indefatigable efforts in that capacity for years, have at last been rewarded. Dr. Turner very modestly accepts only a *share* of the credit for this great work, in his report in the Army Veterinary Department on page 76, this number; but Dr. Schwarzkopf declares that *all* the credit should be accorded to Chairman Turner.

Before closing our remarks on volume XXXIX., we desire to thank our readers, whose subscriptions begin with this volume, for their prompt and *direct* renewals and their very hearty appreciation and support. Some *few*, despite our several warnings from time to time, have again become victims of some unprincipled person who is using the REVIEW's popularity with the veterinary profession as a means of obtaining money from them fraudulently. This man takes subscriptions and gives receipts to his victims, but never turns his subscriptions in to the publishers, who do not know of the incident until the receipt of a letter from the one who has been fleeced, usually some months later, when he has become tired from waiting for his numbers. We regret the circumstance, both for those that are victimized and on our own account, as doubtless there are instances where new men, who do not chance to know of the reliability of the REVIEW, think *we* have defrauded them, and never give us a chance to explain. We can only repeat our old warning: Do not give any wandering agent your money; the REVIEW neither authorizes nor recognizes any subscriptions taken below the publisher's price, either alone or clubbed with any other paper. Send your subscriptions *direct* to the REVIEW office and the numbers will be promptly forwarded.

We have just learned through the Chinosol Co., that Dr. Metheny will positively discontinue the sale of Methenysol. See page 110.

ORIGINAL ARTICLES.

ARSENICAL POISONING FROM SMELTER SMOKE IN DEER LODGE VALLEY, MONTANA.

BY D. E. SALMON, D.V.M., MONTEVIDEO, URUGUAY, S. A.

INTRODUCTION.

The poisoning of live stock in the Deer Lodge Valley, Montana, by arsenic deposited from the smoke of the Washoe smelter has been and still is of much interest to the veterinarians of the United States because of the contributions which the scientific investigations conducted there have made to the subject of veterinary toxicology, and, also, because of the radical difference in the testimony of the experts employed by the Farmers' Association, on the one side, and those by the smelter company, on the other. This difference of opinion within the profession makes apparent the necessity for a revision of our knowledge of arsenical poisoning, and especially of the chronic form of this intoxication, in order that we may obtain more definite ideas in regard to the facts upon which a diagnosis in such cases must be based.

The experience of the veterinarians employed as experts in this case, emphasizes the importance of the expert having a comprehensive conception, at the beginning of his investigations, of the ramifications which the inquiry may take and of the facts which he will need to establish his diagnosis. The character of the examination to which the experts were subjected, also, shows that the veterinarian may, under certain circumstances, be expected to present stronger proofs of poisoning than have heretofore been required in human toxicology where the life of the

accused is at stake; and, therefore, he must be well prepared, not only by his own observations, but by an exact knowledge of the investigations of others. In order that he may thus prepare himself, the results of investigations and observations must be collected, classified and compared; and if there are, still, some elementary facts upon which we are not agreed, it would appear extremely desirable to begin at once to collect data and to make investigations that will remove all doubts, for no one knows when he will be called upon to give testimony in such a suit.

The importance of this case to the parties to the suit could only be fully appreciated by going over the ground, talking with the farmers, observing their live stock for a considerable period of time, and seeing the sacrifices which they and their families were making in order that they might save money for the necessary expenses of the litigation. Where, as in this case, not only the live stock, but the homes, and the very means of existence of over a hundred families are at stake, the responsibility of the expert is tremendous and he should endeavor to avail himself of all the facts which science has acquired for the elucidation of the subject.

As one of the experts employed by the Farmers' Association, the writer visited the valley twice and made a considerable number of autopsies, a few on animals which had died, but the greater part on animals which were sacrificed for the purpose of investigation. He had the opportunity of consulting and cooperating with Professors R. E. Swain and W. D. Harkins, the chemists who investigated on behalf of the farmers; he received valuable information from Dr. M. E. Knowles, State Veterinarian of Montana; and in making his autopsies and conducting his experiments he had the constant assistance for about six months of Dr. A. H. Cheney, whose untiring industry and knowledge of the local conditions proved to be of great value.

This work was done while the suit against the smelter company was in progress and when it was known that the allegation that the animals were poisoned would be contested from every possible point of view, but, of course, the nature of the

defense could not be foreseen, and proved to be in some respects a surprise. The writer continued his investigations until he had obtained sufficient data to make what he believed to be a perfectly secure diagnosis, but the assistance which he was able to obtain from an examination of available literature was unsatisfactory, and this inadequacy made it necessary to conduct a number of experiments for the purpose of supplying the deficiencies. It is surprising, in view of the poisoning which has been known for many years as occurring from the smoke of European smelters, that our text-books do not give us a clearer idea of the minimum dose of arsenic which will produce toxic effects when repeated daily for several weeks or months, nor a clear and definite description of the gross and microscopic lesions which develop as a result of chronic arsenical intoxication. So serious do these deficiencies appear to the writer, and so difficult is the veterinary expert's task in such cases, that an attempt will be made in this series of papers to give a sufficiently detailed statement of the conditions which were found to exist in the Deer Lodge Valley, and the data which has been gathered from various sources, to give the reader a comprehensive idea of the question as a whole and, also, of the more important subsidiary problems which presented themselves for solution.

DESCRIPTIVE AND HISTORICAL DATA.

The Deer Lodge Valley, Montana, is situated to the north and west of Butte, and northerly and easterly from Anaconda. The altitude is over 5,000 feet. It lies between two ranges of the Rocky Mountains, is well watered by many mountain streams flowing in from both sides, is fertile, level and easily irrigated. It is about forty miles long and has an average width, according to Judge Hunt, of about ten miles (1), but in the part most affected by the smoke the average is probably less than five miles. The drainage is by the Deer Lodge River, which runs near the centre of the valley and receives the waters of the various mountain creeks that furnish an un failing supply for the irrigating ditches.

The valley was settled by brave and enterprising pioneers, a part of that army of civilization which opened up the vast region of the plains and Rocky Mountains, making fertile and productive farms in what had hitherto been considered a desert, living lives of hardship and privation, and being constantly menaced by hordes of merciless savages. The first families arrived as long ago as 1864, and these were annually joined by others until the valley became well settled. As the danger from Indians diminished, comfortable homes were established, the flocks and herds became larger, irrigation was practiced on a more extensive scale, fences were built, hay was cut in large quantities and diversified farming became common. The outlying hills and mountains furnished an abundance of summer range for the stock, the irrigated valley produced with certainty good crops of hay, grain and vegetables, and the toil, privation and danger of the early days were succeeded by ever-increasing comfort and prosperity.

In 1883 a corporation styled the Anaconda Mining Company began the construction of a smelter on the north side of the Warm Springs Valley, at a point about a mile in a northerly direction from the present Washoe smelter. The Warm Springs Valley, it should be explained, is a narrow valley which makes off into the mountains at nearly a right angle from the Deer Lodge Valley, not far from the head of the latter, and was chosen as a location for the reduction works because of the large quantity of water available at that point. These works began operations in 1884, and continued down to the year 1895, when they were transferred to the Anaconda Copper Mining Company, a defendant in this suit (2).

This latter company determined to construct a new smelting plant upon more modern and economical lines, and for that purpose selected the present site of the Washoe smelter, which is located on the opposite side of the Warm Springs Valley from the old works and near the extremity of a mountain range which divides the Warm Springs from the Mill Creek Valley and terminates on the western margin of the south end of the Deer Lodge

Valley. The erection of the Washoe smelter required several years' time and it is alleged that about \$9,500,000 were expended upon its construction.

Smelting operations at the new works were begun in January, 1902, with short chimneys, *i. e.*, with four stacks 225 feet in height, constructed on the same level as the smelter. In July of that year cattle began dying in Mill Creek Valley, and soon afterwards in the Deer Lodge Valley. It was at this time that ulcers were first observed in the nostrils of horses running on pasture in the Deer Lodge Valley. The conditions became rapidly worse and during the ensuing six months a large amount of live stock, horses, cattle and sheep, was poisoned. Professors Harkins and Swain, in one of their papers on smelter smoke say:

“During the latter part of November, 1902, it was the fortune of one of us to travel over about one hundred square miles of the territory surrounding the new Washoe smelter at Anaconda. At that time the carcasses of several hundred animals that had recently died lay scattered over various ranches of the valley, and one ranch was visited where approximately sixty carcasses, mostly horses, were seen in a group in one corner of the field. A very large number of the animals were dissected, and practically all of them gave evidence of arsenical poisoning, either acute or chronic” (3).

During the month of November, the losses seem to have reached their maximum, and were so alarming that all the farmers who could do so, drove or shipped their stock out of the valley, while that which was retained was put up and fed upon hay. By the spring of 1903, nearly every one had sold the greater part of his stock that had not previously been too severely poisoned to go upon the market.

Naturally, very vigorous complaints were made by the farmers when they found that these extensive losses were due to poisoning by arsenic deposited upon the grass from the smoke that escaped from the smelter; and claims for damages aggregating several hundreds of thousands of dollars were presented to the Anaconda Copper Mining Company, which was a defendant

in the suit afterwards brought by the farmers. This company, by its representatives, investigated these claims, admitted that the stock had been poisoned by arsenic deposited from the smelter smoke and made settlements with the injured parties, paying out in all on this account more than \$330,000 (4).

This was the first poisoning from smelter smoke, so far as known, which had occurred in that locality, and the results were so serious that an investigation was made to determine what methods could be adopted to prevent continuous damage and avoid further claims of this nature. As the result of this investigation, it appears that a plan was evolved for constructing large flues with dust chambers to collect the solid particles so far as possible, and to erect an enormous stack on an elevation at some distance from the smelting plant, with the alleged object that the poisonous fumes which escaped into the atmosphere might be discharged at so high an elevation that they would be diluted and disseminated to such an extent before reaching the ground that they would no longer cause damage.

The construction of the new stack and connecting flues was commenced in February and completed in September, 1903. The stack is 300 feet high with an internal diameter at the bottom of 31.33 feet and at the top of thirty feet; and it reaches an altitude of 1,100 feet above the valley. There are two parallel flues running from the base of the chimney toward the smelter plant for a distance of about a thousand feet, each flue being sixty feet in width with twenty-foot side walls. This double flue is continued by a section 1,300 feet in length of single flue sixty feet in width and with twenty-foot side walls, which at the end farthest from the stack is connected by separate flues and dust chambers with the reverberatory, the blast furnaces, the roaster building and the converter plant respectively. Of these connecting flues, that leading to the blast furnace is 1,653 feet in length; that to the reverberatory 842 feet; that to the roaster 488 feet, and that to the converter 703 feet. The first three of these flues are twenty feet high and twenty feet wide; while the fourth is eighteen feet wide and ten feet high.

In addition to these flues, a number of settling chambers were constructed. The blast furnace and reverberatory dust chambers were each 250 feet long; the converter chamber 260 feet long, and the roaster dust chamber 290 feet long. All of these were forty feet wide and forty feet high.

Under the long single flue and the double flues, there is an excavation fifteen feet in depth in which a railroad has been constructed, and the bottom of the flues is sloped from both sides into hoppers, which are so arranged that by pulling a lever a valve at the bottom opens, and the accumulated dust flows directly into the cars which are placed beneath to receive it.

An arsenic plant was also constructed containing three furnaces with a capacity of about ten tons each, but the quantity of arsenic actually separated did not exceed two tons a day.

Did these improvements in the smelter plan so modify the composition of the smoke and the manner of its discharge that arsenic was no longer deposited in injurious quantities upon the pastures and hay fields of the valley? The company claimed that they did accomplish this purpose, and denied that since 1903 any injury of any kind whatsoever had been done to the property of any one in the Deer Lodge Valley. The farmers, on the other hand, contended that while the high stack had modified conditions somewhat by disseminating the arsenic over a wider area, thus reducing the number of cases of acute poisoning, there was still enormous quantities of this poison deposited on the pastures and hay, sufficient to cause some cases of acute poisoning and to develop in other animals a chronic intoxication which damaged practically all of their animals and rendered a large proportion of them worthless.

Acting upon this belief, about one hundred of the farmers and residents of the "smoke zone" of the Deer Lodge Valley, representing an ownership of over 50,000 acres of land, formed an association during the latter part of the year 1904, for the purpose of acting together in the effort to obtain relief from the alleged general and widespread damage resulting from the operations of the Washoe smelter. Having failed in an attempt to

reach a settlement by mutual agreement or arbitration, a suit was brought for a permanent injunction restraining the defendants from operating the smelter and from treating ores described as containing poisonous and deleterious substances, on the ground that stock raising or farming cannot be carried on within the smoke infected portion of the Deer Lodge Valley as long as smelting operations, as at present conducted, continue. It is readily seen how important it was to the farmers' case to show that their animals were suffering from arsenical poisoning, and how important it was to the case of the smelter company to contest this evidence, hence, the prominence of the veterinary expert and his testimony.

For reasons which it is not necessary to specify, the suit was brought in the name of Fred J. Bliss, a resident and citizen of Idaho, who owned a tract of land situated about five miles in a northeasterly direction from the smelter. To give some idea of the difficulty, as well as the time and money, required to bring a suit against this great corporation to a final issue, the following facts are cited from the "Opinion" delivered by Judge Hunt, of the United States Circuit Court:

The suit was instituted May 4, 1905, and the Court, against the objection of the complainant, on December 18, 1905, referred the cause to the standing Master in Chancery, with directions to take the testimony and to find the material facts, and report the same to the court. The taking of testimony commenced on January 15, 1906, and was not concluded until about March 20, 1907. Two hundred and thirty-seven witnesses testified, and their testimony fills over 25,000 large type-written pages. Among the experts were professors of chemistry, agriculture, botany, veterinary science and comparative pathology. More than 800 exhibits accompanied the record, consisting of anatomical specimens, microscopic slides, flue dust, botanical specimens and hundreds of photographs.

The testimony of the witnesses for the complainant and of those for the defendants was very contradictory both as to facts and conclusions, and these contradictions were by no means con-

fined to the lay witnesses. Some of the most glaring discrepancies are to be found in the testimony with reference to the symptoms and post-mortem appearances presented by the animals, the historical changes existing in important organs, the signification of symptoms and lesions, and the effect of arsenic upon animal life.

Whatever may be said as to contradictions in the professional testimony, it is certain that the Deer Lodge Valley afforded one of the best opportunities which has ever come to the veterinary profession for studying the effect of arsenic upon farm animals. The investigations of Sussdorf, Freytag and Haubner have attracted much attention, but the two smelters, the Mülden and Halsbräcken, at Freiburg, in 1870, only treated about seventy tons of ore daily; while all the smelters of the Lower Hartz used but 63,000 tons during the year 1899. Comparing these quantities with the 7,000 or 8,000 tons daily treated by the Washoe smelter, it is possible to more thoroughly appreciate the magnitude of the operations of this, the world's greatest smelter, and to estimate with greater precision the far-reaching effects which its emanations may have upon vegetation and upon the health of animals.

(1) Judge William H. Hunt. Opinion. In the Circuit Court of the United States, Ninth Circuit, District of Montana, page 8.

(2) *Loc. cit.*, pages 8-10.

(3) W. D. Harkins and R. E. Swain. The Chronic Arsenical Poisoning of Herbivorous Animals. *Journal of the American Chemical Society*, XXX, No. 6, June, 1908, p. 928.

(4) Judge William H. Hunt, *Loc. cit.*, page 10.

Under date of March 11th, Dr. E. F. Jarrel, of Fort Worth, Texas, says: "Enclosed find my check for three dollars to pay my subscription to the REVIEW. I consider this money well spent. We have just succeeded in having a veterinary law pass both houses of our State Legislature, and is now up to the Governor for his signature, which we have every reason to believe he will sign."

It is the earnest prayer of the REVIEW that the Governor of Texas signs the bill.

THE PROBLEM OF A UNIFORM VETERINARY DEGREE FROM THE STANDPOINT OF HISTORICAL DEVELOP- MENT AND AMERICAN NEEDS.

BY OLOF SCHWARTZKOPF, VETERINARIAN THIRD CAVALRY, U. S. ARMY.

Dr. Glover's timely and persistent efforts to bring to the front the question of uniform degrees and matriculation requirements for our veterinary colleges should be heartily commended. It is certain that these two problems will have to be solved soon, if professional veterinary advancement on this continent is to continue in fact and not merely in name.

The matriculation requirements recommended by him equal those generally demanded for graduation from a high school. They are simple and complete as far as suggestion can go. Many of us will consider them rather modest, but they are a step forward towards acquiring the degree of A.B. This must be our goal if we wish not merely to boast that we are a learned profession but desire to become such in reality by reason of an unassailable educational standard, preparatory and professional.

Dr. Glover is not so positive in suggestion about the solution of the second problem, that of a uniform veterinary degree. The recommendations he makes leave one in doubt as to what he really desires to see accomplished. He is correct in pointing out the absurdity of our various veterinary degrees and the mischief they cause in our practical lives. This is more or less understood and acknowledged by every thoughtful veterinarian, our broad land over. I have heard it adversely commented upon in the far-off Philippines and in Japan. Our colleagues in

* Written for the American Veterinary Review.—April, 1911.

Europe consider our numerous degrees a mystery, if they express themselves politely. It is a foolish situation in which we have put ourselves, but we continue to endure it because we have been too obstinate in the past to change, to correct, to accept or abandon, as the case may be.

The choice of a correct and uniform veterinary degree is not difficult. If we thoroughly go into its origin and evolution it comes to us almost by itself. We, in America, have not constructed the first veterinary degree, but we have invented faulty synonyms. To correct the wrong we must go back to proper precedent, and this fact we found out already some years ago. Perhaps Dr. Glover may not know, and surely many other younger veterinarians do not know, that this subject has been under fire once before, in 1894 and 1895, during the first two years of the existence of the Association of Veterinary Faculties. I beg of him to let me help him out and to sustain him, because I had the pleasure of being the first secretary of this Association and remember well the tenor of the discussions held. At that time the choice of a degree seemed quite possible, but its adaptation by the different colleges proved to be insurmountable. Our colleges were then in bad humor and some of them were on the edge of collapse because times were hard. They feared that we wanted to interfere with their liberties and privileges. They wanted states' rights, so to speak. Fifteen years have elapsed since, during which time the same colleges have become more liberal, more charitable toward each other, more willing to compromise and to accept outside wishes. Note the adoption of the entrance requirements prescribed by the Department of Agriculture.

No better birth-day gift could be presented to the Fiftieth Anniversary of the American Veterinary Medical Association and the whole profession, which practically dates from this time, than the adoption of a uniform veterinary degree by our colleges. It would be a fine testimony of an amicable adjustment among these institutions which we properly call our own because they mold into shape the coming generations of our professional

successors. It would be a sign of real progress of our affairs outside of our scientific advancement.

By all means let us try the issue again, this time with more skill and friendliness, and with more confidence of success. Times are now good, our colleges have been blessed with plentiful remuneration, and they will no longer suspect force or usurpation in so small a matter as involves a change of their degree. Most of these are of comparatively recent adaptation, and in years to come a change must entail much greater annoyance than it will at the present time. Now let us examine the question thoroughly.

THE LATIN ORIGIN OF OUR VETERINARY TITLES AND DEGREES.

Roman writers variously name the domestic animals: *Animalia*, *veterinaria*, *veterina* or *pecudes*, and they were classified by Plinius as belonging to the genus *veterinum*. In early Roman writings the veterinarian was referred to as "*mulomedicus* or *equarius medicus*" if he treated horses and mules only. "*Medicina equorum*" was used in the same sense as our modern equine medicine. Columella, the foremost writer on agriculture of a later period (forty years after Christ) applies first the term "*medicina veterinaria*" as signifying veterinary medicine in general, and "*veterinarius*" as the expert who treats the diseases of domestic animals. About 100 years after Christ mention is first made of veterinary hospitals in the Roman army and they were tersely called "*veterinaria*." Vegetius Renuatus, of the fourth century, the most renowned Roman veterinarian, entitles his book, "*Artis veterinariæ sive mulomedicinæ libri quatuor* (four books on the veterinary art or mule medicine), and he treats of medicine, surgery, obstetrics and breeding combined. Somewhat later the "*hippiatrica*" of Apsyrthus, written in Greek about 350 years after Christ, was translated by Roman writers as "*Apsyrthi Veterinaria*" and it comprised the medical and surgical treatment and the exterior and breeds of the horse.

From these examples of Latin usage we must judge that the terms "*medicina veterinaria* or *ars veterinaria*" were applied to

mean *all the branches of our science and practice*, and that the brief "veterinarius" was used by our Roman predecessors as their rightful *title*. They were accepted and used by all subsequent writers on veterinary medicine until the collapse of the Roman Empire. The tremendous upheaval among the peoples of Europe brought about by this event, completely destroyed Roman culture. The Latin language survived as a world language, but the arts and sciences, including veterinary medicine, were practically lost and with them the Latin technical terms that had become fixed by evolution. These were superseded by new terms or titles indigenous to the languages of France, Great Britain, Germany and other countries.

France led in this change, which took place in the early middle ages (ninth and tenth centuries). Veterinary medicine completely reverted to ancient customs and split again into several branches. The herdsman, thoroughly superstitious and using mostly mystic formulæ for cure, became again the cattle and sheep doctor, while the invention and general acceptance of horse-shoeing about that time made the ancient blacksmith the "ferrou or ferrier," and he became the horse-doctor of the poorer classes of people. He, too, was strictly under the ban of mysticism. The higher position of the former Roman veterinarius was filled by the more educated and talented riding master who had rapidly come to the front in this era, and in whom the aristocracy showed implicit faith in all knowledge that pertained to the horse. They were given the title "maréchal" (from the Celtic marescalk). Maréchalerie comprised the art of riding, the exterior, breeds, horse-shoeing, lameness, and the treatment of the ordinary diseases and blemishes of the horse. The masters of the riding schools have left us many beautifully illustrated and costly books, and their influence upon their age has been so great that in the history of veterinary medicine a time extending over several hundreds of years is classed as "the period of the riding masters."

These French titles were gradually accepted in other countries, only somewhat changed. In Latin Italy the word

marescalcus replaced that of veterinarius, and marescalchena that of equine medicine. Great Britain adopted the French ferrou, changing it into farrier or ferrer. Here "farriery," originally comprising only the trade of horse-shoeing, soon assumed the treatment of the diseases of the horse as they were then known, principally operations on the hoof, bleeding, firing, blistering. St. Eloy was the patron saint of the farriers of Ireland and was often appealed to for help. In Germany the word Kurschmied (a smith who cures) came into existence and his acknowledged status was the same as that of the ferrier in France and the farrier of England.

The various terms and titles, here explained, plainly indicate the confused and lowly condition into which our science had fallen during the middle ages, right up to the time of the establishment of the first veterinary schools in Europe.

THE ORIGIN AND DEVELOPMENT OF THE DEGREE OF DOCTOR.

We must now revert somewhat to trace the development of the other sciences, which suffered likewise during the middle ages. As early as 802 Emperor Charles the Great had founded, at Salerno, a school of medicine in order to save that science from utter extinction. The progress of the school was very slow and it was not until the middle of the eleventh century that it prospered and became famous. In 1160 a school of law had been founded in Bologna, and in 1205 a school of theology in Paris, both of which institutions grew and finally developed into universities that served as models for all others that followed. The professional faculties connected with these early universities were those of divinity, law, medicine and the arts, the latter merely preliminary to the others. The courses were long and tedious. The students were examined for certain *grades of progress* for which they received the *initial academic rank or degree of bachelor or licentiate*, followed years later by the *final and highest degree of master (magister) or doctor*. The initial degrees were conferred by the faculty, the final by the chancellor

of the university on authority of the Pope. The two last degrees carried with them the right to teach their profession along with other privileges and civil rights similar to those enjoyed by the nobility of the land. A doctor of divinity, law or medicine was *ex ipso* a high dignitary.

But there were only comparatively few men who obtained the degree of doctor *medicinæ* at that time. The university course, preparatory and professional, was costly and of such a long duration that young men seldom graduated before they had reached the age of thirty or thirty-five years, when they generally started into public careers. Yet, the ordinary people needed medical attendance and their want was supplied by a lower class of general practitioners. The French coined for them the title of "Chirurgien" (from the Greek). The Germans adopted it as *chirurg* or *wundarzt* (one who heals wounds), and it was imported into early English language as *chirurgion*, from which by contraction resulted the present title *surgeon*.

The surgeon had not the degree of doctor *medicinæ*. He was generally recruited from the guild of barbers and acquired his knowledge and skill as a pupil and assistant to an older practitioner. His practice consisted mainly of manual treatment, such as bleeding, cupping, setting of broken limbs, treatment of injuries, extraction of teeth and the like. He was also given the right to dispense medicines and at a later period was called, in Great Britain, a surgeon apothecary. In rank he was distinctly below that of a physician who was considered a scholar and gentleman because he was a doctor *medicinæ*. Physicians prescribed medicine, but it was below their dignity to dispense them. They were the doctors of the higher classes of people, of kings and emperors, who often bestowed upon them high titles and honors. Among them, also, were men who pursued scientific research and the discoveries of Vesal (1540), Fallopius (1560), Eustachio (1620), Harvey (1630), Sydenham (1708), and others of that period are known to every veterinarian. The practicing surgeon, poorly educated as he was, did not contribute to scientific knowledge.

THE TITLES AWARDED BY THE EARLY AND LATER VETERINARY SCHOOLS OF EUROPE.

If we now fully understand the condition of medicine and veterinary medicine of that time, that is, the division of medicine into a scientific branch occupied by the scholarly physician, and into a lower, manual branch filled by the practicing surgeon, as also the condition of veterinary practice which was entirely in the hands of the empiric farrier, one cannot wonder that the early veterinary schools did not confer the doctor degree upon their graduates. They were powerless to do so, because they were constituted only as a limited technical *school, teaching one profession only, and not a university*, endowed with privileges and power by the laws of the land or the will of a king. Then, too, the pupils of the early veterinary schools of Europe, like our own, were young men of ordinary education, not fit for higher mental study. Like the surgeons, who were recruited from the barbers or sons of barbers, so came the first veterinarians from the farriers or sons of farriers, seeking entrance into the veterinary schools to better their standing in the eyes of the world, but they knew well that they could never enter a university.

France.—The first veterinary schools of history, that of Lyon, founded in 1762, and that of Alfort, founded in 1766, show this condition plainly. Their founder, the renowned Bourgelat, the first veterinary professor chronicled, was a man of high education, possessed of energy, and well connected in government circles. This enabled him to have the first veterinary schools quite well endowed financially, and all he needed for success were capable pupils. He wanted them to be real students, but instead those that were sent to attend the school from the homeland and from numerous foreign countries, were farriers from the army and farriers from civil life. Although he fought this very condition, the opinion of his adversary Lafosse, of the government and public opinion generally seemed to be that such pupils were the most apt to become veterinary practitioners. No

one thought then that *veterinary art* was a science also, and no one intended to put the newly born veterinarian on an equal footing with that of the learned priest, judge or physician. Without pretence he was turned out into his life work for what he really was, a trained empiric, in testimony whereof he received from the school a certificate acknowledging his "approbation de maréchal vétérinaire."

After three or four decades of experience with these graduates, it dawned upon the government and those interested, that veterinarians so poorly educated did not give the desired satisfaction. A reorganization of the schools took place, changing the government supervision, improving the teaching faculties and initiating the teaching of two classes of veterinarians—one of ordinary pre-education and predominant practical training (*maréchal vétérinaire*), and the other a higher class with academic pre-education and of a more scientific mold, which in contradistinction to the first, received the title of "*médecine vétérinaire*." To illustrate the practical result of this division, it may be cited that on January 15, 1813, the Emperor Napoleon I. decreed that each army corps should be provided with one *médecine vétérinaire* with the rank of adjutant (a commissioned officer) and each regiment of cavalry and artillery with three *maréchant vétérinaires* with the charge of *sous-officier* (sergeant).

This system of twofold education of veterinarians continued in vogue until 1824, when the lower grade of study was abandoned and only the higher course continued. Periodically this was made stronger and more severe until it reached its present exemplary standard.

The French government veterinary schools were never affiliated with universities, but remained separate institutions, which fact sufficiently explains that they did not grant a doctor degree, but still confer the unpretentious title as *médecine vétérinaire*, and the graduates are not addressed as doctor. In 1909, however, the veterinary schools petitioned the proper government resort to grant them the right to confer the degree of doctor of

veterinary medicine upon graduates who continue to study and perform research work of merit, and it is only a question of time when this just appeal will be complied with.

Great Britain.—The wave establishing veterinary schools, starting from France throughout the old world, was carried to Great Britain by Vial de Saint Bel, a pupil of the veterinary school at Lyon. On his recommendation the Royal Agricultural Society of London raised the necessary funds to start such a school, and it was opened in 1791 under the name of "The Royal Veterinary College, London." Unlike in France, the government of Great Britain did not assist this new college financially, but its maintenance was largely left to the private enterprise of St. Bel and his assistants. Naturally, the institution itself, as well as the instruction, was modelled after the French pattern, but in 1793 Edward Coleman became its principal, who was an exceptionally capable and resourceful man, and he soon improved the college in many new ways. The original title given to the graduates was simply the English term "veterinary surgeon" (V.S.), which remained in vogue for more than four decades. At that time the college had developed into a meritorious institution, all through the good ethics and economics practiced by the successive principals: Coleman, Sewell, Robertson and the Professors Axe, Brown and others, and a charter was secured from the crown which created the "Royal College of Veterinary Surgeons." From this time on the graduates received the "membership diploma" of the Royal College of Veterinary Surgeons (also termed degree), abbreviated M.R.C.V.S. This diploma carries with it the legal right to practice veterinary medicine throughout Great Britain and the colonies.

But our British colleagues were bent on "advancing with the times or cause the times to advance" as they said, and in 1876 the council of the Royal College of Veterinary Surgeons obtained powers by supplemental charter granted by the late Queen Victoria, to create a higher degree than that of membership, to be entitled "Fellowship," for the purpose of "advancement of veterinary science." This degree can only be acquired after

five years of practice as a graduate veterinarian. The candidate must be of good professional standing and write and defend a thesis on a scientific subject of veterinary medicine. The fellowship degree opens the way to higher public positions in state and municipal veterinary medicine. The "*Honorary Fellowship*," conferred now and then, without examination, upon British and foreign veterinarians of exceptional merit, is a liberal token of the veterinary institution of Great Britain.

The five veterinary colleges now existing at London, Edinburgh, Glasgow, Dublin and Liverpool, are affiliated and the same degree is conferred by all of them. The University of Liverpool, besides conferring the membership diploma of veterinary surgeons, has also instituted a post-graduate course in comparative pathology and bacteriology for officers of the army veterinary department and colonial veterinary surgeons, which qualifies for the examination of the university degree of doctor of veterinary hygiene (D.V.H.). The students of the Royal Veterinary College, London, have also the privilege to acquire the science degree (B.Sc.) of the University of London.

No purely veterinary degree has as yet been created by any university of Great Britain, but hope is expressed by the veterinary authorities, that the universities may be induced to grant the degree of "Bachelor of Veterinary Medicine" to those students who conform with their regulations, and that the degree of "Doctor of Veterinary Medicine" may be substituted for the fellowship degree in the near future; steps which are "bound to react with advantage upon the members of the veterinary profession themselves and the public they serve" (Professor McKendrick).

Germany and Austria.—Vienna opened its Royal Veterinary College in 1777 and Berlin in 1790, both under the auspices of their governments. These schools, too, were originally modelled after the French original, but they soon took quite different courses of development. For a number of years they were partly under control of their war departments, because they principally educated young men for the army service, but they matriculated

and graduated civil students as well. In 1802 the Austrian government created a precedent by affiliating the Royal Veterinary School with the University of Vienna, which resulted in raising the educational standard of veterinary students to the high level required of medical students.

The title conferred upon the graduates of the German and Austrian veterinary schools has always been the brief German word "Thierarzt" (veterinary physician), which is analogous to the title "Arzt" (physician) conferred upon graduates of medical faculties. These titles legally permit the holder to practice medicine or veterinary medicine or hold official positions in any of the different states of these two empires.

In 1820 the University of Vienna created another precedent by instituting the degree of "magister medicinæ veterinariæ" (mag. med. vet.), similar to that of doctor medicinæ, which is procurable only by veterinary graduates who write and publicly defend a thesis before the professors of the faculty.

In Germany proper the Royal veterinary schools at Berlin, Hanover, Dresden, Munich and Stuttgart, have always remained separate educational institutions. But there were numerous universities in the smaller kingdoms, dukedoms, etc., most anxious of improvement, and they created veterinary faculties in conjunction with their medical faculties: Göttingen in 1771; Freiburg, 1783; Marburg, 1789, Würzburg, 1791, each of them conferring the higher degree of doctor medicinæ veterinariæ upon veterinarians who conformed with their requirements. All of these veterinary faculties closed the doors during the Napoleonic wars, as professors and students took up arms in defense of their country, and they did not reopen after peace was restored in 1815, because the universities were poverty-stricken. However, in 1829 the University of Giessen reopened a veterinary faculty and re-established the degree of doctor medicinæ veterinariæ (abbreviated, Dr. Med. Vet.), which since has been conferred upon a multitude of German and foreign graduates, who had the ambition, time and means to undergo the special examination for this degree before the faculty of this university. Quite a

number of the renowned veterinary professors of Germany, Austria, Denmark and other countries hold the honorary degree, Dr. Med. Vet., H.C. (honoris causa), presented to them by this university in recognition of their services in the cause of international advancement of veterinary medicine.

In 1898 the German government exacted from the students of the various veterinary schools the same pre-education demanded of medical students, which is the graduation from a gymnasium and about equivalent to our American university degree of B.A. This step was followed in 1903 by the next advance, which gave to the Royal Veterinary College, at Berlin, the constitution of a university, acknowledging thereby that it had developed into a large and complicated institution of national importance. The first "rector magnificus" chosen was Professor Dr. Med. Vet. Schmaltz, the well-known author on veterinary anatomy. Finally, in 1910, Emperor William decreed that the Royal veterinary schools at Berlin and Hanover shall have the legal right to confer the degree of Dr. Med. Vet. under the restriction that candidates be veterinary graduates of merit and undergo the special doctorate examination, as in any university which is dependent upon a written thesis and its public defense before the faculty. Very recently the Kings of Saxony, Bavaria and Württemberg have given the same privilege to the veterinary schools at Dresden, Munich and Stuttgart. These decrees do not abolish the title "Thierarzt," granted upon graduation from the veterinary schools, which must remain as a legal permit to practice veterinary medicine throughout Germany. Not many veterinarians will undergo the hardships of a doctorate examination in addition to their severe graduation examination.

Switzerland and Italy.—We need now only briefly state that the veterinary schools at Berne and Zurich, in Switzerland, are faculties of universities, and as such have conferred the degree of Dr. Med. Vet. for more than twenty years under the same restrictions as prescribed in Germany.

The Italian veterinary schools at Turino (1769), Milano (1791) and Naples (1815), are independent institutions, but

have enjoyed the rank of a university since 1880. They have the right to confer the degree of doctor medicinæ veterinariæ, but its abbreviation, if any, is unknown to the writer.

It may be well to explain here, that it is an old custom on the Continent of Europe to signify the doctor degree as a prefix to the name only (Dr.), whether it is that of divinity, law, philosophy, medicine or veterinary medicine, all holders of the same recognizing each other as belonging to "the nobility of the mind" (Geistes Adél). This is fairly known in American educational institutions, but it is not generally understood that no doctor degree, of whatever profession, has ever been conferred in Europe upon students on graduation from their schools or faculties, but that it is strictly dependent upon a special doctorate examination, and this is by no means always passed. It is a fact, for instance, that not all physicians are doctors of medicine, and if they do not hold this degree they are not addressed as such. This extreme exactness appears narrow to Americans, but it is the European habit to strictly classify men according to their rightful title.

The Veterinary Schools of North America:

(To be continued.)

A LAST word to the Alumni of the New York American Veterinary College, to remind them of the alumni dinner to be held on the evening of April 26. Tickets are \$3.50, and may be procured from either of the members of the dinner committee; Dr. W. C. Miller, 459 West Forty-third street; Dr. Robt. W. Ellis, 509 West One Hundred and Fifty-second street, the president of the association; Dr. R. S. MacKellar, 351 West Eleventh street, New York City, or from the Secretary, Dr. J. F. Carey, 53 McKinley avenue, East Orange, N. J.

It is urged that members procure their tickets at once, so as to aid the committee in perfecting their arrangements. An alumni meeting will be held at the college, 141 West Fifty-fourth street, in the afternoon of the same day. Usually held 3 p. m.

NEURECTOMIES OF VETERINARY SURGERY.*

BY L. A. MERILLAT, PROF. OF SURGERY, CHICAGO VETERINARY COLLEGE.

In order to appreciate exactly the position our nervous operations occupy among the broad possibilities of neurologic surgery in general we should first understand that the group of operations we have performed for more than a quarter of a century under the name of "neurotomy" consist of a number of *destructive interventions* aiming to permanently interrupt the continuity of sensory nerve trunks supplying painful structures.

Constructive Interventions aiming to restore lost innervation have not yet been attempted in animal surgery. The grafting of nerves, the transplanting of nerves and the anastomosis of nerves with the object of re-establishing their physiological integrity when paralyzed or accidentally divided are parts of neurologic surgery in which we have not as yet indulged.

It is, however, a fact that we are constantly in contact with conditions calling for such surgical work. We need only to supply the *modus operandi*.

The atrophy of the facial muscles due to paralysis of the seventh cranial nerve when injured at the point where it passes over the posterior border of the jaw; the atrophy of the shoulder caused by injury of the supra-scapular nerve and usually described under the name of "sweeny"; the atrophy of azoturia due, no doubt, to degeneration of the crural nerve; and the atrophy of the intrinsic muscles of the larynx accompanying laryngeal hemiplegia are so many conditions which call for construction nerve interventions and which offer possibilities in this direction; as it has often been demonstrated that the axis

* Read before the Ninth Annual Meeting of the North Dakota Veterinary Medical Association, Fargo, January, 1911.

cylinders of healthy nerves when grafted to paralyzed trunks will, sooner or later, re-establish the innervation of the region supplied by its branches.

It is, however, not my object in this discourse to introduce any new prospects, but to analyze the status of those old operations we perform under the name "neurotomy." I prefer the name "neurotomy" to "neurectomy" as it seems to me to be the best nomenclature when judged through the eyes of a surgeon. The mere fact that a section of the nerve is removed, a rather small feature of the operation as a whole, is not sufficient reason to mystify and deceive the unsuspecting reader that the operation is a nerve resection, when in fact its only object is nerve division.

Neurotomy has had an eventful history since it was first performed by Professor Sewell of the Royal Veterinary College of London about the beginning of the nineteenth century. It has, during these hundred years, been more highly applauded at times and more strongly condemned at others than any of our surgical operations. The charming results following its performance in some instances and the disastrous results in other apparently similar conditions, has always kept neurotomy from meeting with universal approval by the whole profession at any time during the successive epochs in which it has been performed. Although neurotomy is old, antedating nearly all of our operations except phlebotomy and castration, and although continually being resorted to at all parts of the civilized world where college educated veterinarians existed during the whole of the past century, I can not truthfully say it has ever met with lasting favor in anybody's hands.

I am here before you with the perplexing duty of describing and demonstrating a procedure for the relief of lameness of horses which I do not myself recommend very highly. Although I perform these operations almost every day of my life in the pursuit of my work as a veterinary practitioner, I feel it is my duty to first condemn them as the universal treatment of any of the various lamenesses and then attempt to assist you in

finding the place they actually belong in our therapy of locomotory diseases.

While I have no reason to suppose that you in your wisdom would be misguided so much by my feeble remarks on this subject, I do not want my visit to North Dakota to be followed by the shedding of hoofs and the wrenching of tendons which the unwise penchant for neurotomy is bound to bring forth. If conservatism is to be made a rule in surgery, in neurotomy it must be made an absolute law. The charming results which sometimes follow its performance often leads the young enthusiast into the dangerous practice of resorting to it too generally and especially too hastily where there are still prospects of deriving permanent cures of the diseases at hand.

The indications for neurotomy are not numerous. There are only a very few diseases and still fewer phases of these diseases wherein such intervention is actually indicated as a sane procedure. Positively *chronic conditions* of a rather *trivial character* are the ideal ones for neurotomy. For example, a case of navicular disease manifested by only a slight lameness lasting month after month which does not change either for the worse or for the better and which is then interpreted as being due to a slight, circumscribed lesion of the navicular bursa will yield permanently to a division of the posterior digital nerve. I believe in such cases the intervention is even curative not only of the lameness but of the disease itself. By making the diseased structures resume their full physiological activities, healing may be stimulated and a cure may follow. On the other hand if the disease is so advanced that the structures affected are not capable of bearing their full responsibility, the destructive process of the disease is augmented by the physical injury from which it was previously protected by lameness, and failure results.

Chronic conditions of a more serious character may sometimes be successfully unnerved where it is possible to place the diseased structures under favorable conditions of repose by shoeing and by less arduous occupations. Thus an unnerved horse that would break down promptly if kept at the arduous occupa-

tion of racing might have remained quite useful for years at light road work; the express horse that is "slammed" along rapidly over hard streets with heavy loads will often make a good horse for years at light delivery work; and the heavy draft horse pulling tons in the dray may make a splendid light draft horse, etc.

As a *last resort* neurotomy is, of course, always indicated. but in such events the practitioner must always look carefully into the possibilities of cures by other methods. After all of the palliative measures have proven futile; the chronicity of lameness is established beyond any doubt, and the patient has passed into a hopeless state of uselessness, the attempt, by neurotomy, to restore it to a useful animal for some occupation or other, is, of course, justifiable. In such circumstances a full confession of the well-known hazards must first be made.

The contra-indications are manifold. No *acute disease* process must ever be associated with such treatment. No animal affected with a *severe claudication*, no matter what its duration is, is a fit subject for neurotomy. But above all the *unsound hoof* offers the poorest prospect even when the other conditions seem ideal. The foot with a flat sole, a sole convex from hard work or from a previous attack of laminitis, the foot with a deep fissure of the frog, the weak heels, the cracked walls, either at the toe or quarter are so many conditions which positively condemn a subject for any kind of neurotomy. The surgeon in his deliberations must first assure himself that the hoof and its genetic structures are in a good state of health and strength. The *exostosis* engaging a ginglymoid articulation without physically obstructing its movements, such as a small, sharp osteophyte of the os suffraginus, the os corona, or the os pedis, is a very dangerous surgical prospect. *Mules* for reasons not easily explained are not as good subjects as horses for neurotomy.

The *untoward sequelae* of neurotomy are most liable to occur after plantar neurotomy and tibial neurotomy. Digital neurotomy is seldom ever followed by any serious results. Among many operations performed I have never seen but one

horse fall a victim to degenerative changes after this operation. The chief serious sequel of neurotomies consists of a wrenching loose of the plantar aponeurosis from the semilunar ridge; wrenching loose of the binding ligaments of the third interdigital articulation, wrenching of the attachments of the perforatus, wrenching of the sessamoidean ligaments, casting of the hoof and gangrene when large arteries have been accidentally divided. The accidents usually described under the name of "degenerations" are probably not degenerations at all. As healthy structures may be deprived of their sensory nerve supply with impunity it is very apparent that the fault must be placed upon the disease itself rather than upon lack of nerve supply. The physical injury to which the supporting structures are subjected after the pain has been removed is no doubt the real cause of such sequelae.

Failures to cure the lameness by neurotomy may be due to several causes. The entire painful zone may not have been unnerved on account of its wide diffusion; anomalous nerves may unexpectedly maintain a sensibility to the diseased part; and finally the physical injury to which diseased structures are subjected after neurotomy may extend the inflammatory process beyond the unnerved zone. This latter result is often seen after digital neurotomy. A horse thus unnerved is often cured perfectly until returned to work. During the first few days everything seems satisfactory, but after several days a lameness returns.

Painful stumps is one of the very common, though less serious, complications. These are due to the outgrowth of the axis cylinders into the surrounding connective tissue. When the connective tissue is derived entirely from the neurolemma the outgrowth is arrested in a more or less symmetrical bulb usually called a neuroma. These stumps cause lameness; they are analogous to the sensitive nerve ends which produce sensitive scars after amputations of limbs, fingers or other appendages.

Injuries such as cuts, punctures and contusions in tissues whose sensory innervation has been permanently interrupted by

neurotomy heal quite as promptly as under normal conditions. They are, however, often overlooked, since they cause no lameness and are submitted to violence that lameness would have prevented. The nail-prick to the unnerved foot is, therefore, usually a serious matter, while the calk or tread to the visible parts is of no more consequence than similar accidents to a healthy foot, when discovered early and submitted to the proper wound treatment. I have frequently observed that quite bad cases of necrobacillosis behave almost as well in the unnerved foot, pastern or fetlock as they do in the normal sensitive tissues.

The behavior of a cut nerve should be studied in order to clear up certain important phases of neurologic surgery, both destructive and constructive. If a nerve is divided with a sharp instrument and then immediately reapproximated, continuity will be restored in the usual time required for any other soft tissue to reunite; but the function of the nerve is not re-established for some months and the *innervation will never again be perfect*. If the nerve is motor the muscle supplied by it will *atrophy during the reconstruction period*, and after its axons reach by growth the old periphery, the muscle again takes up its function and gradually enlarges to its original volume. A certain definite *weakness* is, however, always extant in the case of motor nerves and a certain characteristic *numbness* persists year after year in the case of sensory nerves which have been severed and then immediately reapproximated. When a nerve has been mutilated or a certain part of it is resected (as in the case of our neurotomies) the chances of restoration are greatly reduced; usually the interruption is permanent and if any part of the innervation is re-established it is noted for its imperfection. In such cases the axis cylinders, unable to find the old channel, are lost wandering in the surrounding tissues or are effectually blocked in the scar or so-called neuroma. In short the regeneration of nerves, whose continuity have been destroyed occurs only when the most favorable conditions exist for the outgrowth of the axons, as, for example, when the approximation is perfect.

The effect of sensory neurotomy upon nutrition has, I believe, often been wrongly judged. The terrible and treacherous processes of dissolution, such as casting of hoofs, fracture of bones and wrenching of tendons which occur after neurotomy in acute, subacute and chronic forms have since Sewell, been attributed to trophic disturbances incident to the lost innervation. A number of experiments made upon sound horses and many observations made in animals unnerved at different parts of the body through accident have proven to my full satisfaction that the division of a sensory nerve trunk has nothing whatever to do with the nutrition of the region supplied by its branches. It is very evident that the trophic nerves, so-called, are associated closely to the vascular system of nerves and are capable of functioning independent of the trunks having the more simple functions to perform.

It does not matter to the practitioner so much whether the effects of neurotomy are trophic or physical in origin if he once appreciates fully the harmful effect of physical injury upon the unnerved regions.

Tissues, as it has already been said, regenerate promptly and normally, hoofs retain their normal texture and grow quite as fast, and blood vessels undergo no perceptible changes. Tendons, synovials, and binding ligaments do, however, soften, stretch out and loose their close attachment to the bones. These latter effects undoubtedly have their origin in pre-existing inflammations.

The following are operations which, having been tried, are found worthy of being retained in the category of veterinary surgical operations when applied under the restrictions given in the paragraph on general indications.

I. **BILATERAL DIGITAL NEUROTOMY**, frequently designated as "the low operation," is a division of the posterior digital nerve, the principal branch of the plantar nerve, distributed chiefly to the structures constituting the navicular apparatus. Its indications are navicular disease and traumatic adhesions supervening wounds, particularly nail pricks.

2. **UNILATERAL DIGITAL NEUROTOMY.** The same operation applied to but one posterior digital nerve is often recommended, especially by Hughes, for unilateral side bone.

3. **BILATERAL PLANTAR NEUROTOMY** often called "the high operation," is a division of the metacarpal nerves on the level of the distal third of the metacarpus. This nerve, where no anomalous arrangements of the branches, is the sole nerve supply to the foot with the exception of the anterior part of the coronary cushion and sensitive laminae of the toe.

This is one of the most dangerous of the neurotomies and should only be resorted to as a last resort for navicular disease, traumatic adhesions, ringbone and side bone when all other methods of treatment, including digital neurotomy, have failed.

4. **UNILATERAL PLANTAR NEUROTOMY** is the same operation applied to one plantar nerve. It is an effectual intervention for unilateral side bone and is attended with less danger than the double operation. In fact I feel free to recommend this operation in side-bone lameness that proves obstinate.

5. **MEDIAN NEUROTOMY** is the surgical division of the median nerve at the level of the elbow. It is a more safe operation than plantar neurotomy because it does not as completely unnerve any whole region. Its chief indication is the lameness which through anomalous distribution of the nerve trunks below, has not yielded to the other operations. To-day it is indeed seldom applied as a first resort for any of the various conditions for which it was originally intended. The splint, the tendosynovitis, the tendonitis, the osteophytes about the shin and fetlocks, the various forms of tendonous, ligamentous and synovial afflictions of the fetlocks are no longer immediately attacked by this once classical operation. This operation was lauded very highly as a perfect cure for many of the very annoying chronic afflictions of carriage horses, race horses, saddle horses and draft horses. To-day it is more prudently applied.

6. **MEDIO-CUBITAL NEUROTOMY** is a double neurotomy. It is median neurotomy and ulnar neurotomy combined. The latter division is effected at the middle third of the anti-brachial

region. Alone, ulnar neurotomy is never performed, because the cubital nerve does not alone reach any part that is affected with diseases requiring neurotomy.

Medio-cubital neurotomy has been performed occasionally as a last resort for obstinate lameness. It is, however, a mighty dangerous procedure that might well be omitted from our surgical operations. Degenerations are certain to follow sooner or later.

7. **TIBIAL NEUROTOMY** is a division of the sciatic nerve at the level of the distal third of the tibial region; at the point this nerve divides into the two plantars. This operation is analogous to bilateral plantar neurotomy and although it is concerned in supplying innervation to the tarsus, the division has no harmful influence upon this articulation when applied to the treatment of diseases located in the regions below the fetlock pastern and the foot. Plantar might well be excluded from the surgery of the pelvic limb, and tibial substituted whenever it is desired to treat sessamoidean and pedal diseases.

It is, however, attended with all the grave consequences of plantar neurotomy and must be applied with great prudence. The ligaments of the fetlock and the perforatus tendon very readily wrench loose after this operation and often as soon as the patient is returned to work.

Tibial neurotomy is also performed for spavin. Alone it is ineffectual for this disease, but when performed with peroneal neurotomy the claudication of small spavins is usually arrested.

8. **TIBIO-PERONEAL NEUROTOMY**, the classical double operation for spavin, is a division of the sciatic as above described and of the branch of the small femero-popliteal generally described under the name of the anterior tibial nerve. Surgeons usually call it the deep peroneal nerve.

This operation (the peroneal division) is a difficult one to perform as the nerve is hidden deeply in the bellies of the anterior group of muscles. And aside from the difficulty of performance the surgical wound is a difficult one to heal. The muscles underlying and firmly enveloped in the strong tibial fascia will bulge

through the surgical wound and refuse to heal often for months. By following certain methods of suturing and by averting septic complications, this inimical feature can, however, be overcome.

9. FACIAL NEUROTOMY, division of the superior maxillary branch of the fifth cranial nerve, introduced into our surgery some years ago by Professor Williams, has become obsolete. The disease for which it was intended seems to have been a phantom. Epileptiform symptoms against which this operation was once directed, are now differently interpreted.

In regard to performance it might be said that all of our neurotomies belong to the order of minor surgical operations. They are, after all, very simple procedures, which every veterinarian with a knowledge of general surgery can easily perform. Plantar and digital neurotomy can, with the aid of local anaesthesia, be performed in the standing position; the others require recumbent restraint to which should be added either local or general anaesthesia. The seat of operation should be carefully disinfected after approved rules of skin disinfection, and the procedure throughout should be done in accordance with standard surgical methods. Nerves about to be divided should first be well stretched to assure some proximal degeneration. The wound, to prevent sensitive and unsightly scars should heal by primary union and the patient afterward should be given a protracted rest. The unnerved horse requires more careful surveillance as regards shoeing and general attention to the feet than is usually accorded it. The feet are kept short but the soles strong and the shoeing should assist in throwing the weight toward the bony column.

THE Meeting of the Pennsylvania State Veterinary Medical Association, March 7 and 8, in Philadelphia, was a marked success, far surpassing the anticipation of even the most sanguine. It was largely attended; the papers, discussions and clinics were of the best and the members enthusiastic.

IMPACTION OF THE BOWELS.*

BY DR. J. C. WINGERT, MARENGO, ILL.

This form of indigestion is caused by the animal gorging itself with food, and arises more from the animal's voracious appetite than from any defect in the quality of the food.

The condition is, however, more severe if the food consumed is especially concentrated or difficult of digestion.

The varied conditions which present themselves in these troubles necessitates describing them under two forms:

1. Overloading the rumen with foods that undergo an active fermentative process, and
2. Impactions without fermentation which cause suspension of rumination.

Under No. 1 we have for causes:

Overloading the rumen with succulent grasses, new hay, frosted fodder, soft, unripe corn, swill, garbage, and so forth devoured more or less ravenously.

All foods which ferment rapidly and produce much gas may determine the cause when introduced in sufficient quantities into the digestive canal.

In animals kept constantly in the stable, the feeding with green or fermenting food is usually the starting point of tympanitis.

The animals are much exposed to it in the pastures, when feeding on grass covered with heavy dew, or wet with rain, or covered with ice and frost. Also when drinking large quantities of cold water after eating.

There is comparatively no great formation of gas, and the gas which is formed is diffused through the stomach instead of accumulating in a layer in its upper part.

* Presented at the twenty-seventh annual meeting of the Ill. Vet. Med. Ass'n.

In these cases the contents of the rumen is a churning, bubbling, fomenting mass that cannot be evacuated with the trochar and cannula sufficiently to make any appreciable impression upon the intra-abdominal tension, as only a limited amount of gas and ingesta will gurgle from the cannula.

Symptoms.—The most striking symptom is the sudden increase and great volume of the abdomen. The left flank may extend so greatly as to become level with the dorsal spine; some may even go beyond this.

From the first onset animals usually cease to feed and rumination is suspended. After several small defecations they make vain repeated expulsive efforts. The extremities are *usually* gathered under them, but at other times are much spread, as if to avoid falling; the back is arched, the tail high, ears hanging, and the animal will only advance when forced to do so.

With the increase of tympanitis the respirations are accelerated and become painful, we notice anxiety, excitement, stamping, congestion of the mucous membranes and conjunctiva.

The eye is haggard, opened wide, and prominent. The lower part of ears, the joints and flanks are covered with sweat, the pulse becomes more and more accelerated, small and soon imperceptible. Dyspnoea increases rapidly, the nostrils are dilated, the mouth is half open and the tongue hanging, the saliva runs on the ground, the patient groans repeatedly.

There is nausea without any effectual eructations. Soon the anxiety becomes extreme, the extremities are cold, mucous membranes cyanosed; finally the animal becomes immovable and stupefied, sinks to the ground and succumbs to convulsions.

Under No. 2—Impactions without fermentation:

We find the rumen sometimes becomes filled with drier contents than the foregoing, from overfeeding and lack of exercise, from inactivity of the rumen due to debilitating disease or influences.

From an insufficient water allowance, or from any of the innumerable circumstances and conditions that causes suspension of rumination.

In these instances the rumen is impacted one-half full, two-thirds full or even to the upper zone with relatively dry ingesta constituted chiefly of the rough forage feed, hay, fodder, and so forth, mixed with the smaller grains, corn, wheat, rye, peas, etc. At times the impaction is the cause of the indisposition, while at other times it may only be an effect.

In either case, however, it constitutes a serious condition that must be promptly corrected in order to save the patient's life.

Symptoms.—These vary with the causal conditions, especially with the quantity and digestibility of the food ingested.

The animals keep away from their mangers, arch the back and expel normal excrement in small quantity and at short intervals. They will move the tail, strike the abdomen with the hind feet, carry the head from one flank to the other and complain.

Sometimes they will lie down and almost immediately get up again. The countenance is anxious and haggard, the eyes are prominent and conjunctiva injected. In some cases we observe stupefaction; the animals are indifferent to everything happening around them. Inappetence is complete and rumination has stopped. Thirst is often increased; we observe ptyalism with motions of empty mastication, eructations, nausea and even true vomiting in some cases. The volume of the abdomen is increased, especially the left flank. The rumen is packed with alimentary matters; they are sometimes quite hard, but mostly soft. The abdominal swelling is not resonant on percussion, but pits on pressure, and when the animal lies down it does so on the right side. Pressure upon the abdomen are painful and the animal seeks to avoid them.

The peristaltic movements are lost or diminished, and as the case advances defecation is rare and not abundant, and the excrements are dark and hard. The temperature is not increased and is regularly distributed. Pulse is accelerated and the artery is distended. Respiration is not free and becomes quite painful in decubitus.

Treatment.—In those cases where tympany is observed the patient must be prevented from eating and treatment begun im-

mediately. At first we should do our best to obtain the evacuation of gases by the oesophageal route. This can be performed in different ways, either by pulling the tongue out of the mouth, which produces nausea and eructations, or by traction on the commissures of the lips by means of a straw rope, this gives rise to involuntary movements of the tongue which produce eructations and sometimes vomiting. Strong and prolonged pressure or massage on the left flank is sometimes sufficient to exacuate the gaseous contents of the rumen. The renewal of the peristaltic movements can be distinctly felt under the hand, and eructations are soon produced.

A large number of therapeutical agents have been recognized and used in these cases, but their value is generally inferior to that of mechanical means. They answer only in the cases where the latter are perfectly unsuccessful.

These therapeutical agents are sometimes stimulants, sometimes emetics, absorbents or antiferments. It is hard, I think, to name a drug or mixture that has not at some time or other been poured down some hapless animal in this condition with the expectation of getting relief. A great deal of it has done more harm than good, as it is not an uncommon thing to find a case where the medicine has taken the wrong route and entered the trachea and lungs instead of the oesophagus.

I will now try and outline a treatment which in my hands has always given very good results. In fact, in my opinion, it is the only way to treat these cases, and that is with the aid of the stomach tube. We are all more or less familiar with the intricate mechanisms of the ox's stomachs and the relations and connections of the oesophagus to them. It is decidedly uncertain in my opinion when we give medicine by the mouth just where or which one of those stomachs it is going to pass into.

The trouble in all of these cases is in the rumen, and that is where we must get our medicines if we expect to derive any great benefit from them. This can only be accomplished with satisfaction by the aid of the stomach tube. I use the tube in each and every case.

When I get a case, about the first thing I do is pass the tube, and do almost invariably get quite a quantity of gas from the rumen in this way. I always take a little time and get as much gas in this way as possible. If it is impossible to relieve the tension in this manner I use the trochar and cannula. But before removing the tube I administer a drench composed generally of raw linseed oil, one quart; oleum terebinth, two to four ounces; aromatic spirits of ammonia, two ounces; salicylic acid, four to six drams; well shaken and poured into the tube through a funnel. In a great many cases this is all that will be required. But, if in one or two hours gas is still forming to any extent, pass the tube again and repeat the drench as before. I have never had a case yet, when treated in this manner, that I had to repeat the drench more than twice to allay the fermentation and relieve the animal.

These same kind of cases treated without the tube, usually would hang on two or three days and cause all kinds of trouble and worry.

But in extreme cases the practitioner must be on the alert; he should not loose too much time in trying these means; he ought to know the right moment at which to abandon them and evacuate the contents of the rumen.

In extreme cases rumenotomy is the only thing to do, and it must be done at once, or your patient will die right before your eyes. Every moment's delay imperils the life of your patient.

The operation is performed in the standing posture if possible. By means of a stanchion to hold the head and by ropes to prevent decumbency. Except where instantaneous relief is needed to forestall impending death, rumenotomy should be performed under the strictest possible antisepsis. The field should be shaved, well washed and disinfected. The instruments, and especially the needles and sutures must be aseptic. The incision is made about five inches long through the abdominal wall, midway between the ext. angle of the ilium and the last rib,

beginning about two inches below the transverse processes of the lumbar vertebrae.

The skin and muscles are incised with the scalpel, and the peritoneum with the probe pointed bistoury. The retractors are applied to the wound and the rumen incised in the same direction as the incision in the abdominal wall; but about one inch shorter. The rumen is first punctured with the scalpel at that part occupying the middle of the abdominal incision.

In acute bloat the index finger is hooked into the perforation thus made, and the rumen drawn out as far as possible where it is held until the flow of the contents ceases. The abdominal tension now being relieved the incision is enlarged upward and downward to the required length. The contents are then removed, handful by handful, until the rumen is empty.

The edges of the wound in the rumen are now cleansed of all adhering particles, and then sutured with a Czerny-Lembert of catgut. The muscles and skin are closed with single interrupted stitches. A small orifice is left inferiorly for drainage. The edges are dusted with iodoform and covered thickly with collodion. It is essential that the animal should receive only limited quantities of liquid food, for if rumination is immediately stimulated by the ingestion of solid food, the contractions of the rumen will prevent all chances of primary union of the incision.

At the end of eight days the sutures in the skin are removed and the wound submitted to treatment indicated by its condition.

In those cases of impaction *without fermentation* the treatment should be directed towards the removal of the impacted mass, and also to restoration of tone to the over-distended walls of the viscus. Here again we can derive great benefit from the use of the stomach tube. By passing the tube we can, to a certain extent, ascertain the amount of distention present and relieve the rumen of any gas which it may contain. In those cases where the rumen is impacted one-half or two-thirds full, and the content is dry and solid, it can be softened and broken up by pumping water or linseed oil into the rumen through the

tube. Oil is especially beneficial to lubricate the passages and soften the mass of food.

Manipulation applied externally over the food mass is sometimes beneficial; it breaks down the food mass and excites the rumen to action.

Our medicinal treatment should be directed along the line of stimulants and purgatives. For purgatives in these cases I use magnesia sulph., sixteen ounces; tincture of ginger, one ounce, given every six or eight hours until the bowels are quite active.

For stimulants I use the following prescription: Fl. ext. nux vom., two ounces; spirits nit. ether, six ounces; aromatic spirits of ammonia, four ounces; alcohol, four ounces; mix and give two ounces every two hours until relieved.

In a great majority of those cases of overloading the rumen, such as we get where cattle break into a cornfield and load up all they can hold, I use this treatment and push it vigorously. I could enumerate a good many cases treated this fall and it has given good results in almost every case. If you can get to the cases before they are too far gone your percentage of losses will be very small.

But should these measures fail, before the animal begins to sink exhausted, or the brain becomes congested, or alvitis supervenes, rumenotomy should be performed.

BEFORE the Ways and Means Committee Dr. H. D. Gill, of the veterinary department of New York University, declared that horse owners in New York City were losing \$500,000 a year because of the ravages of glanders. He came to Albany to speak for the bill appropriating \$40,000 for payment for animals condemned because of disease. Commissioner Pearson of the State Department of Agriculture seeks to increase this appropriation to \$70,000 and to have provision made for an appropriation of \$20,000 to investigate means for stamping out glanders in New York City.—*New York Tribune* of March 23, 1911.

SYMBIOTIC OTACARIASIS OF THE CAT.

By J. W. KALKUS, D.V.S., PATHOLOGIST WASHINGTON STATE COLLEGE,
VETERINARY DEPARTMENT, PULLMAN, WASHINGTON.

This disease, which is caused by the *Symbiotes auricularis* var. *cati*, is not common in this country, and therefore quite interesting; especially since it produces rather extraordinary symptoms. The parasite is a little longer than it is broad, the ovigerous female measuring from 450 to 475 microns in length and 250 to 300 microns in breadth. The male is 300 to 320 microns long, by 200 to 250 microns broad. Both sexes are possessed of four pairs of legs of five articles each; those of the male having ambulacra. The ovigerous female, however, has no ambulacra on the last two pairs of legs, while the fourth pair is only rudimentarily developed. Before entering upon a discussion of the disease it will probably interest the reader to have some history concerning the few cases I was enabled to investigate. The first cases appeared in a pair of Manx cats that were brought to this country from the Isle of Man in the fall of 1908. The owner informed me that these cats and all their progeny had suffered from periodic attacks of what appeared to be ear-ache. This he assured me caused the animals to scratch their ears until they would bleed; at times also inducing them to act most singular, or as though intoxicated. No treatment was administered and after several of these attacks the animals eventually succumbed to the disease.

Symptoms.—These are usually characterized by an early loss of appetite, accompanied by nausea; so that any food partaken of will almost immediately be ejected from the stomach. The ears seem to be the seat of an intense itching, which causes the animal to scratch those parts violently; the whole resulting in severe

excoriations of the concha. At times it appears impossible for the animal to retain its equilibrium; it appears weak, sways back and forth, and acts as though mentally unbalanced, finally rolling over on its side and sometimes becoming semi-comatose for a few moments, afterwards arising and walking off apparently normal. During these attacks, which usually last from one day to a week, the animal becomes emaciated, appears dull and stupid, while the hair becomes devoid of lustre. On examining the inside of the ear we find an excessive amount of cerumen and a slight accumulation of scabs; upon closely inspecting these scabs we shall detect numerous minute, white, oval and quite active objects, which prove to be the causative parasite. At times there is also a peculiar foetid odor emitted from the ear. Although these parasites are usually easy to find, this is not always the case; in fact the ear may appear merely as though coated with a slight accumulation of filth. I have never, as a result of this affection been able to discover any ulceration of the ear. The epileptiform attack is caused by the loosening of the ceruminous plug and pressure against the tympanum when the animal scratches the cartilage of the ear; or by slipping about of the ceruminous accumulation while the animal is running. It may also be the result, as explained by Boucheron, of stimulation of the filaments of the trigeminal and pneumogastric nerves in the external auditory canals by the acari. Following the subsidence of these attacks the animal may remain apparently healthy for a period of several weeks or months; thereafter it may have a second attack. I was fortunate enough to obtain the complete history of one case in particular; a case I personally treated. This was a female kitten, two months old, which showed the first symptoms in October, 1909, being sick about three days. After recovering from the first attack she remained apparently in good health until December of the same year, when she had another period of illness, accompanied by the usual symptoms, this time of a somewhat longer duration. Following this there were ostensibly no further manifestations of disease until March, 1910, at which time the animal was placed in my care. It will

be obvious that during the cold winter months, inasmuch as no active symptoms of disease were then noticed, the parasites must have remained dormant; their host, during this entire period, having been kept from coming into contact with other animals,



Symbiotes Auricularis var. *Cati*. Ovigerous Female, Highly Magnified.

from which a second infestation could have been contracted. The duration of the incubation period of the ova varies according to surrounding conditions. When these conditions are favorable, the eggs may hatch in from twenty-four to forty-eight hours. However, it has not been determined how long the eggs may remain germinative and give origin to embryos under unfavorable conditions. Gerlach has seen the eggs of the *Sarcopt* of the horse hatch after being removed from its host for four

weeks. During the entire period the above described animal was affected nothing whatever was done to relieve her suffering, until being placed in my care, proper treatment was administered, whereupon she made an early and complete recovery.

Treatment.—After a diagnosis has been made the treatment is simple and the malady is by no means serious if properly handled. All coal tar products which are so fatal to cats are to be avoided. I have had very satisfactory results by pouring into each ear a saturated alcoholic solution of boracic acid once daily until all the parasites are destroyed. The alcohol has a tendency to dissolve the abundance of cerumen, thus exposing the parasites it harbors. Whereupon a second application will, as a rule, complete the cure.

DINNER TO DR. C. J. MARSHALL.

THE Pennsylvania State and Keystone Veterinary Medical Associations gave a dinner to Dr. C. J. Marshall in Leonard Pearson Hall, University of Pennsylvania, on Tuesday evening, March 7, in honor of his appointment as State Veterinarian. About one hundred and fifty ladies and gentlemen sat at the festive board. Four states, the District of Columbia and the Dominion of Canada were represented. The menu, which was tastefully gotten up and adorned with a splendid picture of Dr. Marshall on the front cover, contained the following list of honor guests and the subjects assigned them by Toastmaster Hoskins: Address of Welcome, Dr. John W. Adams; University of Pennsylvania, Provost Edgar F. Smith; Medical Education, Dr. Allen J. Smith; Our Canadian Colleagues, Dr. E. A. A. Grange; The Field of Comparative Medicine, Dr. John Marshall; Veterinary Education, Dr. Louis Klein; Our Association, Dr. Jacob Helmer; A City's Milk Supply, Dr. Samuel McHamill; Veterinary Journalism, Dr. Robert W. Ellis; Practical Dairying, E. T. Gill; Animal Husbandry, Dr. Carl W. Gay; The Ladies, Dr. H. D. Gill, and, finally, Our Guest, Dr. C. J. Marshall. The speakers, with few exceptions, paid little attention, however, to the subjects connected with their names, as they were so bubbling over with goodfellowship for Dr. Marshall and enthusiasm over his appointment as State Veterinarian, that they involuntarily gave voice to the sentiments nearest their hearts.

REPORTS OF CASES.

SOME PRACTICE OF THE OPSONIC.*

By Dr. JOHN T. GRUBER, Marion, Ohio.

It may be interesting to say something regarding the nature of Opsonins, before entering into a discussion of the curative effects of diseases and especially the chronic suppurative diseases, by increasing the opsonic index. The chemical nature of opsonins is not known, but it is the generally accepted theory that they possess certain combining powers, but few things are known regarding their action and the way they can be influenced. Opsonins may be stated as certain specific chemical substances within the blood which so act on the infectious organisms and renders them more easily phagocytized, *i. e.*, more easily destroyed by the white blood corpuscles, especially the polymorphonuclear leucocytes, which seem to play the most active part. Opsonins may be increased or decreased within the body. They are decreased more or less in all chronic suppurative conditions, with the exception of tuberculosis, where they may fluctuate from day to day, above or below unity. The opsonic may be increased by the injection into the blood of the toxins of the organism producing the disease. This is termed an opsonic vaccine. There are two different kinds of vaccines used, first, the autogenic, which is made from a culture of the disease-producing organisms. Second, a stock vaccine which has been prepared from similar cases. The technique of preparing an autogenic vaccine is very simple. The media, which is most difficult to make, can be purchased at very little cost already prepared, neutra agar being the one mostly used for the various cocci. Simply inoculate the agar slope tube and place in an incubator for

* Read before the Ohio Veterinary Medical Association Meeting, Columbus, January,

twenty-four hours. This varies somewhat according to the kind of organisms you are dealing with. The incubator I use is a common, small egg incubator. After twenty-four hours, wash off culture with a normal sodium chloride solution, sterilize, then place in a series of small vials each with an increased dosage. For a detailed description of this technique, I would refer you to an article written by Dr. Phillips and published in the AMERICAN VETERINARY REVIEW of March 1, 1910. During the past eight months I have treated four cases of chronic fistula of the withers and one case of cartilaginous quittor and one case of chronic nasal catarrh with empyemia of sinuses which was a sequel to influenza, and two cases of purpura hæmorrhagica, with very satisfactory results. One case of fistula was not cured. This case proved, on post mortem, to have a very extensive necrosis of the scapula and vertebræ; the other three cases were permanently cured. Two of these were treated with a stock vaccine with absolutely no result and which later reacted to the autogenic vaccine. The case of quittor was treated in the ordinary way for about six weeks without any apparent results, which later responded to the autogenic vaccine. The case of nasal catarrh with sinuses involved, was a very complicated one. I trephined the superior and inferior maxillary and also the frontal sinuses which contained a large amount of pus and treated, by irrigating with antiseptics and astringents until operating wounds healed, then the treatment was discontinued, and in about two weeks nasal discharge was as profuse as ever. This continued for about a month, when I decided to use the autogenic vaccine and in about two weeks, made a permanent recovery. The two cases of purpura reacted to the vaccine, which was a stock vaccine, very promptly. One case was a very severe one which had been treated by an empiric for about twenty days. This case showed symptoms of anemia of spinal cord. The dosage of vaccine depends on the individual case. One must be governed by local swelling at point of injection and upon discharge of pus in suppurative conditions. Beginning with a small dose, about one-half c.c., which would contain approximately 25,000,000 dead bacteria, nephelometer comparison. If swelling occurs at point of injection and discharge of pus is more copious, wait until the negative phase passes over, which will be in about four or five days, then repeat increasing dosage, about .2 c.c. If the negative phase does not occur, the injection may be repeated much sooner, with an increased dosage of about .4 c.c.

In summing up these few cases, I may say first that the vaccine thereapy should be encouraged and, second, that the auto-genic is the more reliable product.

ASCITES IN A HOUND BITCH.*

By W. C. HOLDEN, Delphos, O.

A hound bitch, weight about fifty pounds, in normal condition, five years old, and had dropsy of the abdomen or ascites.

History.—This bitch whelped on April 1, giving birth to seven healthy puppies, and three weeks later refused to own them. They were fed on cow's milk until old enough to eat solid food. Her appetite began to fail and total loss of appetite succeeded in a few days. She was only allowed a limited amount of water. By May 19 all of the visible mucous membranes were of a light color (yellowish), which soon turned to a dirty orange yellow and was treated for jaundice as the case indicated. Gave mild purgatives and diuretics which consisted of castor oil and acetate of sodium. I pressed the abdomen between my hands a few minutes each day over the region of the kidneys to assist in emptying the gall bladder. She made a complete recovery from jaundice in two weeks. We soon noticed the abdomen begin to fill with fluid and to continue to do so until it became an enormous size. I insisted upon tapping her, but the owner would not consent to have it done. Nor did he consent until she got so heavy she could hardly walk. On June 28 she was brought to the hospital for treatment and a pitiful looking sight she was, her abdomen almost touching the ground. I stood her on an operating table and pushed a milk tube through the floor of the abdomen with five feet of rubber tubing attached. The abdomen was so distended with fluid that the skin was torn two inches in length at the linea alba posterior to the umbilicus. The tube was inserted here without any difficulty. The other end of the tubing was lowered into a gallon vessel. It required thirty minutes to draw out fluid and the measurement was fourteen and one-half liters. In character, it was transparent and sticky to the fingers and was free from lymph. I put her on mild cathartics and diuretics without results. July 29 she was returned apparently as bad as ever. I tapped her again as before

* Presented to the Ohio Veterinary Medical Association, Columbus, January, 1911.

and drew from her twelve liters of fluid which did not seem to be nearly so adhesive as the first tapping. Continued the same treatment as before and the food she ate consisted of lean meats, dried beef, bologna, etc. She ate scarcely enough to keep her alive. August 26 I punctured her again getting this time, eight and one-half liters of fluid and September 28, tapped her again, getting seven liters of fluid, making in all of the four tapplings, forty-two liters of fluid, equal to ten and one-half gallons.

I now began to think of changing the treatment and to experiment, I attached to the free end of the tubing, a small glass funnel and elevated it above the animal's back about four feet. I prepared three gallons of a five-per cent. solution of soda bicarbonate and allowed it to flow into the abdominal cavity, keeping the funnel full so as to exclude the air. I heated the solution to body temperature, before administering. I then placed her on her back, kneaded the abdomen a few minutes, placed her on her feet again and allowed the solution to run out. She was given five grains of acetanilid, repeated every six hours, and one-eighth grain of pilocarpine, subcutaneously, once a day for four days, which greatly increased the fluid and amount of saliva, which is essential in accomplishing a cure in ascites. She made a complete recovery in three weeks after the last tapping.

The owner would not trust the bitch wholly with me, as his wife could not sleep unless she was in the same room, so I did not have her at the hospital all of the time. There were times I did not see her for three weeks. What seemed so strange to me was, how could the diaphragm stand such enormous pressure without tearing?

A MONSTROSITY.

By C. H. MAINHART, M.D.V., Richmond, Ky.

The accompanying cuts represent three different views of a monstrosity of a mulekin I delivered of a mare on the 14th of February past. It was two separate mules from the diaphragm forward, and one mare mule back of the diaphragm, with the exception of two livers. The œsophagus of both emptied in one stomach. It had posterior presentation with lumbo-sacral position. It lacked sixty days going full time. Mare recovered nicely. The monstrosity is being mounted by a Cincinnati taxidermist.



ENGORGED RUMEN.*

By Dr. H. E. MYERS, Fostoria, Ohio.

On December 4, at 6 P. M., I was called to a country residence a distance of about ten miles. On arrival I found my patient to be a Jersey cow, six years old, due to calf April 1. She was lying on her side, breathing short and labored, and bloated to her full capacity, which seemed to have a dull sound. Before my arrival, several obliging neighbors had volunteered their services and were sure she would burst if she were not tapped. A knife was plunged into the rumen without any results. I used a trocar and was somewhat surprised when, after a few bubbles issued from the cannula, no more gas could be found, or at least it would not escape when a way had seemingly been provided. The history of the case is as follows: This cow with several others, had been fed on corn fodder, and, during the day, allowed to pasture over an old meadow. On this particular morning, however, they were all turned into a field with new clover in it which had grown up late in the fall and was more or less frosted. The cow did not come to the barn with the others and was found in the condition before mentioned and could scarcely be gotten home before she went down. Rumenotomy was decided upon, for she was so bad that to defer the operation meant death and I rather thought that the same term would answer to describe the result of the operation, for I feared she would not live long enough to perform it. Going into detail as to the technique of the operation before a body of professional men, such as this association represents, would be superfluous and a waste of valuable time, so that will be dispensed with.

After cleansing, an incision about eight inches in length was made and as soon as the rumen was cut into, the contents, which were a mass of partially masticated grass, came bubbling and frothing through the opening. About three bushels of this fermenting mass was removed, while a good quantity still remained, from which the gas was pressed out with the hands. One-half ounce of ammonium carbonate was introduced through the opening. Rumen was sutured with No. 6 catgut, skin and muscles with linen tape. The animal lay perfectly quiet until the last few sutures were taken. Ordered a light diet for ten

* Presented to the Ohio Veterinary Medical Association, Columbus, January, 1911.

days. Saw her a week later and found her on the barn floor with a hay mow on either side and learned she had been there since the day following the operation. A small abscess had developed just below the puncture made before my arrival, where feed had worked between the muscles. This extended to upper part of my incision and drained into the rumen through an opening of about two inches which was caused by one stitch being torn by overfeeding. I opened the abscess and cleansed it, sutured the small opening in rumen and nothing farther was needed.

The part that appealed to me was that no gas could be reached by the use of the trocar, and then finding it mixed with the food and not separated as it is usually.

AN UNLOOKED-FOR RECOVERY.

By J. H. PICKERING, Edmonton, Alberta, Canada.

The subject of this report was a horse used in the express business, and had just arrived at the stable after a rather exciting runaway. When I arrived the horse was laying down in a single stall and was bleeding very freely from the rectum. Upon inquiry I learned that one of the shafts of the sleigh had run up the horse's rectum. I examined the shaft and found it covered with blood; so I thought it would soon be all over from the looks of the quantity of blood that had passed from the horse. The horse was gotten onto his feet; he was very weak and groggy; visible mucous membranes pale. I gave him large doses of whiskey and tinct. ferri per chlor. and decided to explore the rectum for injury after the bleeding had seemed to stop. Removed large quantity of clotted blood and some feces, but could not find any injury, and although I removed my shirt so that I could insert my arm right in to the shoulder, I could not find any trace of the injury.

The hemorrhage seemed to stop, but the horse was so weak he could hardly stand up. Kept up the whiskey and also gave tinct. of iron often. A few hours after the horse seemed in severe pain, so I gave a dose of chloral hydrate and tinct. of opium, which relieved him. Next day I gave a small dose of raw linseed oil. After this the feces was passed regularly. Horse's temperature never went up higher than $102\frac{3}{5}$ degrees

Fahrenheit. He had slight discharge with the feces after a few days. The urine seemed scanty and of very disagreeable odor. I gave mild diuretics and even yet, although the horse seems well and in good shape, the urine is rather scanty, high colored and has a very distinct and bad odor. With this exception the horse seems alright, temperature normal, eats and drinks well, feces passed in good shape, the horse looks bright and moves around smart.

There is no doubt but what the shaft entered into the rectum. Bystanders who witnessed the mixup report that they saw the shaft run into the horse, also the profuse hemorrhage and the blood on the shaft show this to be the case. I think the shaft must have run through the bowel up farther than I could reach, and have injured the kidneys. I have no doubt from the condition I found the horse in that there must have been a lot of internal hemorrhage, and I am putting it mild when I say a ten-quart pail would not any more than hold the blood that was passed from the rectum through the anus. There must have been a pretty large artery or vein ruptured to produce such hemorrhage, and, from the general weakness and color of the mucous membrane, I am sure there was a lot of internal hemorrhage as well as what was passed externally. I believe the large doses of whiskey which I gave for the first two or three days, and especially the first day, was very instrumental in saving his life. So, now, after twelve days have passed and he seems practically all right, it looks like a rather remarkable recovery to me.

ANTE-PARTUM PAREISIS.

By Dr. J. H. PICKERING, Edmonton, Alberta, Canada.

Under the reports from the English review, I see a case of milk fever reported as occurring one month before parturition took place. Having had a case in our practice here that occurred two months before parturition, I thought I would send in a report of the case for publication.

On November 7, 1910, I was called to see a cow belonging to Mr. S. Wilson, of this city, and found the animal suffering from a well-marked case of milk fever. She had been prostrated for twelve or fourteen hours before I was called in to treat her. Now, milk fever is very seldom seen in this country. In nine

years' continuous practice I have only had six cases of milk fever; and when you take into consideration that this is a great cattle country and a great deal of dairying is carried on here it has always seemed strange to me that there is so little of it out here. I practiced in Ontario and Illinois before coming here, and I can remember quite well how great was the mortality in milk fever before the Schmidt treatment of injection with potassium iodide came out; and even *with* this treatment I did not have the success that many claimed for it. But the oxygen or air treatment, has certainly got the disease "cinched," and it is a great triumph for the veterinary profession.

In this case I had no oxygen tank so I injected the udder full of air, no other medicine was given; and after the second injection the cow was up and made a good recovery. On January 7, 1911, my partner, Dr. Cairns, was called to attend to a case of difficult parturition. In this cow both mother and calf came through the operation alright. This cow then had the attack of milk fever just two months before calving. The cow had been giving no milk for two or three months before the attack of milk fever.

A TREATMENT FOR CHOKE.*

By C. W. FOGLE, Leipsic, Ohio.

This paper contains nothing new, but I hope that it will cause a discussion of a condition that is frequently hard to treat—namely, choke—especially when caused by oats. The following is a resport of a case:

The patient was an old gray gelding that had choked several times before. The cause was a feed of new oats given about twenty-four hours before I was called. The œsophagus was apparently filled with oats, from the stomach up to and including the lower third of the cervical portion. The horse was not showing much distress, but was standing quiet, head up, saliva running profusely and retching every ten or fifteen minutes.

I gave arecolin, one-half grain, and strychnine, one-quarter grain, followed in fifteen minutes by one grain of eserine.

I then left to make another call, returned in an hour and found the patient no better, although the typical result of the arecolin and eserine was apparently evident.

* Presented at the Ohio Veterinary Medical Association, Columbus, January, 1911.

Over the most superficial portion of the oesophagus, about the middle of the neck on the left side, I anæthetized a space four inches long and one inch wide, using a preparation of cocaine and adrenalin, clipped the hair, scrubbed and disinfected both hands and the part to be incised, cut through one skin with a bistoury, broke down the areolar tissue with my fingers and found the œsophagus, around which I passed a piece of sterilized bandage one or two inches wide. I then passed the stomach tube, per orum into the œsophagus and when the end of the tube touched the oats, had an assistant pump slowly while I compressed the bandage and watched the progress of the treatment. In a very few minutes the obstruction of the oats was removed and I proceeded to close the wound with a few stitches accompanied and followed with warm antiseptic irrigations. The patient was restricted to a sloppy diet.

In breaking down the tissue with the fingers, one should be careful not to make a pocket in the jugular furrow, as this mistake will necessitate an opening lower down to allow drainage.

Keep your fingers on the œsophagus while the assistant is working the pump so that if the tension becomes too great, it may be relieved at once.

I operated on the same horse about one year later with the same results. This operation, is, of course, only of the heroic nature and should only be attempted after the usual treatments, such as eserine and arecolin have failed.

I have operated in three other cases since the above-mentioned patient's last recovery and was successful with only one of them.

Do not expect to be successful when the "choke" has been standing for four or five days.

Merillat advises the use of a double tube stomach pump.

A FEW CASES OF TETANUS.*

By DR. DETTMAN, Troy, Ohio.

There is no use in my describing what tetanus is, for you all know, and now will try to describe treatment for same, starting with a case not so developed as some others and giving treatment.

* Presented at the Ohio Veterinary Medical Association, Columbus, January, 1911.

Patient four years old, disease caused by nail prick. The animal was left in his natural abode and given the following treatment per orum. For the first twenty-four hours, oleum lini, two ounces; acidi carbolic, one dram, every two hours, and as time passed the dose was given less frequently and termination in three weeks. I don't believe it would have been necessary to have given it the last week, but cut the dose to just a few minims to treat the owner of the horse, which we all sometimes have to do. Now, gentlemen, will treat the worst case of all which made a complete recovery:

Patient, a brown mare, heavy in foal, disease caused by an injured hock. Symptoms: Pulse quick, temperature 101 degrees Fahrenheit, very rigid, tail elevated, anxious look, etc. Prognosis fatal, and on the strength of it gave treatment which I thought would kill the mare if the disease didn't. Treatment consisted of the following: Three ounces of a five-per cent. solution of carbolic acid hypodermically every two hours. Instructed the owner to let me know the next morning, which he did and said the mare was sweating fearfully and breathing hard, but would like me to come again. On arrival, found the mare as described. Thereon I gave one ounce of fl. ext. of gelsemium. In course of half an hour mare quieted down to some extent. Left orders to give acid every four hours and one dram of gelsemium every two hours. Gentlemen, will say that mare made a complete recovery. Will also say, in conclusion, that this is the only place I give sedatives at all.

THE eighth annual banquet of the Veterinary Medical Society of the Iowa State College, was held at the Savoy Hotel, Des Moines, Iowa, on March 10th last. It was a very enjoyable affair.

THE B. A. I. Veterinary Inspectors' Association of South Omaha, Neb., held their annual election of officers at their meeting held March 20, 1911. The following officers were re-elected to succeed themselves: Dr. F. Jelen, president; Dr. J. G. Beattie, vice-president, and Mr. Edgar Jackson, secretary-treasurer. The past year has been a very profitable one for the Association, much good has been brought about by the reading of the papers on different diseases and the discussions following same.

EDGAR JACKSON, Secretary-Treasurer.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

A CASE OF BASTARD STRANGLES [*Henry B. Eve, M.R.C.V.S.*].—Six-year-old mare, while at work was suddenly taken sick and had to be sent home, where she was found with every symptom of “acute” passive congestion of the lungs, apparently as the result of overexertion. This was complicated later with pleurisy and pericarditis. With the indicated treatment of counter irritants on the chest, febrifuges and diffusible stimulants the animal apparently recovered and was sent home where she was allowed to remain idle for considerable time so as to allow her to recuperate her condition. She improved and was about going to be sold when, during one night, she developed an enormous swelling of the pectoral and abdominal regions. This was tapped and fully six gallons of pus were taken from it (from the abdominal cavity, writes the author). The swelling gradually subsided and convalescence was uneventful. The pleurisy and the pericarditis were considered as of septic origin.—(*Veter. Record.*)

RETENTION OF THE FŒTUS [*W. J. Young, M.R.C.V.S., D.V.S.M.*].—Recently bought, a cow was expected to calve a few days after. She showed the typical symptoms of milk fever and was treated by the owner. She was up on the third day. Thinking that perhaps the cow had calved at the dealer's place, who then kept it, the buyer wrote for it and got the answer that the cow had not calved. Four months after, Young saw her in the last stages of tuberculosis and advised her to be destroyed. At the post mortem lesions of old-standing generalized tuberculosis were found in the thoracic and abdominal cavities. The uterus contained a large fœtus in advanced state of decomposition with two gallons of fluid. Both shoulder blades and carpal bones were devoid of skin and flesh. The fœtus showed no signs of tuberculosis. During life the cow had obstinate con-

stipation, steady fall of milk and abundant uterine discharge.—
(*Veter. Record.*)

REMARKABLE CYSTIC ADENOMA WITH CILIATED EPITHELIUM IN A COW [*A. Leslie Sheather, M.R.C.V.S., B.Sc.*].—This is a record of an interesting discovery made at the post mortem of a cow at the slaughter house where she had been killed. Unfortunately the viscera had been removed and only the two sides of the trunk could be looked at. Attached to the peritoneum, there were a large number of cyst-like structures, varying in size from that of a pea to that of a cocoanut and in color from a pale yellow to a darkish red. They were forming masses with smaller cysts attached. The majority were quite sessile, but a number had large peduncles; they were, on the left side of the carcass more numerous than on the right. The lymphatic glands were also the seat of similar cysts. They contained clear watery liquid. That which seemed to be the omentum was an enormous mass of cysts, weighing 110 pounds. Some of these cysts, contained clear, watery, pale yellow colored fluid, and in a few a small amount of blood. This fluid, after centrifugation, left a deposit consisting in cells provided with numerous cilia which were moving, even after many hours since the slaughter. The tissue of the diseased gland was greatly reduced and the walls of the cyst were composed of a stratum of fibrous tissue with lining of columnar epithelium. Similar cysts had also been noticed in the lungs, liver, stomach, spleen and also abdominal organs.—
(*Journal of Comp. Path. and Thera.*)

FRACTURE OF THE FLOOR OF THE PELVIS [*Capt. E. P. Argyle, A.V.C.*].—Aged mare had a fall, was very lame on the off hind leg, which is carried forward with a circumduction motion. Rectal examination revealed crepitation round the obturator foramen. The animal is put in slings. After a slight raise in the temperature the mare takes well on the treatment. Repeated rectal examinations show the formation of a callus on the pelvic floor, to the right side. Muscular atrophy sets in. After four weeks the mare walks comparatively well and with much improvement. For two weeks more she was kept at rest, then took gradually increased exercise, and at the end of nine weeks was able to resume work. A fortnight later she had another fall, with the same symptoms and she was destroyed. Post mortem: Old comminuted fracture of the right pubis and ischium, invol-

ing the obturator foramen. There were no attempts to formation of false joints, but complete union. There had been some displacement and the obturator foramen was partly obliterated by the callus. The muscles supplied by the obturator nerve had no trophic alterations.—(*Veter. News.*)

SUBCUTANEOUS INJECTIONS OF AQUEOUS SOLUTION OF CARBOLIC ACID IN THE TREATMENT OF STRANGLES [*Capt. G. Clive Webb, A.V.C., F.R.C.V.S.*].—These were experiments carried on by the author, who made the injections near the common seats, the formation of abscesses. Each injection contained one drachm of carbolic acid with water to form a ten per cent. solution. Three injections were given daily for three days. The conclusions were as follows: "Although the subcutaneous solution of carbolic acid, in strength varying from five to ten per cent., does not appear to cause any marked irritation, yet in the majority of cases hard swellings result at the seat of inoculation, which persist for a considerable time, and if a second injection is made at too short an interval, near the site of the first injection, necrosis and sloughing may occur. In cases in which a submaxillary abscess was in the process of formation at the time of injection, the latter appeared to have no beneficial effect in causing resolution of the abscess or preventing its maturing and bursting. In some other cases, the fluid injected was diluted to a strength of two and one-half per cent., the same actual quantity of carbolic acid being administered at each injection. Swellings still resulted and seemed to be in nowise less severe.

"Comparing results of animals treated in this way with those of a number of animals left untreated, the course of the disease and abscess formation in the former appeared to be in no way favorably affected. The good effect of any antiseptic properties of the carbolic acid is probably more than counterbalanced by its destructive effects on the animal cells and in particular on the phagocytes inhibiting their action. I am therefore of opinion that this form of treatment has no merits and is not to be recommended."—(*Ibidem.*)

TRAUMATIC INDIGESTION IN CATTLE [*W. Selborne Worthington*].—When a sharp body, a piece of wire is swallowed and remains in the rumen, with the food, no inconvenience results from it. But when it gets into the reticulum its presence is soon manifested by a series of symptoms for which the veterinarian

is called. But it is generally too late. The symptoms of indigestion are usually recognized, but with them there are one or two important ones, which aid to form the differential diagnosis. For instance, speaking on broad lines, "when indigestion is due to paralysis of the muscular coats of the rumen and reticulum the cow does not throw the cud. *She simply cannot.* If the indigestion is due to a wire in the reticulum, she chews the cud irregularly, but it *hurts her to throw it.* Again, the temperature in most cases, where there is a wire, *rises slowly and steadily.* In indigestion of non-traumatic origin the temperature either remains normal or *jumps up at a bound*, so to speak."

By closely observing for these manifestations in cases where he had been called for cases of indigestion, the author has been able to relieve animals by operation, viz.: Rumenotomy and exploration of the reticulum, where he has generally found and removed the sharp piece of foreign body—cause of the trouble. (*Veter. Record.*)

CASTRATION OF CRYPTORCHIDS THROUGH THE FLANK [*E. C. Winter, F.R.C.V.S.*].—The writer has operated, by this method, some twenty-five horses and lost only three: one from peritonitis, one from septicæmia and one while getting under the influence of chloroform before the operation was started. The procedure is to physic and starve the patient for forty-eight hours, to empty the bowels and give an enema an hour before operating. The horse is cast, chloroformed, and the skin disinfected with iodized chloroform. The incision is made where the curl is in the hairs in front of and below the point of the hip. The skin is incised, first vertically, then the two layers of muscles, diagonally, not cutting the striæ, but dividing them with fingers or a spatula. The wrist of the operator is wrapped with a towel soaked in antiseptic fluid, the hand is introduced by breaking through the peritoneum with the finger nails. When the testicle is removed the outer layer of muscle is sutured with three stitches and then the skin. The wound is coated over with collodion. Cicatrix takes place by first intention.—(*Veter. Journal.*)

FOALING CASE—RUPTURE OF THE UTERUS DURING FOALING [*E. F. J. Bordeaux, G.M.V.C.*].—Heavy draught mare was about due to foal. She had pains for two days. She had plenty of milk. The cervix was fully dilated, but the uterus was found

empty. Under it the foetus is distinctly felt. The rupture could not be detected with the hand. The mare died in forty-eight hours. Abdomen was found full with fluid and exudate, dark in color and offensive smell. The foal dropped out with the intestines, when the abdomen was open. The right cornu was ruptured at the extremity and the edges were irregular and jagged. This was the third time the mare had a foal.—(*Ibidem.*)

CASES OF FOREIGN BODIES IN THE STOMACH [XX].—Small pug swallowed a penny and since has been attempting to vomit. Gastrotomy is performed, penny extracted, dog gets well.

Bull terrier stole a joint of meat, bolted a piece containing a metal skewer four and one-half inches long. Operated and had good recovery.

Fox terrier swallowed five-inch wooden skewer. Operated. Did well.

Cat vomits blood. On palpation a stick of wood is felt in the stomach. The cat has peritonitis and is destroyed. Post mortem shows that the stick was sharp at one end, had perforated the stomach and given rise to purulent peritonitis.

Bull bitch had a swelling over the thyroids. Liniment is prescribed. Seen ten days later the swelling has gone from the neck, but there is a large one on the back extending from the loins forwards. It is open and a broken hat pin three and one-half inches long is removed. The animal died the following day with purulent peritonitis caused by perforation of the stomach.

Small Manchester terrier swallowed a half penny. Operated. Recovery.

Small Dalmatian had a swelling on its back over the last three dorsal vertebrae. It is punctured and a hat pin is found and extracted. Dog got well.

These cases were seen in the space of seven months, out of about 1,200 animals examined. Such a number would seem to show that similar accidents are not uncommon.—(*Veter. News.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

SECONDARY CUTANEOUS MELANO-SARCOMATOSIS IN A DOG [*Professors Dr. V. Ball and C. Cuny*].—Seven-year-old pug,

very fat, is brought to the writers for treatment. He has, on a level with the internal toe of the left forepaw, a black tumor, irregular in form and as big as a hazelnut. It has a firm consistency and is ulcerated in one point. This growth exists since about six months. All over the body except the head, there are a certain number of melanotic tumors; on the flanks, the legs and the tail. They have gradually increased in number, are rounded, semi-spherical or lenticular and of very black color. They vary in size from that of a small pea to that of a hazelnut. On the hind leg they exist principally on the anterior face, on the dorsal in the front leg and those on the tail are on the inferior face. The dog presented no indication of glandular or visceral metastasis. The histological examination of the primitive tumor, that of the forepaw, revealed its nature of globo-cellular melanosarcoma.—(*Journ. de Zootech.*)

OSTEITIS OF INFECTIOUS ORIGIN [*Savary, Army Veterinarian*].—Gelding is laid up for very large œdematous swelling of the four extremities, sub-abdominal region and sheath. The head is free. The swelling is scarcely painful and on the external face of the legs shows lymphatic cords, having no tendency to suppuration. There is no elevation of temperature. The general functions act normally. Excessive hypersthenia of the loins is manifest, even with the simple pinching of the region. Circulation is normal.

The history of the animal is that he had strangles some while ago and has been castrated after. For treatment: massage, warm fomentations, astringent applications and general tonics internally. Soon, however, the sheath is so swollen that it has to be scarified. The general condition remained about the same for a long time. About five months after the beginning of the disease the lymphangitis subsided very rapidly and on the legs were observed several bony neoformations. "On the right fore-leg a fusiform exostosis on the internal face of the radius; on the left anterior leg, a similar lesion on the head of the external small metacarpal bone; on the right hind leg, one exostosis as big as a hen's egg on the head of the internal small metatarsal, looking like a big spavin, and on the same leg an exostosis on the external small metatarsal." The left hind leg remained clear of lesion. None of these neoplasms existed before. There had been no lameness. The exostosis developed insiduously from the month of April to that of September, concealed by the swell-

ing and the anegeuleucitosis of the extremities. Gradually the condition of the animal improved and he was soon able to resume his work. The exostosis diminished some in time, with the exception of the one that occupied the seat of a spavin on the right hind leg. The author concludes that infection from strangles may be considered as the origin of this peculiar complication of pathologic condition.—(*Rev. Gener. de Medec. Veter.*)

PROLAPSUS AND DISTOKIA DUE TO VAGINAL TUMOR IN A COW [*Professor M. Bru, of Toulouse*].—For some time when this pregnant animal laid down, there has been retropulsion of the vagina, which protruded some as a red mass, which would disappear when the cow was standing up. When the time for calving came she has a prolapsus of the vagina that the owner failed to reduce. The author was called. The protruding organ is quite large, the mass is very hard, the neck of the uterus is pushed on one side close to the lips of the vulva and its general form is irregular and constituted by a large tumor developed in the thickness of the vaginal walls. The reduction was very difficult, and then by exploration it was found that implanted on the right wall of the vagina, the tumor was in contact with the entire internal surface of the cavity which it filled more or less, pressing against the rectum and bladder, and stimulating the violent and expulsive efforts of the animal. A contentive bandage had to be applied to prevent the return of the prolapsus.

As a delivery was expected in a short time, some little time was allowed to pass before further interference was resorted to. But, after a few days, as the animal was losing ground it became necessary to extract the calf. As removal of the tumor was not possible on account of the wide base of the growth, and as it prevented the calf from passing, the author proceeded in displacing the neoplasm, viz.: producing the appearance of the prolapsus, its return, by pressing on the growth with the hand introduced in the vagina and pushing upon it backwards and outwards, when with the cavity being comparatively emptied, the calf, which was on anterior normal position, was removed without much difficulty. The cow did well for a few days, but finally died. Portions of the neoplasm were examined under the microscope and proved to be of fibro-sarcomatous nature.—(*Rev. Veter.*)

TWO CASES OF DEEP WOUNDS OF THE HEART IN THE HORSE [*MMS. Paris and R. Lassere, Army Veterinarians*]. *First*

Case. Internal hemorrhage due to the perforation of the left ventricle by bony splinter of fractured rib. Mare ran away, has a heavy fall against a projecting stone and she soon presents all the symptoms of internal hemorrhage. She drops after a few minutes, when reaching her stable about two miles off, and dies. Post mortem: Extensive bloody exudation in the pre- and sub-sternal regions with severe bruises of lacerated pectoral muscles on the left side. There is a fracture of the fourth, fifth and sixth ribs of the right side, also of all the left sternal, except the first. The fractures took place at the articulations with the cartilages. They were comminuted. There was a fracture of the sternum. In the thoracic cavity, which is filled with blood there were found a laceration of the pericardium, perforation of the left ventricle by a small splinter, very sharp on both ends and about one and one-half centimeters long.

Second Case. Perforation of the heart with a stable fork. One morning a horse was found dead in his stall with the history that in the habit of getting loose, he started, this last time, running, slipped on the stable floor, fell, got up and returned to his place where he fell down to rise no more. Post mortem: On the left precordial region four little wounds are observed, four or five centimeters apart, running in the same direction, obliquely downwards and forwards. From these, escapes bloody serosity. By careful dissection it is found that the two upper ones are superficial while the others run through the muscles of the chest, the parietal walls of the pleura and the pericardium. On a level with the heart, the lower wound only penetrates into the left ventricle and the whole thickness of the myocardium, thus opening the cardiac cavity. The history given of the accident was untrue, and the horse died from the blow of a fork applied by the stable guard.—(*Revue Veter.*)

FLOATING KIDNEY IN A DOE [*G. Ranvier*].—The little beast had lost appetite since several weeks and is much emaciated. Palpation of the abdomen, revealed the presence of a mass as big as an egg which is easily moved about. After incision of the skin and opening of the abdominal cavity this tumor is drawn outside. It was an hypertrophied kidney. Ligature of the blood vessels and excision relieved the doe from her trouble. The animal made a rapid recovery and was soon the mother of a litter of four little rabbits. All were in good health.—(*Rec. de Medec. Veter.*)

ARMY VETERINARY DEPARTMENT.

BILL IS NOW A LAW.

“That hereafter so much of section 20 of the Act approved February 2, 1901, as provides that veterinarians shall receive the pay and allowances of second lieutenants, mounted, shall be interpreted to authorize their retirement under the laws governing the retirement of second lieutenants.”

Thus, step by step, veterinarians of the army are getting nearer the coveted position of commissioned officer.

We have been several years getting this retirement feature through Congress and feel that justice has at last been given our army confrères in this respect at least.

The profession owes much to Senator Warren, of Wyoming, and Congressman Hull, of Iowa, the chairmen of the Senate and House committees, respectively, on Military Affairs. These gentlemen have done the best they could for us considering the pressure brought to bear by the opposition against any change in the personnel of the army.

In the profession, Schwarzkopf, Jewell, Corcoran, McMurdo, Griffin and Le May, of the army, gave valuable aid.

Outside of the army, our committee extends its thanks to Drs. Clarence Marshall, Hoskins and Schneider, of Pennsylvania; Dr. Hollingworth, of New York; President Glover, of the A. V. M. A.; Dr. Reynolds, of Minnesota; Dr. Cooley, of Ohio; Dr. Dyson, of Chicago; Dr. H. Bannister, of Virginia; Dr. Mayo, of Virginia; Dr. Bahnsen, of Georgia; Dr. Geo. White, of Tennessee.

The following secretaries of state associations are to be thanked for their kind co-operation:

Dr. H. A. Smith, B. A. I. Association, Chicago; Dr. H. J. Milks, New York State Association; Dr. Hal. C. Simpson, Missouri Valley Association; Dr. Burton Rogers, Kansas Veterinary Medical Association; Dr. O. V. Brumley, Ohio State Association; Dr. J. J. Hogarty, California State Veterinary Medical Association; Dr. B. F. Kaupp, Colorado State Veterinary Association; Dr. W. B. Switzer, Oswego, N. Y., Central New York

State Association; Dr. C. H. Babcock, North Dakota Veterinary Association; Dr. C. L. Blakely, Maine Veterinary Association; Dr. S. W. Allen, South Dakota Veterinary Association; Dr. J. P. West, Wisconsin Veterinary Association; Dr. E. P. Flower, Louisiana Veterinary Association; Dr. E. M. Bronson, Indiana Veterinary Association; Dr. R. P. Marsteller, Texas Veterinary Association; Dr. J. T. Seeley, Washington State Veterinary Association; Dr. E. Jackson, South Omaha B. A. I. Veterinary Association; Dr. Judson Black, Michigan State Veterinary Association; Dr. G. E. Leech, Minnesota State Veterinary Association; Dr. D. M. Campbell, Chicago Veterinary Association; Dr. W. G. Crisman, Virginia State Veterinary Association; Dr. A. J. Kline, Northwest Ohio Veterinary Association; Dr. K. G. Huyett, Pennsylvania State Veterinary Association; Dr. J. H. Taylor, Genesee Valley (New York) Veterinary Association; Dr. B. K. Dow, Connecticut Veterinary Association; Dr. E. S. Bausticker, York County (Pennsylvania) Veterinary Association.

Last, but certainly very *great* thanks are due the AMERICAN VETERINARY REVIEW, for its activity in giving this matter publicity.

Very truly yours,

J. P. TURNER, *Chairman.*

VICTORY AND DEFEAT IN ARMY LEGISLATION.

The amendment to the army appropriation bill, providing for the retirement of veterinarians as second lieutenants, has been passed by Congress and signed by the President. This new law will retire Veterinarians Service, Tenth Cavalry; Company, Ninth Cavalry, and Corcoran, Twelfth Cavalry. The two former are Civil War veterans, and both over seventy years of age, and the effort made to have this amendment become a law was largely on their account.

But every other army veterinarian justly feels that the right to retirement is a most welcome and valuable addition to our present status, because it safeguards against poverty in old age or against compulsion to leave the army in a disabled condition.

The credit for this little victory belongs entirely to Dr. Turner, chairman of the legislative committee, A. V. M. A. He

was not assisted by more than a handful of army veterinarians. Early in the session he was forced to abandon the bill "to increase the efficiency of the veterinary service of the army," and all that was left to do was to save the retirement clause of the appropriation bill, which he successfully accomplished. This is fully recognized by every army veterinarian and there is an unanimous feeling of gratitude among them for his honest and hard work in our behalf.

But this little victory is completely overshadowed by the crushing moral defeat which we received at the hands of the army dentists, who managed to be advanced over our heads by having a dental corps created, consisting of commissioned dental officers—an entirely new feature in army organization, the whole world over, and certainly a shock to our medical corps.

We ourselves as veterinarians never did entirely acknowledge the claims of the army dentists, about their importance in the army service, nor can we possibly acknowledge that their medical studies are in any manner comparable to the breadth and deepness of those of veterinary medicine, nor, finally, can there be any doubt as to which of these two army services is the more needed and valuable in an economic sense. The general opinion of army officers in these questions is overwhelmingly in our favor.

Yet, notwithstanding these facts, the army veterinarians have failed in legislative attempts for the past thirty years, while the army dentists, after only ten years of a novitiate in our army, have won a signal victory for themselves and for their profession generally, by securing equality with the medical officers of the army.

The explanation of their success offers nothing new. It was won by organized effort. At the buttress of this was a strong pride in their profession, always displayed, along with unity of action and push. Two of three "supervising dentists," were constantly on the battleground with several assistants, all strongly backed by professional influence throughout the United States and by funds provided by the National Dental Association. *They exhibited reports and statistics of the work performed by them in the army to prove the need and usefulness of dental surgeons.* Nor was their victory won easily. Their "Dental Corps Bill" was at once objected to in the House and the conferees instructed to kill it. The dentists refused to give up, fought desperately and won. We certainly must admire them for their well-

planned campaign and congratulate them on their superior skill and tenacity.

This said, the situation leaves us in humiliation, and a comparison between their sweeping ascent and our own little victory will subject us to ridicule in the army, as it has already done. Perhaps just such crushing moral defeat as this was necessary to awaken the AMERICAN VETERINARY MEDICAL ASSOCIATION to a full realization of our weakness in professional affairs, and to finally arouse all of us to action to wipe out the reproach heaped upon us. While the matter is one that primarily affects the profession in the United States, there can be no doubt, from what we know of our Canadian colleagues, that they will heartily join hands with us to correct a great mishap, particularly as their territorial army veterinary force is now fully recognized and organized. It is now up to the *Association* to act.

O. S.

INSTRUCTION IN THE INSPECTION OF MEAT FOOD SUPPLIES FOR THE FRENCH AND UNITED STATES ARMIES.

“An army fights upon its stomach.”—Napoleon Bonaparte.

The military demonstrations near our Mexican border, begun in March, effective as it will be for the purposes for which it was undertaken, will be in nothing more educationally efficacious than to the Subsistence Department of the United States Army. “An army fights on its stomach.” A starved army cannot be expected to be offensively beligerent; an underfed army is not expected to be an army of zealots; a well-fed army is the valorous, the spirited, the redoubtable army which conquers and is ready to conquer more. In its methods for the provisioning of the troops; in the improvement of the ration; in its studies of cookery; in its garrison and field application; above all, in the improved understanding of meats and meat food products, our army to-day is many leagues ahead of what it was a dozen years ago. This has come to pass, in very large measure, through the indefatigable labors of the Commissary General, Henry G. Sharpe, and his spirit, his studiousness, his diligence for improvement of supplies, has imbued the officers under him with keen-edged interest in advanced methods as they could learn of them in other armies and discover them by study, experi-

ment, observation, reading or veterinary counsel. Surely, then, a short article on the instruction in the inspection of meat food supplies for the French and United States armies is timely, in view of the unusual interest at present in the military spectacle on the Mexican-American border; while it may be also poignant or punctuated with pregnant suggestions.

We, who are veterinary officials of the War Department, or who belong to the military organization of the United States, are interested in those who are doing work similar to our own in foreign armies, and particularly in any changes made, which strike us as improvements, that should lend suggestiveness to us. In an article written for the *AMERICAN VETERINARY REVIEW*, January, 1908, entitled, "An Army Veterinary School; Let Us Have One at Fort Riley." I pointed out that in the Army Veterinary School at Saumur, France, all veterinarians intended for work in the French line are required to undergo a special training before being ordered to a regiment, not only in equitation, hippology, horse-shoeing, military law and other branches, but also in meat inspection. In other words, the man intended for veterinary service in the line, though he be a man who has had the wide training required for military, veterinary candidates in one of the three National Veterinary Schools of Alfort, Lyons or Toulouse, where he has had courses in pathology, bacteriology and applied meat inspection, must, nevertheless, in his special course at Saumur, take another course in meat inspection in its military application—that is to say in such a course he would be put face to face with problems of military meat inspection, be privileged to study them, so that he might be able to solve them practically in the actual work in garrison and field, at home and abroad.

But, of late, French authorities have devised a means to permit veterinarians in the French army to become specialists in the inspection of animals and meats intended for military purposes. In the September, 1910, number of the French meat and milk monthly journal, *L'Hygiène de la Viande et du Lait*, published by H. Martel, Chief of the Veterinary Sanitary Service of Paris, or rather the "Department of the Seine," which includes Paris, there appears an article on changes which are to be made. All meats intended for the French troops are to be inspected entirely by French army veterinarians, as ordered by the government decree of May 1, 1910. The decree provides for the admission, for military training, of a number of veterinarians

to the great Army Veterinary School at Saumur, where they are to go through the regular discipline for veterinarians intended for the French army. They are not, however, to do duty as officers of the line. They are to have the title of "Aide Veterinaire." After the special military training at Saumur is completed they are to be ordered to Paris for special instruction in practical meat inspection in the Parisian abattoirs under Martel, the chief of that service. After passing an oral, written and practical examination in these subjects, they are to enter upon their assigned duty, at such points deemed advisable. Veterinarians of the French army are commissioned officers, and those who are to inspect meats for the troops are to have the same rights, privileges and immunities as these.

French methods ought to have in them something of suggestiveness for us. Several years ago Consul General Mason, of Paris, sent me over copies of the laws and regulations governing meat inspection in Paris and its environs. They opened my eyes to the detailed thoroughness of Parisian inspection, and my studies since of the great French meat inspection journal, edited by Martel, have deepened my impression of the care in inspection, especially in La Villette. Rigor of veterinary inspection of abattoirs is supreme in Paris. An inspiring article could be written upon the subject. Let it suffice for us to know that, in no other place than Paris could French army veterinarians get better special practical training for the military inspection of cattle and fresh meats. We veterinary inspectors of food supplies for the United States Army in Chicago, have more than once been under obligations to the French army, presumably especially to French army veterinarians, for suggestions looking towards improvement of our own supplies. We have conducted experiments along lines indicated in translated documents sent to us from France, through American military channels, and we will be looking for more suggestions with the inauguration of the new veterinary inspection of supplies for the French army which we have mentioned.

We feel, therefore, under obligations to France for stimulation in our own investigations in behalf of advancement of meat inspection methods. But the methods of instruction of French army veterinarians in inspection technique should teach us more, or at least suggest other means for improvement in our own army. Dr. Olaf Schwarzkopf, Third Cavalry, United States Army, who was trained, I understand, under Dr. Robert Oster-

tag in Berlin, and who has made extensive observations of German slaughter houses, has reported in the AMERICAN VETERINARY REVIEW for March, 1911 (page 779), "The Recommendations of the Board of Officers to Revise the Veterinary Supply Table," that "it can be authoritatively stated that hereafter young veterinarians, newly appointed, will be ordered to undergo a course of instruction in equitation and army veterinary practice at the Mounted Service School (Fort Riley) before joining their regiments." This, as an incidental result of the meeting of the Board of Officers, if it turns out to be true, is good news. It will be a start towards the formation of an Army Veterinary School at Fort Riley, such as I suggested three years ago. Nothing is lost by repeatedly recommending changes looking towards improvements. Sir John Falstaff, in Shakespeare's "Henry IV.," speaks of "damnable iteration." But iteration is a virtue in army circles, providing you can repeat your suggestions in a different guise, with more persuasive argument, with more forceful statement so that truth is transparent as the limpid trout brooks in the Maine mountains. I have long appreciated the value of suggestions for the improvement of the meat inspection service for the army. When I was ordered to Washington in 1908, Commissary General Sharpe, who honored me with a long tête-a-tête, suggested that, on my return to Chicago, I should turn over in my mind my observations, take plenty of time and write him, in the fullest manner, all the suggestions I could make for the improvement of our inspection work for the Subsistence Department of the army in Chicago. I did so, and had the pleasure of seeing many of my suggestions carried into immediate effect. Since then, from time to time, I have seen other of my suggestions adopted. In our inspection office we are required to act under a general order, which obliges us to communicate by letter, or call for a conference, on any point or points which occur to us as changes which might be made with advantage to the efficiency of the service. The recommendations that I have thus made would fill a large quarto volume.

The plan for instruction of veterinarians in the inspection of meat or other food supplies for the French army resolves itself into this—instruction in army meat inspection methods for all veterinarians, those intended for the line as well as others, conducted at the Army Veterinary School at Saumur; additional practical abattoir instruction in Paris for army veterinarians.

who are to give most of their time to inspection, under the title "Aide Veterinaire." Both sides of this plan should have something of suggestiveness for us in the United States.

In my opinion it is highly advisable that regimental veterinarians of the United States army know something about practical meat inspection. In their entrance examination for the line, it is true, they must pass in the subject of meat inspection, and this is wise. But this is only the proof of a theoretical acquaintance with meat inspection. Cannot something more be done? There is practical meat inspection work to be done in the army—work which must be expected of line veterinarians. The new manual of the Subsistence Department of the army, issued a few months ago, requires army veterinarians to be called into requisition, wherever and whenever possible, at such times when their services might be of value in the juncture when animals are to be slaughtered, either the property of the United States, or owned by companies at posts, or elsewhere, or when meats, which are subsistence stores, are to be passed upon for wholesomeness or healthfulness. The work of army veterinarians in meat inspection is widening and is destined to widen. Our army veterinarians should have a hand in the inspection of fresh meats from Australia, or in the investigation, before letting of such important contracts, of methods of slaughter there. There is much meat inspection work to be done at times for the army in the Philippines. There is inspection of animals at posts, owned by messes, when they are to be killed.

We are doing something in the way of instruction of army commissioned and non-commissioned officers in meat inspection in Chicago. Chicago is to us what Paris is to army veterinarians in France. Each is the most important meat inspection centre. It is reasonable that officers of the army, who desire instruction in meat inspection, or who are required, under orders, to learn meat inspection, should be taught it at the centre of the industry. The opportunities Chicago offers our officers for this kind of information cannot be gainsaid. By far the largest share of meats for the army is bought in Chicago. The purchasing officers in other centres are required to look to Chicago as the central office for this class of supplies. Hence the Purchasing Commissary of the army in Chicago has come to be a very important official, and his responsibilities have increased greatly during the last few years. Up till a few days ago, for instance, the Purchasing Commissary in Chicago, was Major H. E. Wilkins,

who was Depot Commissary at Havana during the recent occupation of Cuba by the Army of Pacification, and who represented the Ward Department in San Francisco during the earthquake, when the army took over the work of provisioning the sufferers. He is now Chief Commissary at San Antonio, Texas, for the Division which is near the Mexican border.

The instruction of army officers in meat inspection, carried on in Chicago, has been in operation for ten or more years, that is, since reorganization after the Spanish War. A large share of the commissioned officers of the Subsistence Department, now holding important posts as purchasing officers, have, some time or other, been drilled in Chicago in meat inspection. It seems to be the steady policy of the department to order newly appointed commissaries and commissary sergeants to Chicago, as student-officers, to take such a course. The officers in charge of the Cooks' and Bakers' Schools of the army have benefited by the instruction in Chicago, and have attested its usefulness. There is hardly any time of the year when one or more, and sometimes three or four, of these officers are here as students. The work of instruction is carried on practically entirely by the army veterinarians of the Subsistence Department in Chicago, acting under orders from the Purchasing Commissary. The length of time instruction is given, in individual cases, depends on the application of the student, his abilities, and the exigencies of the army service. Some stay a month or six weeks; others many months.

The net result has been favorable to the advancement of veterinary affairs in the army. Great confidence has been placed in the army veterinary (commissary) inspectors and many privileges, very unusual to civilians, as they are, have been accorded them. The responsibilities of this class of men are bound to increase in time of war, even when a military demonstration is made, as in the Mexican boundary situation. In the present exigency, for instance, an advance in the confidence in them is shown. A few days ago, when the troops were mobilized in Texas, my associate in the inspection in Chicago, Dr. C. W. Johnson, was immediately ordered for duty to San Antonio to inspect animals, fresh meats, and other supplies, under the direction of the Chief Commissary of the Division, Major Wilkins; while all the responsibilities of the inspection of meat food supplies to be prepared in Chicago for the whole army were given to the writer, under orders from the Purchasing Commis-

sary here. This is an immense change since the Spanish War days, when a pseudo inspection, a weak, half-hearted, spasmodic, uninterested, disloyal, induteous examination was made of the supplies, by men representing the Chicago Board of Trade.

All this throws light on the question of the instruction of United States Military Veterinarians in the inspection of meats and meat food products. If the French view be taken, regimental (line) veterinarians should have special instruction in meat inspection, along with other courses on army veterinary practice, before they join their regiments for the first time, by a veterinarian practicing meat inspection in the War Department. This should be done if the proposal is carried out, when the young appointee is ordered to Fort Riley—the same as the young French military veterinarian is taught meat inspection at Sautmur. Those veterinarians who are to give up their whole time to such inspection should, like the "aide veterinaire" in the French military system, belong to the United States military establishment, and they should undergo some special training, as does the veterinarian who is a novice in the French army; but should receive this special training in practical meat inspection in Chicago before entering upon their life work as meat inspectors for the United States military authorities. The union of all veterinarians in the army into a Veterinary Corps is an eventuality which at the present hour seems anticipatory; but which must be a development in time. The logic of events veterinary in the army will bring that to pass in time. The most cannot be gotten out of veterinarians serving, at present, the various army departments, Quartermaster's or Subsistence Departments, as civilians, until they are amalgamated with the military organization. I am absolutely certain that, in my day or your day, this will be an eventuality. "Every mickle makes a muckle," as the Scotch say. Little by little we are advancing towards that end—organization of all into one—a veterinary corps.

D. ARTHUR HUGHES.

DR. WALTER FRASER, Thirteenth Cavalry, U. S. A., has been transferred from Fort McKinley, P. I., to Fort Riley, Kansas.

THE Manitoba Veterinary Association held one of the most successful meetings at Winnipeg, February 15, that the organization has ever had. A detailed report of it will be published in the May issue of the REVIEW.

SOCIETY MEETINGS.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The twenty-eighth annual session of this association was opened at Columbus, Ohio, in the Veterinary Clinic Building, Ohio State University, January 17, at 1 P. M.

The members were welcomed to the city by Mayor George S. Marshall, as follows:

MAYOR MARSHALL'S ADDRESS.

Mr. Chairman and Delegates to the Convention of the Ohio State Veterinary Medical Association:

It is my duty as well as my pleasure frequently to address conventions that assemble in Columbus from time to time. You may be interested to know that there are as many conventions held in the City of Columbus as there are working days in the year; so that it is no small duty of the chief executive to address these conventions and I am usually honored with an invitation to make an address of welcome. The frequency and the interest shown in these conventions is an excellent indication of the wonderful activity that there is going on in all departments of life in these days; in fact, it appears to be an era of association and of organization for the mutual benefit of all concerned. Men interested in a particular line of work, get together for their mutual benefit and mutual help.

This morning I had the honor of delivering an address of welcome to the United Mine Workers of America, represented by over 2,000 delegates from every mining state in the Union and portions of Canada and Mexico. These men in their homes and at hard work in the mines, have been thinking of the great questions which concern them. So it is with all groups of men in a particular line of industry or profession.

I do not recall the beginning of veterinary work in this state, because, as your chairman has indicated, this is the twenty-eighth annual session. However, I do recall the early days of the Veterinary Department at Ohio State University. When I

entered in the fall of 1889, there was no distinct department of veterinary medicine as I remember, although a department existed in connection with the agricultural department, but there was no separate building. The head of the department had a very small group of men gathered about him interested in that subject. I have seen that subject developed at the State University, and the growth has been very encouraging and very rapid.

When I was a boy on the farm, I am sure that our veterinary surgeons knew very little about the horse. Now veterinary medicine is placed upon an exact scientific basis or as much as it is possible, subject of course, to development.

I am surprised indeed at the number of representatives here and I understand that all that are qualified to be members are graduates in veterinary medicine. This means a great deal to the profession the members of whom are graduates and are professionally pursuing the subject.

The two old horses that we used when I was on the farm were there when I was born and were still there when I left and I do not think that they were ever sick a day in their lives. I do not know why they never got sick, as they were used in all kinds of weather for all kinds of service. Another interesting fact is that I never knew a time when fruit was not plentiful on our farm. I could not understand why men were studying these particular branches of science. I now find that I cannot even make a pear or apple tree grow in my backyard. I tried this some time ago, but was disappointed. And I have not had a peach, apple or pear since other trees that I have were planted. Now, I do not know whether it is because of conditions that are existing in the country here or whether it is due to bacteria, insects, flies and the like that are now infecting our fruit, and I do not know whether it is because of the manner of the treatment of our horses on the farm or whether there have been new attacks made upon them from different sources. And animals in the city cannot be successfully treated unless the knowledge gained in the last quarter of a century is applied. As these diseases have arisen with the horse, the cow, the sheep and other animals, there has developed a course of investigation of the causes of such diseases together with their remedies and you men are here in Ohio to give the animal kingdom that degree of skill which it seems is now necessary for the existence of the animal kind.

I understand that there is not only one veterinary college in Ohio, but that we also have one in Cincinnati which is doing excellent work, as I understand.

As chief executive of the City of Columbus, it gives me great pleasure to welcome this splendid body of men to our capital city. I thank you for your time and attention.

RESPONSE TO ADDRESS OF WELCOME BY DR. WALTER SHAW.

On behalf of this Association, it gives me great pleasure to accept your kind welcome to the city.

You see before you these silver haired veterinarians who have attended many of our meetings and have seen great advances in the profession. They will see that we younger fellows make no mistake.

It is not alone the duty of the veterinarian to administer and care for the needs of the individual patient, but to protect the herds and flocks of this country against contagious and infectious diseases; and by so doing, protect the public health against diseases communicable from animal to man. There is a great yearly loss in this and other states from diseases that could have been prevented. Carelessness is principally the cause of such great losses, particularly that of transportation, when diseased animals are shipped and allowed to mingle with a healthy herd. If this unnecessary loss is prevented, the price of all dairy and meat products will go down. This will be of great benefit to both the producer and the consumer. Ohio to-day is made the dumping ground of many states for their diseased stock. This state of affairs should not exist. This should be controlled by seeing that no animals enter having a contagious disease. Ohio needs more veterinarians in the field to control and prevent contagious diseases.

If it is the will of the people to remedy existing conditions and the legislature will pass the necessary laws, the veterinary profession can furnish the men.

I wish to direct your mind to the deans and professors of some of the best colleges and also that we have some of the very best men in bacteriology, anatomy and pathology. We have the greatest anatomy of domesticated animals that was ever published. We saw, during the past twenty years, parts of it in preparation, but when it came to our hand it surpassed all expectations.

On behalf of the association I again thank you for your kind welcome to the capital city.

The roll call showed eighty-four members to be present at the opening of the meeting.

Following the reading and unanimous approval of the minutes of the meeting held in January, 1910, the president delivered the annual address.

PRESIDENT COOK'S ADDRESS.

Gentlemen and Fellow Members of the O. S. V. M. A.:

As I understand it, the principal purpose of this organization is to look after the general welfare of the veterinary profession and to promote and protect its interests in the State of Ohio.

The association is now twenty-eight years old. Now, let us reflect and see whether or not it has performed its full duty to the profession during that time. Let us ask ourselves the following questions:

What part did this organization take in the struggle to bring about the enactment in 1894 of the law regulating the practice of veterinary medicine and surgery in this state?

What part did this organization as a whole play in the several attempts since made to strengthen that law?

The last General Assembly of Ohio amended that law and made some very desirable and important changes in it, but what part did this organization as a whole take in getting these amendments through?

What voice has this organization had in the appointment of members of our State Board of Veterinary Examiners?

What voice has this association had in the appointment of a State Veterinarian for Ohio, or in the selection of his assistants, or in appointments to other public veterinary offices in the state?

What has this association done toward the development of the Veterinary Department of our great State University or for the cause of veterinary education in any direction?

Since the profession was vitally interested in all of these matters, it appears that its representative organization should have taken an active part in each. But did it?

Let us go a little farther and ask: What has this organization ever done toward the lessening and final eradication of veterinary quackery in the state—a *growing* evil which seriously affects the opportunities of our young members and reflects public discredit upon our whole profession?

Then we might ask if the association enjoys the confidence of the whole profession in the state? It certainly should, but the fact that seventy-eight per cent. of the graduate veterinarians in the state are not included in its membership, indicates that it does not.

Then, again, why the painful indifference of so many of our members, who rarely even attend our meetings?

In my opinion, the evident indifference among our members and the lack of confidence, support and co-operation of a majority of our professional brethren in the state are due to the inactivity and inconsequence of the organization in veterinary affairs in the past.

These sins of omission are brought to your attention at this time solely in the hope that some corrective action may be taken before this session ends. This organization must at once become an active, alert and efficient representative and guardian of the profession's interests throughout the state. To this end, your president makes the following recommendations:

That the Board of Censors be charged with the duty of looking after the general welfare of the profession while the association is not in session and with doing all possible to promote and protect its interests, and more specifically, to be charged with the duty of planning and executing an active campaign against veterinary quackery in this state. With a competent and willing executive committee, active between sessions, this association's influence for good will be felt in veterinary affairs throughout the state and its usefulness will be appreciated by every member of the veterinary profession.

It is also recommended that the holding of banquets be discontinued. There is plenty of evidence that banquets are not popular with the rank and file and the time can be much more profitably spent. A banquet is scheduled for this meeting, contrary to the advice of your president. We all know the difficulty of holding together a meeting of busy practitioners for more than one afternoon and evening, then why waste a big part of such valuable time in banquets? I take it that members spend their time and money in attending meeting in the hope of aiding in the cause of veterinary progress and no good can come through banquets.

It is also recommended that your literary programs for future meetings be limited to a few high-class papers on scientific problems of the day bearing on veterinary science. Papers on

commonplace subjects and case reports can be printed in veterinary publications and read and digested at home and at our leisure. Clinics too, should be held only when there is something new to be demonstrated. Let us spend our valuable and limited time hereafter in thoughtful deliberation on ways and means of advancing our profession.

Resolutions in line with these recommendations have been prepared and will be introduced at this meeting and their adoption is earnestly recommended.

During the past month, your president has taken a census of the veterinary practitioners in the state. Names and addresses of all persons practicing veterinary medicine and surgery either legally or illegally in the state at this time, were obtained. This information should prove invaluable to the association in its deliberations at this meeting. From the information obtained, the following figures are taken:

Number of graduates practicing legally.....	220
Number of graduates practicing illegally.....	146
Number of non-graduates practicing legally.....	79
Number of non-graduates practicing illegally.....	781
Total number of legal practitioners.....	299
Total number of illegal practitioners.....	927
Number of veterinarians in the state eligible to membership in this association whose names are not enrolled.....	314

These figures furnish good food for serious thought and plenty of room for action and you are urged to get together and do something.

Now, just a final word of warning: The veterinary profession of Ohio could not ask for a better protective law than it has to-day.

All that is necessary now is to enforce the law, but its enforcement must be gone about judiciously and in such a way so as not to arouse public sentiment against it. Veterinary quackery can be eradicated, but not in a day. It will take a few years to do it. Every quack has some friends and since the sympathy of the public is naturally with the under dog, some degree of caution will be necessary in the campaign against him. All steps toward the enforcement of the law should, therefore, be left to a single board composed of men fitted for the work and this board should have absolute control. Indiscriminate prosecution and persecu-

tion of non-graduate veterinary practitioners by individual members of the profession, will surely do the cause much harm. No member of this association should personally attempt a prosecution of a business competitor or even discuss in public the merits of the law. Hundreds of non-graduate veterinary practitioners in the state slept on the privilege granted them in the law, to obtain, without examination, a license to continue in practice and these men are now appealing to the Legislature for relief and it is probable that the veterinary profession will have to fight hard to prevent amendments favorable to the empiric, but detrimental to the profession, being made. Mind you, these men are strong in number, and if properly organized, will bring powerful influence to bear on the Legislature. Already one big daily paper has taken up their cause and printed editorials calculated to create public sentiment in favor of the amendments to the law provided for in a bill introduced in the state Senate a week ago. If the law is tampered with at all, it will be made to allow practically anyone wishing to engage in the practice of veterinary medicine and surgery an opportunity to obtain a state license and this will mean the licensing of not less than a thousand persons who have not had college training for the work. The effects of such an amendment would be disastrous to your interests and I would urge you right now to prepare to resist the attack. A copy of the bill has been obtained and will be read later in the meeting. In view of this impending danger, I would urge you to exercise great care in the selection of your officers for the coming year. When selecting officers, remember that "good fellows" do not always make good executive officers and leaders. With "dead ones" in office next year, the profession's interests will be in extreme jeopardy and your association will be without force and consequence. You will need officers who are capable of mustering the 300 licensed veterinarians in the state into a united army of defence to resist the efforts now being made to amend the law that so vitally affects your interests. With efficient officers to organize and direct the available forces of the profession, any attack on the law can be successfully resisted. Since the duties of the officers will require considerable time, the offices should not be given to or accepted by members who, on account of private interests, cannot give the necessary time to the work of the association. Elect only able, wide-awake and tactful leaders to the offices of president and secretary and to the vacancy in your Board of Censors. The criticisms and the

recommendations made and the alarm of warning sounded are not intended to give offense nor to create a scare, the sole object being to arouse you from your state of lethargy to your full duty and to advise you of imminent dangers ahead. The veterinary profession in Ohio looks to this organization for protection. It is an obligation you have voluntarily assumed and it's now up to *you* to make good.

Following the president's address, and presentation of a number of resolutions by Dr. Cook, the election of officers took place, and resulted as follows:

President, Dr. Louis P. Cook.

Vice-President, Dr. G. W. Cliffe.

Secretary, Dr. C. V. Brumley.

Treasurer, Dr. David S. White.

DR. COOK: "I would like to have the privilege to suggest a man to be appointed on the State Board of Health who is a member of this association. It seems to me that it is due us. We have now elected a governor and it will be his duty within the next few days or weeks to name three members of that Board, two Democrats and one Republican. I know whereof I speak when I say that the man whom I am going to ask this association to endorse stands as good a chance as any other member of this association—Dr. Cliffe for Democratic nominee on the State Board of Health." Dr. L. P. Cook introduced above motion.

A standing vote was taken and Dr. Cliffe unanimously elected to represent the association as their nominee.

DEATH OF DR. COTTON.

The following report was made by Dr. W. H. Gribble:

"Dr. T. Bent Cotton was born in Mt. Vernon, Ohio, March 21, 1841, and died in the same city, January 6, 1911. He had been in frail health for several years, but was active until stricken with paralysis about four days previous to his death. In early life Dr. Cotton was a carriage blacksmith, but his love of animals induced him to study veterinary medicine. He graduated from the Ontario Veterinary College on March 31, 1882, and located for practice in his native city, at once taking a leading position in his chosen profession.

He was an honorary member of the Academy of Veterinary Science and Comparative Pathology of New York State, to

which he had been elected January 8, 1886. He was a member of the American Veterinary Medical Association, in which he had held many offices. He was one of the organizers of the Ohio State Veterinary Medical Association and up to two years ago was one of its most active workers. A years ago he asked to be released from active membership and was at once unanimously elected an honorary member.

In the removal from our ranks by death our brother T. Bent Cotton, this association has lost one of its charter members and one of its most active and willing workers, ever ready to lend a hand in the upbuilding and advancement of the veterinary profession.

While his presence will be missed from our meetings and his advice from our councils, it will in no way compare with his being missed from his family circle.

We extend our heartfelt sympathy to the widow and daughter in this their bereavement.

WHEREAS, While his presence will be missed from our meetings and his advice from our councils, it will in no way compare with his being missed from his family circle, be it

RESOLVED, That we extend our heartfelt sympathy to the widow and daughter in this, their bereavement, and venture to suggest that "Mayhap he is better off."

(Signed) WM. H. GRIBBLE.

READING OF PAPERS.

"Remarks on Applied Anatomy," by Doctor S. Sisson.

Dr. Sisson was given a very elaborate introduction by Dr. Cliffe, in which he introduced our distinguished brother as the "Wizard of the Twentieth Century in Anatomy," and that the doctor has produced the greatest anatomy on this or any other continent. To which the doctor replied in his quiet way, "Mr. President, Mr. Chairman and Members of the Association, I feel considerably embarrassed, as you might easily understand, under the present circumstances. I do not know that I need to say anything further than that."

"Opsonic Index and Its Benefit in Practice," Dr. John T. Gruber.

Dr. S. R. Howard read a very interesting paper on the "Use of Slings in Veterinary Practice."

Dr. Reuben Hilty favored the assemblage with a very interesting paper on Azoturia.

Dr. C. B. Frederick also presented a very interesting paper on that small yet great word, "If."

"Tuberculin Test of Cattle," was the subject of a very interesting paper by Dr. Paul Fisher. Dr. Fisher also showed some charts demonstrating various features of the tuberculin test in cattle. Here are a few of the points:

One animal showed reaction, but on post mortem, no lesions could be found and the dissector was despairing, when he opened the skin over the knee and found a small lesion there.

One herd had an animal which did not react until the nineteenth hour.

The eighteenth hour is as early as one dare stop taking temperatures and the eighth hour in the morning is the latest that one dares to begin to record them.

One herd did not react in that the temperature stayed at the highest point a very short time, but post mortem revealed definite lesions.

Previous history is very important, no matter what the tuberculin test shows.

Temperature is recorded three times before injection and every two hours after, from the eighth to the eighteenth hour or longer if temperature rises at the eighteenth hour.

Dr. C. W. Fogle read an interesting paper on "Treatment of Choke in the Horse."

Dr. H. Fulstow also read an interesting paper on "Some Diseases of the New-Born Foal."

RESOLUTION.

WHEREAS, Diseased animals, especially glandered horses, tubercular cattle, cholera-infected swine, and scabby sheep are transported into Ohio from other states without restriction, and

Whereas, Our present laws do not provide for the enforcement of measures to stop this practice which causes enormous losses to our animal industry, be it therefore

RESOLVED, That this association recommend and urge the enactment by the General Assembly, now in session, of a suitable, modern, live-stock law.

Motion was made and seconded to adopt the above resolution. Same was carried by acclamation.

RESOLUTION.

"I move that a resolution in behalf of the Ohio State Veterinary Medical Association be extended to Dr. Hilty and his collaborator, Dr. Longfellow, to continue the research work in the state on Azoturia, the report to be made at the next meeting.

Question called and carried by acclamation.

RESOLUTION.

It was moved by Dr. Shepherd and seconded by Dr. Carl, that the president and secretary act as a committee to give the reasons for the objection to the present law in the legislature or rather the proposed amendment.

Motion was carried by acclamation.

RESOLUTION.

RESOLVED, That at future meetings of this association, the secretary extend a cordial invitation to all persons who are not members of this society, who are college graduates and persons that we would like to have in our society. Also, that he request the members of the association to bring in such members of our profession as would make desirable members of this association.

Secondly, That the secretary get a registrar and register and have this registrar posted outside the door, his duty being to collect dues and to tag each member on receipt of same, as a member.

O. V. BRUMLEY, *Secretary*.

CALIFORNIA STATE VETERINARY MEDICAL
ASSOCIATION.

The annual meeting of this association was held at the San Francisco Veterinary College, 1818 Market St., San Francisco, on December 14, 1910.

The meeting was called to order by the president, Dr. David F. Fox, of Sacramento.

Roll call showed the presence of the following members: Drs. R. A. Archibald, H. A. Spencer, D. F. Fox, C. Keane, E. J. Creely, J. Boyd, A. J. F. Bateman, G. J. Donnelly, C. L. Megowan, H. A. Turner, A. J. Sorensen, J. A. Hill, A. S. Will-

iams, O. A. Longley, C. F. McCarthy, L. E. Tuttle, C. H. Har-
ing, T. L. Dardis, F. H. McNair, H. E. Torgersen, J. P. Iverson,
F. J. Ast, J. J. Hogarty.

The following visitors were present: Drs. J. A. Grau, C. L.
Roadhouse, C. F. Edwards, Attorney James Creely, Dr. Zeig,
agent of Parke, Davis Co., and students of the San Francisco
Veterinary College.

The minutes of the previous meeting were read and approved
as read.

The secretary's annual report was submitted, and upon
motion, duly seconded and carried, it was accepted and ordered
placed on file.

Owing to the absence of the treasurer, Dr. W. F. Betzold,
there was no report rendered.

The proposition of holding at least one joint meeting annually
with the Southern Auxiliary was discussed at length and it was
the opinion of several present that the matter should be taken up
with the Southern Auxiliary to ascertain whether or not said
meeting consisting of two days could be so arranged.

Under the head of Reports of Committees, Dr. R. A. Archi-
bald, chairman on the Committee of Arrangements of the A. V.
M. A. meeting, rendered the following report:

REPORT OF THE ENTERTAINMENT COMMITTEE FOR THE AMERI- CAN VETERINARY MEDICAL ASSOCIATION.

*Mr. President and Members of the California State Veterinary
Medical Association, and Mr. President and Members of
the Southern Auxiliary of the California State Veterinary
Medical Association:*

Your committee appointed for the purpose of entertaining
those who attended the meeting of the American Veterinary
Medical Association in San Francisco, during September, 1910,
begs leave to report that there still remains a balance of \$68.29, a
check for which is herewith attached.

It may seem to the casual observer that a large amount of
money was spent, but your committee assumed that it was
better to give the best entertainment possible with the amount
of money available, providing such entertainment did not exceed
the amount of money collected; consequently in every step taken

it endeavored to get the best obtainable under the circumstances.

As chairman of the committee I desire to express my appreciation of the assistance and support given me by the individual members of the committee and subcommittees. I do not desire to make special mention of the work of any individual member, but without exception everyone performed every task required of him at all times and under all circumstances.

I wish to make special mention and call attention to the great kindness and courtesy displayed by Dr. W. F. Egan, of San Francisco, who placed at our disposal his premises on Webster street, for the use of our clinic, and not only that, but he fixed up the place especially for this occasion at considerable personal expense. He also took charge of clinical cases, before and after the clinic, which was all done, as far as the committee can ascertain, for less than cost.

I cannot close this report without complimenting the members of the veterinary profession in California for the noble manner in which they came to the front with funds and assistance for the purpose of carrying this great undertaking to a successful termination. No other city or community, in this or any other country in the history of veterinary affairs has ever accomplished like results, and when we take into consideration the extent of the veterinary population in this state the results are still more remarkable.

I also desire to call attention to the kindness of the Montana Veterinary Association, who sent us a check for fifty dollars (\$50), and special mention should be made of the kindness and liberality of Drs. Jacobs, Mack, Richardson, Steward, Dill and Drake, of Nevada, who assisted with liberal subscriptions. Mention should be made in this connection of the liberality of the following business houses who subscribed to the entertainment fund: Mulford Co., Abbott Alkaloidal Co., Sharp and Smith, Cutter Laboratory, Haussmann and Dunn, Parke, Davis and Co., and Alexander Eger.

Respectfully submitted,

R. A. ARCHIBALD,

Chairman, Committee on Entertainment.

Dr. R. A. Archibald turned over to the secretary a check for \$68.29, as a balance of the A. V. M. A. Entertainment Fund.

It was duly moved, seconded and carried, that the report be

adopted and that the committee be discharged. The president, Dr. D. F. Fox, expressed his deep appreciation and thanks to the chairman and committee for their earnest endeavors in making the meeting such a success.

After a lengthy discussion as to the disposal of the check for \$68.29, Dr. R. A. Archibald said he thought that it should be spent. He said the proper way would be to appoint a committee to devise ways and means to spend said money. It was moved by Dr. Keane and seconded by Dr. Boyd that such a committee be appointed.

The president appointed Dr. Charles Keane to act on this committee and requested him to take up the matter with the Southern Auxiliary members to ascertain their opinion in this matter.

The following applications were received, accompanied with the initiation fee: Drs. Chester L. Roadhouse, Berkeley, Calif.; W. M. Thompson, Red Bluff, Calif.; C. F. Edwards, Gilroy, Calif., and were referred to the Board of Examiners to be reported upon at the next regular meeting.

The Board of Examiners reported favorably upon the application of Dr. H. E. Torgersen, a graduate of the Chicago Veterinary College. Upon motion, duly seconded and carried, Dr. H. E. Torgersen was elected to active membership in the association.

Dr. R. A. Archibald brought up the proposition of districting the northern part of the state in order that we might get the veterinarians who are not members to become such, whereupon the president, Dr. D. A. Fox, stated that he had overlooked the matter on account of his time being taken up with matters pertaining to the meeting of the A. V. M. A., but hoped in the coming year the association would make an effort to put this proposition into effect.

Nominations and election of officers for the ensuing year resulted as follows:

President, Dr. Otis A. Longley, of Fresno.

Vice-President, Dr. A. J. Sorensen, of Modesto.

Secretary, Dr. J. J. Hogarty, of Oakland.

Treasurer, Dr. J. A. Hill, of Alameda.

Board of Examiners—Drs. H. A. Spencer, P. H. Browning and E. J. Creely.

It was duly moved, seconded and carried, that the secretary be instructed to cast a ballot for the respective officers.

It was moved by Dr. Archibald, and seconded by Dr. Keane, that a committee be appointed to amend and revise the by-laws of the association. The president appointed the following to act on said committee: Drs. R. A. Archibald, Charles Keane and C. L. Megowan.

The president then declared a short recess until 2.00 P. M. At 2.00 P. M. the members assembled at the San Francisco Veterinary College to witness a clinic prepared for them by Dr. Hall and the faculty.

At 8.00 P. M. the association reconvened for the purpose of reading of papers and discussions.

Dr. C. A. Pyle read a paper entitled, "Preventive Treatment of Hog Cholera," which proved to be very interesting and brought forth a general discussion.

Dr. R. A. Archibald being called upon explained in detail the different tests for glanders, particularly the Konew test, which proved most interesting and instructive.

Dr. C. L. Roadhouse being called upon read a paper entitled, "Veterinary Inspection of Certified Dairies," which promoted a very lengthy discussion.

Matters pertaining to legislation were discussed at length and Dr. R. A. Archibald was of the opinion that our present law was a good one and that it should be carried to the Supreme Court for a ruling from that tribunal as to its legality. He thought that it would be poor policy to interfere with the present law.

Attorney James Creely being present was called upon by the president and expressed his opinion on the matter. He said that the present law was a good one and thought it would stand the test. Mr. Creely kindly enlightened the members as to the legal questions involved in enforcing this law.

It was duly moved and seconded that when the committee on legislation visits Los Angeles that said committee take the matter up with the Southern Auxiliary and that they be given full power to act.

Dr. Charles R. Keane explained to the meeting the proposed bills to be submitted to the next legislature. They are:

A. Bill to provide funds for a laboratory in connection with the office of State Veterinarian to be used for the purpose of preparing hog cholera serum and for general laboratory purposes and providing for the appointment of a Veterinary Bacteriologist and Pathologist.

B. Bill regulating use of Tuberculin, Mallien and other biological products in California, special tax on horse and mule industry, to provide a fund out of which to indemnify owners for the destruction of glandered animals.

C. Bill providing for the testing for tuberculosis, segregation, and marking of reacting animals in at least the breeding herds in this state.

It was moved, seconded and carried, that the measures proposed by Dr. Keane be endorsed by this association.

It was duly moved and seconded that the next meeting be held at Fresno on the second Wednesday of March, 1911.

It was moved, seconded and carried, that a vote of thanks be extended to Dr. A. V. Hall and the students of the San Francisco Veterinary College for their excellent entertainment. It was also moved and seconded that a vote of thanks be extended to the essayists, Drs. R. A. Archibald, C. L. Roadhouse and Dr. C. A. Pyle.

There being no further business to come before the association upon motion, duly seconded and carried, it adjourned to meet in Fresno on the second Wednesday of March, 1911.

J. J. HOGARTY, *Secretary.*

THE CLINIC OF CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

1. Excision of the ventricle for roaring (Adams' method).
2. Periosteotomy for ringbone.
3. Resection of the perforans tendon.
4. Median neurectomy.
5. Plantar neurectomy (high).
6. Plantar neurectomy (low).
7. Excision of lateral cartilage (not cutting coronary band).
8. Anterior and posterior tibial neurectomy.
9. Spaying of cat by flank method.
10. Spaying of two bitches.

Note.—Cat and bitches all recovered, also the horse receiving two doses (20 c.c. each) of Cannabis Indica in the jugular vein remained quite from 4.00 P. M. until 8.00 A. M. It got up next morning showing no bad effects from the drug.

WISCONSIN SOCIETY OF VETERINARY GRADUATES.

This association was called to order by the president, Dr. L. A. Forge, at Madison, January 10, 1911. The roll call showed a goodly number of the members in attendance. The reading and adoption of the minutes of the previous meeting, and the secretary-treasurer's report, were followed by the reports of the several committees.

Twenty-six applications for membership were tendered the secretary and referred to the Board of Censors to be reported on at the evening session.

Election of officers followed and resulted as follows:

President, T. H. Ferguson.

Vice-President, —. —. Holmes.

Secretary-Treasurer, J. P. West.

Dr. D. B. Clark, as delegate to the San Francisco meeting of the American Veterinary Medical Association, gave a very interesting report, thoroughly covering the ground of the last meeting of that society, as well as the pleasant features of the trip to and from the Coast. Dr. Clark's report was much appreciated and regularly accepted.

Dr. Dreher's able paper on "The Use of the Stomach Tube in Gastritis," was much appreciated by all members present. It brought out much discussion and was well defended by the author, who was excused with a vote of thanks.

A paper by Dr. A. H. Arpke, subject, "Pericarditis," brought out many interesting discussions by Drs. Roub, Hensel, Holmes and others. The doctor was excused with a vote of thanks.

The meeting adjourned to reconvene at 7.30 P. M., with President Ferguson in the chair.

Dr. M. P. Ravenel favored the society with a very interesting talk on that broad subject of tuberculosis, giving briefly the experiences of investigators with the later methods of immunizing cattle against this disease. The doctor was excused with a vote of thanks.

Herbert Lothe, secretary of the Live Stock Sanitary Board, gave an interesting paper, subject, "Relation of the Live Stock Sanitary Board to the Veterinarian," in which he made many instructive suggestions to the practitioners, and showed the importance of the two working harmoniously.

Dr. Hadley's paper relative to "Recent Research Work and Diagnosis of Glanders" brought out much discussion, which was well defended by the author, who was excused with a hearty vote of thanks.

Many interesting subjects were discussed by Drs. L. A. Wright, J. F. Roub, C. M. Crane and T. H. Ferguson.

The censors reported favorably upon the twenty-six applications for membership. The rules were suspended and they were voted members collectively.

The meeting adjourned to reconvene for clinics at 8.30 the following morning at Dr. J. P. West's infirmary.

The entire forenoon of the second day was devoted to clinics.

Dr. H. F. Eckert presented a paper on "Laparotomy," which was well received and highly applauded by the society.

Dr. L. A. Wright gave a very complete report of the veterinary law and the workings of the "Board," comparing same with other states.

Dr. D. B. Clark gave a very lengthy talk covering the subject of cattle testing by veterinarians and other parties authorized by the Wisconsin Live Stock Sanitary Board, and spoke also of the increased work of the Sanitary Board.

Dr. J. S. Atkinson's interesting paper on "Azoturia," in which the doctor cited many cases of his own experience in the treatment of the same, brought out much interesting discussion by members of the society. The doctor was excused with a vote of thanks.

Dr. B. F. Kenyon's able paper on "Impaction," citing many cases of his own experience, his treatment of the same and results, brought out much discussion by Drs. Roub, Crane, Atkinson and others.

It was moved, seconded and carried that the society hold its semi-annual meeting at Green Bay.

Moved, seconded and carried that the date of the meeting be left to the secretary.

Moved and seconded that Drs. Ravenel, Alexander and Hadley be tendered a vote of thanks for the interesting contributions to the program, and interest shown in the society.

Moved and seconded to adjourn to the banquet, which was held at the Capital House at 7.30. Nearly two hours were pleasantly spent at the banquet held in the Capital House; Dr. D. B. Clark acting as toastmaster.

At 10.00 President Ferguson again called the meeting to order.

Moved and seconded to elect a candidate to represent the society at the American Veterinary Medical Association.

Dr. L. A. Wright was officially elected as the delegate to represent the society.

Volunteers for papers for the semi-annual meeting were: Dr. Abbott, Dr. Wanke, Dr. Hensel, Dr. F. F. Eckert, Dr. Reinhard, Dr. Palmer, Dr. Schneekloth, Dr. Edwards, Dr. Brown, Dr. H. F. Eckert, Dr. Howes, Dr. Curtis and Dr. Hollister.

Regularly adjourned, to meet at the semi-annual meeting.

J. P. WEST, M.D.V., *Secretary.*

NORTH DAKOTA VETERINARY MEDICAL ASSOCIATION.

The ninth annual meeting of the above association convened at Hotel Gardner, Fargo, N. D., Tuesday morning, January 17, 1911.

President C. H. Babcock called the meeting to order at 10 A. M. and delivered the annual address.

Roll call showed twenty-five members present. The following visitors were also present: Dr. L. A. Merillat and Dr. D. M. Campbell, Chicago, Ill., and Dr. Oscar Johnson, Hatton, N. D. The minutes of last meeting read and approved.

After listening to committee reports and transactions of routine business the following gentlemen were elected to membership in the association: Edmund Mackey, M.D.C., Mandan, N. D.; H. Anderson, V.S., Dickinson, N. D.; G. Hammond, M.D.C., Litchfield; G. E. Slonlin, V.S., Aneta, N. D.; E. W. Elliott, V.S., Milton, N. D., and E. D. Harris, D.V.M., Fargo, N. D.

Next on the program was reading and discussion of papers.

1. "Swamp Fever, Facts and Problems," by Dr. L. Van Es. Dr. Van Es did not read a paper, but discussed the subject very fully, illustrating his talk with numerous drawings, and giving the results of the painstaking research work done at the North Dakota Experimental Station for the past three years. A report

of this work, together with the information Dr. Van Es has gleaned from his labors will, no doubt, soon be published as a station bulletin.

2. Dr. E. J. Walsh presented a specimen of "thrombosis," of external iliac artery of the horse together with a clinical description of the case.

3. "Tuberculosis," by Dr. M. M. Fulton.

4. "Tetanus," by Dr. F. J. Anderson.

5. "Bacterins," by Dr. D. Fisher.

6. "Some Excitement," by Dr. E. Schneider.

At 8.00 P. M., January 17, 1911, thirty-eight members and visitors enjoyed a sumptuous banquet at the Hotel Gardner.

Wednesday, January 18, 1911, association met at the Agricultural College. The forenoon session was taken up by Dr. Merillat in a masterly presentation of the subject of "Neurectomies of Veterinary Surgery,"* followed by a brief, but pointed, talk on the treatment of wounds in a modern, scientific manner. Dr. Merillat made an earnest plea for a cleaner and more scientific surgery as the best means of competing with our empirical competition.

After luncheon Dr. Merillat demonstrated on an anæsthetized subject the following operations: "Median," "Ulnar," "Posterior Tibial" and "Peroneal Neurectomy."

"Peroneal Tenotomy," as modified, or rather amplified, by Dr. C. C. Lyford, was the next operation demonstrated by Dr. Merillat.

"High Plantar Neurectomy," by Dr. E. J. Walsh.

"Low Plantar Neurectomy," by Dr. F. J. Anderson.

This concluded the clinic and President Fisher announced his committee appointments.

Delegates to the American Veterinary Medical Association are: Dr. L. Van Es, Fargo, N. D.; Dr. R. C. Cliff, Park River, N. D.; Dr. J. W. Robinson, Garrison, N. D.

The association selected Dr. R. C. Cliff as their choice for appointment to fill vacancy on the board of veterinary examiners and the secretary was instructed to write the governor of the state to that effect and urging the appointment.

The association decided to continue the institute feature of the meetings for another year.

* Published in this issue of the REVIEW.

Dr. L. A. Merillat was tendered a rising vote of thanks for his able handling of the "Surgical Institute."

The following officers were elected for the ensuing year :

President, Dr. D. Fisher, Grandin, N. D.

Vice-President, Dr. E. J. Walsh, Minot, N. D.

Secretary, Dr. C. H. Babcock, New Rockford.

Treasurer, Dr. B. C. Taylor, Hillsboro.

Adjourned to meet at Agricultural College in January, 1912.

C. H. BABCOCK, *Secretary.*

SOCIETY OF COMPARATIVE MEDICINE

(NEW YORK STATE VETERINARY COLLEGE,
CORNELL UNIVERSITY.)

The above society held its eighth annual banquet at the Ithaca Hotel, Ithaca, N. Y., January 11, 1911. After an excellent menu, Toastmaster Dr. P. A. Fish, introduced the speakers of the evening. These were: Dean L. H. Bailey, Dean T. H. Crane, Dean V. A. Moore, Dr. W. L. Williams, Dr. G. T. Stone, Dr. H. S. Beebe, Dr. D. H. Udall, Dr. F. D. Hollford and E. F. Painton, president of the Society of Comparative Medicine. This was the first banquet to be held in co-operation with the alumni, they adding much to its great success.

At the regular monthly meeting of the Society of Comparative Medicine, February 18, 1911, Dr. J. F. DeVine gave an address. His subject was "The State Quarantine Service." Following the talk Dr. DeVine answered a great many questions asked by members of the society. Officers were elected for the present college term. President, C. I. Corbin; Vice-President, R. R. Bolton; Secretary, J. K. Bosshart; Treasurer, A. C. Goff; Corresponding Secretary, J. F. Mitchell.

J. F. MITCHELL, *Corresponding Secretary.*

YORK COUNTY VETERINARY MEDICAL SOCIETY.

The meeting of the above association at York, Pa., on March 7, was largely attended and the subjects of live stock and dairy sanitation were among those which were discussed at length. This being the annual meeting, election of officers took place, with the following results:

President, Dr. W. L. Herbert.

First Vice-President, Dr. F. N. Kain.

Second Vice-President, Dr. J. D. Smith.

Secretary, Dr. E. S. Bausticker.

Treasurer, Dr. Charles Lenhart.

The trustees for the ensuing year are—Dr. Fred H. Hartenstein, Dr. W. E. Cranmer and Dr. C. A. Kain.

E. S. BAUSTICKER, *Secretary.*

INTERNATIONAL COMMISSION ON CONTROL OF BOVINE TUBERCULOSIS.

It seems advisable to keep the public informed in a general way concerning the work of this commission. Readers desiring to look up the personnel of this commission will find it in the *AMERICAN VETERINARY REVIEW* for October, 1910.

A meeting of this commission was held in Buffalo on February 27. It was decided that the first task would be the preparation of material for a small pamphlet on the subject of bovine tuberculosis. This pamphlet is to be very simply and plainly worded, for the general public, especially stock owners. It is to embody a full statement of available information on the subject, so far as it concerns the stock owner in a practical way, and so far as such information is accepted by the commission.

This primer will probably be published in very large editions in the United States and Canada and be given very wide distribution by the Canadian and United States governments and by our several states in this country.

The committee entrusted with the responsibility of preparing this pamphlet is: Dr. V. A. Moore, Cornell University; Dr. J.

R. Mohler, Federal Bureau of Animal Industry; Mr. J. J. Ferguson, representing American packers; Dr. Reynolds, Minnesota, representing American veterinarians in state work; Dr. F. Torrance, Manitoba, representing Canadian veterinarians.

The next meeting of this commission will be held at Toronto late in August.

M. H. REYNOLDS, *Secretary.*

REPORT OF COMMITTEE ON LEGISLATION.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.
ANNUAL MEETING, MARCH 7 AND 8, 1911.

Mr. President and Gentlemen:

The chairman of the Committee on Legislation amidst his greatly increased duties and personal bereavement has asked me as the second member of the committee to present a report for that body.

This committee, having as its chief duties that of looking after legislation in our state, has not had until the present legislative session any special work for the past two years.

Many changes have occurred in these two years. The second incumbent, since the death of our lamented leader Pearson, has now the office of State Veterinarian and in the appointment of Dr. C. J. Marshall we have great cause to rejoice. I know of no man living who will carry out with greater fidelity and more loving devotion the plans of Pearson than our esteemed colleague.

Already in the present legislature measures are pending to grant \$100,000 for the further completion of the veterinary school buildings and a renewal of the maintenance support of \$60,000 for the next two years. These measures should have our active and undivided support as they tend to build stronger and better the whole field of animal industry in its broadest and best sense.

The renewal of the appropriation for the Department of Agriculture, the State Live Stock Sanitary Board and the Meat Hygiene Service with larger appropriations for aiding in a better

milk supply for our cities are indeed of the greatest interest to us, and specially should they have our undivided favor at this time, in that one of our number has again been retained by the present state administration, the Hon. N. B. Critchfield, as Secretary of Agriculture. His retention assures the people of our state of the best methods and plans for serving the multiplied interests of agriculture in one of the richest and most densely populated states of our union.

Within the past year Mayor Reyburn of Philadelphia appointed one of the ablest commissions to consider the whole subject of our milk supply and its sources of production, that has ever considered this subject for any municipality of our land. The most exacting and conscientious work was done by this body during the past six months and they have brought forth the most comprehensive plan for dealing with this problem in their report, and to their lasting credit it has met with approval by the producer, the handler and dispenser, the press of our city, and from the people in general. More than that our lamented Pearson had long ago urged our state to appropriate money to aid cities and towns in this project, and this has been made available at this time to enter upon those plans. The past week the mayor has introduced in councils a bill for the appropriation of the needed sum of money—some \$67,000—to carry the plan into effect, all of which should receive our support, and the city has petitioned the state to aid in the work.

During the past year Greater Pittsburg has taken a very advanced step in better measures to insure a more wholesome food supply for her people. In the Department of Health a food inspection division has been created and one of our members, Dr. J. C. McNeil, has been placed at the head of this department. Better care of all perishable food products has already been attained by this department. An educational campaign for a better milk supply at the source of its production and improved methods of handling in transit and at the dispensing point have already been inaugurated. A more rigid surveillance of the meat supply has been insured and consideration of a central abattoir under municipal control and direction, the doing away with all private slaughter houses and better facilities for all handlers of meat products, while adding many additional safeguards to the consumer.

The Meat Hygiene Service of our state is bearing good fruit in many localities. In one of our inland cities, Reading, a meat

inspection service there has rendered splendid results to the people of that city. This post has been under the care of one of our members, Dr. George B. Fetherolf.

This brief survey of legislation, already a part of our state and municipal governments, gives us much food for pleasant reflections and adds an incentive to intensify this work all over our own state, until this great commonwealth of more than one-eleventh of the people of these United States may be made stronger, happier and better in every way.

Respectfully submitted,

W. HORACE HOSKINS.

DR. WALTER G. HOLLINGWORTH, Utica, N. Y., in a recent lecture before the veterinary students at Ithaca, announced that he had provided for an honorarium of \$50 to be awarded annually to a senior or graduate student for advanced work or research in pathology and bacteriology. The doctor has taken a very active part in the campaign for better milk, and is widely known for his work in connection with it. In an address before the Society of Comparative Medicine, N. Y. S. Vet Coll., the same day, Dr. Hollingworth stated that one-third of the income from all agriculture in the State is derived from animals, whose valuation is placed at \$189,000,000.

WARNING!

We beg to warn the medical profession against a rather unusual form of commercial effrontery and imposition. Three products have been introduced to the profession, the labels on the bottle bearing the fanciful names, Pix-Cresol, Methenysol, Zylol. The products are introduced, respectively, by Pix-Cresol Chemical Co., Kansas City, Mo.; Samuel Metheny, M.D., Lincoln, Neb.; Standard Chemical Co., Des Moines, Ia.

Analyses of these products as found in the open market, show that they contain from twenty-five to twenty-eight per cent. Chinosol, to which the promoters have added from seventy-five to seventy-two per cent. sugar of milk.

As the labels on the three products give no indication of the contents, we feel it our duty to notify the medical profession.

CHINOSOL COMPANY,
CHAS. ROOME PARMELE, *President*.
54 and 55 South Street, New York.

March 15, 1911.

AMERICAN VETERINARY REVIEW.

MAY, 1911.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, March 15, 1911.

PROLAPSUS RECTI IN PREGNANT MARES.—In his excellent work on obstetrics, Prof. Williams of Cornell University states (page 855) that “the prognosis of prolapse of the rectum in the mare during parturition is highly unfavorable.” Why?

In the *Annales de Bruxelles*, Mr. Jos. Hamoir, veterinary practitioner, gave an explanation of this complication in mares, and takes advantage of it to insist on the proper treatment which it demands. Not to relieve the prolapse only, as this is generally easy to obtain, but to remove also the severe prognosis.

First, what is the cause of the prolapse and what alterations take place in the pelvic cavity when it occurs?

Without considering the various conditions of prolapse, Hamoir only has in view that which takes place in mares at the time of parturition, or delivery. Of course, because of the violent expulsive efforts that all mares make during the labor of the foetal expulsion, the rectum always prolapses. Even without the presence of distokial condition, with an accouchement, normal or nearly so, a prolapse may be observed. But in many of these cases, as soon as the efforts cease, the prolapse returns to its place, although in some instances it does not and the intes-

tines may be projecting as far down as the hocks of the animal and then the interference of the surgeon as well as that of the obstetrician is in demand.

In these last cases, is there not any other cause besides the efforts of expulsion made by the mare. For Hamoir, these do not act alone, and the state of repletion, of fullness of the rectal cavity is a condition *sine qua non*, or at least very favorable to the formation of a prolapsus. The abdominal and the uterine pressures, acting simultaneously, upon such easily displaced organs, must have for results its expulsion by the anus. But with these pressures and as a consequence of the displacement of the intestine backwards and outwards, varying from 30 centimeters to one and half meters, the double of the length of the rectal bag, there must have been a laceration of the peritoneal support of the intestine, viz.: the peri-rectal peritoneum, the mesorectum and even that of the floating colon, which may have given away in a more or less considerable length and hence a necessary and fatal complication.

The physiological sequelæ of such lesions are readily understood. The intestine is deprived of the blood vessels and nerves which reach its small curvature between the two folds of the peritoneum which support it. Its muscular coats become paralyzed, anæmia of its structure is manifested by the gangrenous aspect of the organ, coprostasis and peritonitis will in short time finish their work by the death of the animal.

The diagnosis of these secondary lesions is not difficult for the practitioner, who carries them in his mind. The extent of the prolapse is to be taken in consideration, first of all, and when the portion of the intestines projecting is about 30 centimeters in length, the probabilities of the lesions must always be suspected. The reduction may be made very quick and without difficulty, but if coprostasis is manifested soon after, if rectal examination reveals a condition of the rectum being flappy and empty, with a mucous membrane dry and without mucous lubricating it, there can be no more doubt, the case is complicated with rupture proportional to the extent of the prolapsus. The

passage of gases and the immediate return of enemas which may be observed, are due to abdominal pressure and not to the contractions of the intestine. As a consequence of this condition the general health of the animal is rapidly modified, fever takes place, there is loss of appetite, constipation, colics, violent expulsive efforts, septicemia peritonitis and finally death in four or five days.

With these conditions, of course, Prof. Williams was right, "the prognosis is always serious." Out of 15 cases, statistics record one recovery only, or a mortality of 92%.

Is there a treatment? Hamoir resumes it as follows: With manual evacuations of the rectum, soothing enemas, or laxative injections, and the life of the animal may be saved for a few days, but notwithstanding these, death will finally occur.

The only rational therapeuty consists in the resection of the intestine, deprived of its vascular and nervous support and which is paralyzed and anemic. Reproduce the prolapsus, which is not always easy to do, resect all the prolapsed portion a few centimeters from the anus, suture the two concentric extremities of the rectum and complete the operation according to the general *modus operandi*. *When the Prolapsus is Extensive*, do not be tempted to be satisfied with the deceiving success of a reduction which is generally easy, *but do operate immediately*.

As prophylactic measures, Hamoir recommends that *one or several evacuating enemas be given to pregnant mares as soon as the work of delivery sets in*.

* * *

ANTIPHYMATOL AGAINST BOVINE TUBERCULOSIS.—In the last October issue of the *Zydsch ft voor Vecartsenijhunde*, there is an article on this subject by Prof. Klimmer relating to his method of vaccination by the use of antiphymatol, which is resumed as follows:

The experience of the last ten years has demonstrated that tuberculosis cannot be controlled in an efficacious manner by hygienic measures only or by the preventive inoculation accord-

ing to the methods of von Behring or that of Koch-Schutz. The acquired immunity granted by this inoculation does not last much more than a year and cannot be made longer, as animals of a certain age stand inoculations badly and besides there is danger of human virulent bacilli passing into the milk. And again, intra-venous inoculation gives about 7.5% of loss, and is not without danger for man either, at the time of the operation, or by the use of the milk or of the meat of animals recently immunized. On those accounts this method is left aside in Germany.

Since five years, the professor has, with a number of his colleagues, used a new method consisting in the union of a preventive and curative inoculation with the easy application of hygienic measures. He uses a vaccinating substance, *antiphymatol*, entirely harmless for men or bovines, and whose vaccination can be renewed each year so as to give a lasting immunity. The innocuity of antiphymatol for bovines is proved by fifty thousand inoculations. Calves of from one to two days old, or aged and also pregnant cows, as well as bovines already tuberculous, have stood the inoculations well. No observations of latent diseases made more serious have been seen and a favorable effect on the tuberculous process has been observed.

The inoculations are made under the skin, they do not give rise to pulmonary inflammation, œdema or abscesses, as they are noticed so often after the injection of virulent bacilli.

Antiphymatol is absolutely harmless for the man who makes the inoculation or for the one who drinks the milk or eats the meat of the vaccinated animal.

* * *

Klimmer has controlled the preventive action of antiphymatol compared with the preventive action obtained by the inoculation of human or bovine bacilli, attenuated by heat; taking for this nine cattle, infected experimentally. The infection was made by the intravenous injection of 1-2 milligramms of bovine bacilli,

three months after the subcutaneous or the intragenous preventive inoculation. This infection gave amongst the control cattle an acute attack of tuberculosis after 4 to 6 weeks, while the animals vaccinated two to four times with antiphymatol stood it very well. These cattle, in good condition, were killed from 3 to 5 months after having been infected and at the post mortem in two of them there were found lesions. One had two and the other seven small tuberculous calcareous deposits as big as the head of a pin in the mediastinum and lymphatic glands. The other animals which had been vaccinated with antiphymatol two or four times showed no tuberculous lesions whatever. Prof. Schurer of Vienna has extensively experimented with Klimmer's method and says: "The method is harmless for the subjects to vaccinate and for the one who does it. The meat is not dangerous to consume even when the animal has been killed a short time after the vaccination. This inoculation gives for a certain length of time a great resisting power against the disease, but the duration of this immunity remains yet to be determined."

Antiphymatol has also been experimented with to the point of view of its curative properties. In this the results were very satisfactory. The application of the method can be resumed as follows: The animals are first submitted to the ocular test with phymatine, to separate the healthy ones and get an idea of the extent of the disease in the herd. The subjects affected with advanced tuberculosis and specially those that have lesions of the udder are killed as soon as possible. The vaccination is made with 5 c.c. of the product (sold by Humann and Teissler of Dohna, Saxony). The injection is made on the left side of the neck. It must be done the first year once, with non-tuberculous stock and with those that are affected three times at three months apart. The following years it is made only once. Calves are vaccinated when three months old. So as to avoid an infection of the calves before the vaccination, they must be fed only with milk coming from healthy cows or with pasteurized milk.

EXSUFFLATION IN PLEURITIC EXUDATIONS.—It is yet but a short time when all the treatise of medicine and therapeutics, at the chapter of Thoracentesis, recommended great care to avoid the introduction of air in the pleura. To-day, not only the introduction inspired is feared no longer, but even is it considered as a therapeutic application and is resorted to quite freely. The indications are daily increasing and the days are not far when it will be part of the technic of complete Thoracentesis.

Dr. Gouget writes indeed in the *Presse Medicale*: Since Parker, who, according to the *Lancet*, wrote an article headed "Suggestions for the treatment of special cases of Empyema by Thoracentesis and the simultaneous injection of air," and who was the first to inaugurate this treatment in 1882 so as to allow the evacuation of pus in some cases of empyemas with thick rigid walls, the introduction of air in the pleura has been permitted by a certain number of operators in various circumstances and with equally different objects.

Some like Eward, and Benham, Wenckebach, Huss, have applied it for chronic empyema, to facilitate the escape of pus and avoid the retraction of the chest. Others like Potain, have made it a mode of treatment for hydropneumothorax, to prevent the reopening of the pulmonary fistula and a new collection of the exudate. It was with the same object in view that Vaquez and Quiserne, Achard and Grenet employed it for receiving pleurisies. And again others to avoid incidents and accidents (pains, coughs, expectorations) of thoracentesis and allow the complete evacuation of very abundant exudates. Finally, Mosny and Stern have shown that alone, the introduction of air in the pleura, permitted the possibility of the escape of fluid in some cases of "Blocked" pleurisies.

To resume the various indications which seem to be free from discussion, there are:

1. The introduction of air in the pleura is the only means to evacuate some "blocked" effusions, in pleurisies with thick rigid walls;

2. In overcoming the effects of the aspiration or even the simple decompression upon the pulmonary tissue and upon the thoracic wall, it prevents pain, cough, pulmonary edema, re-opening of fistula and retraction of the walls. At the same time it permits the complete evacuation of the largest exudates.

3. It also seems to prevent in a certain measure the return of the fluid.

By opposition to all those advantages, what are the possible objections? With all reserve for the cases where a great quantity of air has been pushed in the pleura with the belief of making aspiration, there has never been any inconvenience mentioned. Not only the careful introduction of air in the pleura is harmless but it is not even necessary to have it filtered. Kawekara and Kawai, Achard and Helmgren have proved it. At any rate, does air infect peritoneum after laparotomy? Infection by atmospheric germs is no longer feared as in days gone by and filtration of the air can go aside with the spray which was used in the first days of antisepsy.

There is then no contra-indications to the introduction of air and its indications are so numerous that they cover almost all the cases, except those of recent and small effusion where even thoracentesis is useless.

Some authors have been brought to consider the introduction of air as the natural complement of all thoracentesis and resort to it systematically.

It is the practice of many, and in a recent article published in Stockholm by Holmgren, he goes even further, as instead of allowing the air to enter by aspiration he replaces it by a process which he calls *exsufflation* which he considers as *the* method of choice. Theoretically, the complete evacuation of the effusion and the presence of a thin layer of air between the pleura walls can be but advantageous. The first allows the complete unshrinkage of the lungs and it is not the slight elastic compression of the air that could interfere with it. At any rate its presence will prevent the formation of adhesences.

If this method would prove correct, many animals thus treated might be saved. Taking into consideration the serious characters that pleurisy sometimes assumed in horses the treatment with exsufflation might find its indications.

* * *

TRANSLUCID NODULES AND THOSE OF GLANDERS IN SOLIPED LIVERS, DIFFERENTIAL DIAGNOSIS.—The *Revue* of Leclainche reproduces from Dr. Cesari the resume of a series of articles, which were published in the *Clinica Veterinaria* by Dr. Francesco Valero, a while ago.

Frequently there are found in the liver of solipeds and principally of horses, white-yellowish nodules, very often calcified, varying in size from that of a seed of millet to that of a pea, which are disseminated sometimes in great numbers under the capsule of the organ or in the parenchym of the hepatic gland. These lesions are also found, but less frequently, in the lungs and the lymphatic glands.

For some authors, they are of glanderous origin and for others they are parasitic. Their nature has for a long time been the object of great discussions.

Successively, Oreste, Ercolani, Galli-Valerio, von Ratz, Lisi, Malesba, Scacco have shown that these lesions were most often due to eggs of distomas. Mazzanti, with many observations, admits that they may also be produced by embryos of *Strongylus Armatus*. On the contrary, Kittl, Olt, Ostertag, Grips, Schutz, Kunnemann think that in most cases they are lesions due to echinococci or coenurus. And finally, more recently Calnette comes with the examination of about one hundred livers, showing that in some cases these nodules are due to nematodes in some cases, to eggs of distomas in others or in the majority of cases form by *tenia echinococcus*.

However, all the authors agree in recognizing the analogy that, to the macroscopic point of view, exist between these parasitic nodules and those of glanders. Kitt, however, has made

the remark that when the nodules exist only in the liver, they cannot be of the nature of glanders, as this affection of the liver is always of embolic origin and, therefore, connected with the presence of more important glanderous lesions in other organs. But, leaving aside the cases where the nodules are strictly localized in the liver, it remains nevertheless a true fact that the macroscopic aspect is insufficient to decide whether one has before him glanderous or parasitic lesions or embolic infarcti, by thrombosis from the abdominal aorta, the portal vein or older embolies from the umbilical artery.

* * *

To this point of view can the presence of general, or perhaps better, of local eosinophily be of any value? Schutz, after calling the attention to the presence of eosinophiles in parasitic nodules, has demonstrated the diagnostic importance of this character to distinguish the tubercles of glanders from the parasitics. But it must be acknowledged that if the absence of eosinophily may justify the exclusion of a suspicion of the parasitic nature of the lesions, one cannot conclude to the nature of glanders origin, and in this case it is necessary to resort to other methods of diagnosis.

Fracaro, in his researches, has proposed to find to what extent it was possible to trace the parasites by their remains or by their eggs in the nodules of the liver and also to find out the presence or the absence of local eosinophily and thus find the simplest technic to reach a positive diagnosis.

In none of the numerous lesions that he has examined to this purpose has he succeeded in finding the presence of the parasites, their remains or their eggs. But these negative observations have proved nothing against the theory of the parasitic origin as the calcification of the lesion destroys them very easily. By opposition, histological sections have always shown numerous eosinophilous cells, gathered in the neighborhood of the nodules and of granulations easily discovered. He has succeeded in exhibiting these eosinophilous elements in simple frottis made

from the hepatic tissue surrounding them. He fixed the preparation with alcohol-ether during 15 minutes, colored them 10 minutes with a boiling solution of Giemsa, and then washed them with distilled water.

By this method the differential diagnosis between the parasitic nodules and those of glanders is rapidly made by the discovery of the local eosinophily.

* * *

PNEUMOCOCCIC INFECTION.—How many unknown facts do yet exist in the solution of this important problem. From the *Presse Medicale* I find the following, which I present to our readers as interesting, even if indirectly pertaining to our medicine. In days gone by, cold explained everything in the process of infection in pulmonary diseases. Then came the theory or better, the discovery of the pneumococcus, which seemed to settle the question, notwithstanding the discussion relating to the manner in which the microbes was transmitted. It is now nearly proved that the bronchial and pulmonary mucous membranes, in healthy condition, cannot be penetrated by the pneumococcus. The blood and the lymphatic circulation appear to be more in favor now and pneumonia may be considered as only a secondary localization of the microbe. To invade the organism, the pneumococcus finds its way of entrance most often in the buccopharyngeal tract, sometimes through the skin or the mucous membranes, exceptionally through the intestines.

After these considerations the author that I reproduce enters into the most interesting part of his work, viz.: the contagion of pneumonia, specially by the medium of fleas.

Mice are very susceptible to pneumococcus and experience has proved that fleas play a very important part in the pneumococcic contagion from mouse to mouse. Every flea, having bitten a pneumococcic animal, carries into its organism quite a number of pneumococci, which are detected in the excreta of the fleas. Besides this, the bite of a flea on the skin becomes a sufficient door of entrance for the microbe to pass.

Can the pneumonia of mice be transmitted to man? There are facts which seem to prove it. The fleas of rats and of mice are fond of human blood and they bite men. Living on a pneumococcic animal, the fleas carry with them numerous pneumococci that they have picked up on the bed of sick people or sucked from their blood. And again, clinical facts have a tendency to plead in favor of this possible transmission of pneumonia by fleas. Some true epidemics have been observed. The pneumonias are more frequent in months where the reproduction of fleas is greatest. Some trades have more pneumonias than others, principally those that are more exposed to the bites of the parasites.

The conclusions of the writer are that he firmly believes in the possibility of this mode of contagion. It is true that it is not the only means of infection by the pneumococcus, but wherever fleas have passed the microbe can be found.

Another vengeance of the little ones against us! Bites of fleas are already much disliked, certainly this new theory of the infection of pneumonia will not make them any less disagreeable, and in our days of pulmonary pest they will certainly be considered as much more than that!

* * *

BIOGRAPHICAL NOTES.—“*Le Cheval de Course*” (The race horse) is a new book published here by J. Q. Bailliere and Son.

Written by two veterinarians, M. M. Gobert and Cagny, this work, although it may be considered as a new departure for veterinary writers to bring out, is one which will be read by members of that profession, as well as by horsemen, taking the word in its broadest sense (breeders, stock raisers, trainers and also practitioners) as in the 500 pages that the book contains lots of pleasant reading, of interesting facts, practical and theoretical are treated in such manner that not only one will enjoy the perusal of the work but also gain knowledge by it.

The work is divided in two parts. In the first, Breeding is treated at large. Haras, selection of the reproducers, the mares as well as the stallions, the hygiene of both and that of the foals, with the peculiar disease of these three different unities.

In the second part the subject of training forms the principal portion. The feeding and its modifications according to the requirements of condition, the conditions of the race horse, the doping, shoeing—all these parts have received by the authors a careful attention, for which in fact they have been well prepared by a long practice among this class of horses. This part is completed with the examinations of the various diseases which might be said are proper to the race horse, these being considered, however, in a general way and without any attempts to interfere with the general practitioner and its being required.

Thirty-nine illustrations add considerable interest to the various chapters of this interesting little work.

* * *

TRATTATO DI TECNICA E TERAPEUTICA CHIRURGICA, GENERALE E SPECIALE (Treatise of General and Special Surgery), by Prof. Doct. Lanzillotti-Buonsanti, the learned Director of the High Veterinary School of Milano.

This is the second part of volume III. of this important work, to which in previous occasions the REVIEW has referred already. It treats of the technical and therapeutic surgery of the upper half of the thoracic extremity and is divided into nine chapters. In the first the bandaging in general, in the second the operations demanded for the ailments of the cutaneous and muscular system of the shoulder and arm, in the third those relating to diseases of the nervous apparatus, in the fourth those of the scapula and humerus proper and their articulations. Chapter V. treats of shoulder lameness. The sixth of the care required for similar troubles of the elbow and fore-arm. In the seventh the affections of the cubitus and of the radius. In the eighth the operations connected with lesions of the carpus and in the

last median neurotomy. The balance of the work will be completed with four more parts, one treating of the upper half of the hind extremity, another of the tibial region, hock and two first phalanx, a third on the surgery of the foot and the last on amputations and dislocations. All those parts, like the preceding, will be illustrated by numerous photographs.

When completed this book will no doubt form one of the finest of Italian veterinary literature.

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I have also just received No. 2 of Volume IX. of the Chicago Veterinary College Bulletin. The December, 1910, number.

A. L.

THE DIAGNOSIS OF GLANDERS BY COMPLEMENT FIXATION.

The early diagnosis of glanders constitutes one of the most important and difficult tasks which confronts the veterinarian engaged in sanitary work. In those instances where there are no positive indications of the disease, it is impossible to establish a diagnosis by physical examination, and only through the aid of some special diagnostic method or test can there be any hope of determining the presence or absence of the disease. Horses affected with occult or latent glanders, and in which the disease is not suspected, are undoubtedly great factors in the propagation of the infection. Indeed, there are many glandered horses which do not show positive symptoms until later stages of the disease.

The first important step toward determining obscure and latent cases of glanders was made by the discovery of mallein. There are, however, a considerable number of glanderous ani-

mals in which the mallein fails to give a typical reaction, and, on the contrary, a reaction may follow the injection of mallein in the absence of glanders. The mallein is not an entirely reliable diagnostic agent for determining glanders, nor has it ever been considered as efficacious in the detection of this disease as tuberculin for the diagnosis of tuberculosis.

With the application of the agglutination test for glanders it appeared that a more satisfactory method had been found for the diagnosis of all types of infection with this disease.

While there is no doubt that the agglutination test is of great value in all cases of recent infection, nevertheless extensive experience has proved that horses affected with chronic glanders give occasionally a very low agglutination value, which in some cases is even lower than that of normal blood serum. From this condition it appears evident that in certain cases of chronic glanders the disease can be determined only by repeated tests, and a diagnosis in such cases is only possible from the fluctuation of the agglutination value—either an increase or a decrease—as it is a well-known fact that this value remains stationary in normal horses. Therefore, the agglutination test alone does not constitute an entirely satisfactory diagnostic method for glanders. However, as its great value has been proved beyond doubt in the early cases of infection, it may well be utilized as an adjunct to any other test which may be applied in connection with the diagnosis of suspected cases of the disease.

In 1909 Schutz and Schubert published the results of their important work on the application of the method of complement fixation for the diagnosis of glanders. And since their experiments were followed by splendid results, exceeding by far the results obtained from either the mallein or the agglutination test, they recommended that this method of diagnosis in combination with the agglutination test be taken as the official test in Germany. This method, overcoming as it does the disadvantages of the mallein and agglutination tests, constitutes without doubt the most reliable method for the diagnosis of glanders which we have at our command at the present time. The complement-fixa-

tion test is, in fact, the most definite method known for determining specific infections and is as nearly perfect as a biological test can be. It has only recently been introduced in veterinary science and the publications concerning it are at present limited to foreign periodicals.

This new method of diagnosing glanders which has given most favorable results in Germany, and constitutes at the present time the official test of Prussia and other parts of Germany, is described and discussed by Drs. John R. Mohler and Adolph Eichhorn in a bulletin (No. 136, B. A. I.) recently issued by the United States Department of Agriculture on "The Diagnosis of Glanders by the Complement Fixation."

Since this method of diagnosis for glanders was inaugurated in the laboratory of the Bureau of Animal Industry, large numbers of horses and mules have been examined in the District of Columbia as well as animals for other parts of the United States.

The results of the tests thus far conducted show that at least 97 per cent. of the cases of glanderous affections can be determined by the complement-fixation method.

The serum of glanderous horses contains immune bodies which develop during the course of the disease. The presence of these immune bodies in the serum is utilized in the development of the test. The necessary quantity of the serum for the test has been established through the painstaking experiments of Schutz and Schubert.

The substances which are used in making the test are described in the bulletin, their method of preparation and the detail as to the conduct of the tests are given with minuteness, and the reactions which take place are interpreted in terms of the amount of hæmolysis, that is, the reaction which takes place when the red blood corpuscles of one animal are introduced into another of a different species and are dissolved by its blood.

Thus the test tubes may show, either complete hæmolysis, incomplete hæmolysis or no hæmolysis whatever. The fixation of the complement is manifested by the absence of hæmolysis and

therefore indicates without doubt the presence of glanders. On the other hand, if the tubes show complete hæmolysis, the absence of glanders is indicated.

In the presence of glanders a fixation of the complement takes place as a result of anchoring the immune bodies and antigen, which, in the absence of glanders, there being no immune bodies present, the complement is used up in the phenomenon of hæmolysis.

The Department's experience as well as the work of the German scientists shows that the results of the complement-fixation tests should be interpreted as follows:

1. Horses in which the serum produces a complete fixation of the complement should be considered as glanderous.
2. Horses in which the serum gives an incomplete fixation of the complement should be considered as glanderous.
3. Only horses in which the serum shows no fixation of the complement are to be considered free from glanders.

Animals affected with glanders will give a positive reaction. Normal animals otherwise affected with diseases other than glanders will give no reaction.

UNIFORMITY OF VETERINARY DEGREES.

No one can read, in the present number, the conclusion of Dr. Schwarzkopf's article on uniformity of veterinary degrees begun in the April number, without being impressed with his earnestness, his lack of prejudice, the wonderful fund of information he has upon the subject and the very great amount of study he has given the matter. We scarcely hoped when we asked the members of the American Veterinary Medical Association and of the profession generally to make suggestions that would lead to a definite action on this important matter at the coming convention, that anyone stood ready with so much to offer that would seem to elucidate the most knotty questions and

finally lead up to a resolution to the Secretary of Agriculture. It seems another demonstration of the old adage that there is always a back for the burden. Aside from his fund of knowledge on the subject, which has made it possible for Dr. Schwarzkopf to treat it so fully and thoroughly, the doctor is peculiarly suitable to write on the subject because of the fact, that, while he has been a member of the American Veterinary profession for twenty-six years, and is, therefore, thoroughly familiar with the condition and needs of the profession in America, yet he is not an American graduate and holds no American degree; nor is he prejudiced for or against any particular college or degree. He has weighed the evidence carefully and dispassionately and looked at it from every viewpoint, and has finally arrived at the D. V. M. degree by elimination. We are sure that his efforts will be thoroughly appreciated by President Glover and the entire membership of the American Veterinary Medical Association, and that his contribution will stir into action the entire veterinary profession of America on this subject of primary importance to our profession.

THE A. V. M. A. AT TORONTO IN AUGUST.

In this month's issue of the REVIEW under the head of correspondence, our readers will find a communication from Principal E. A. A. Grange, of the Ontario Veterinary College, chairman of the local committee of arrangements of the American Veterinary Medical Association. In the communication Chairman Grange, with true Canadian thoroughness, has laid the foundation for what promises to be the most largely attended and most successful meeting in the history of the association. Our readers will see that the committee is well prepared to entertain a very large gathering. In our next issue we will erect upon this foundation, the frame-work of the 1911 meeting; the outline of the program, plans for entertainment, etc., and in

the July number round out the complete program. We learn from Secretary Marshall that the members having charge of the several divisions of the program are making progress, and from present indications, we should have one of the best literary programs yet offered. Dr Rutherford, who has charge of the division on Sanitary Police Measures, has announced to the secretary that he has promises of papers from Drs. R. G. Hickman, Paul Fischer, W. H. Dalrymple and C. D. McGilvray. Dr. John R. Mohler, who has charge of the division of Pathology and Bacteriology, has papers promised from Drs. E. C. Schroeder, W. E. Cotton, Adolph Eichhorn, John Reichel and Karl F. Meyer. The subject of the paper to be presented by Drs. Schroeder and Cotton (jointly), is, "An Undescribed Pathogenic Bacterium in Milk." Dr. Eichhorn's paper will be on "Immune Bodies and Biological Reactions." Dr. Reichel's subject is "Preventive Treatment of Rabies in Animals." Dr. Karl F. Meyer will present a paper on "The Pathology of Nephritic Affections in Domesticated Animals." The above subjects treated by the men whose names accompany them is surely a literary treat in itself, and that comprises only one division. Prepare for Toronto now.

WHY NOT A SPECIAL TRAIN TO TORONTO FROM NEW YORK?

With the pleasant memories of the recent trip to the Coast on the American Veterinary Special, it has occurred to us that much pleasure and convenience could be added to the trip to Toronto by running a special train from New York. This train would not only be convenient to members from New Jersey, Eastern Pennsylvania and the New England States, but could be used advantageously by members from the West who desired to spend a few days, or even hours, in the American metropolis en route to the convention city. They could procure tickets from their homes to New York and return over the roads most con-

venient to them, and join the Eastern members on the "Special" from New York. The New York Central has a train leaving New York at 6.30 P. M. and arriving in Toronto at 8.40 the following morning. Or an early morning train might be arranged for, arriving in Toronto on the evening before the opening of the convention. The fare over this road would be \$10.25; berths, \$2.50; lower, \$4.50 for section, and \$9 for drawing room. Returning, those with time to spare and not wishing to return direct, may return by way of Thousand Islands, St. Lawrence River, Montreal, Quebec, thence through the White Mountains, or by way of Niagara Falls, Adirondack and Green Mountains.

We merely make this as a suggestion at this time, but if it meets with the approval of the local committee and is welcomed by the members, the REVIEW will do everything in its power to bring it to maturity. Mr. Frank C. Foy, the Canadian agent of the New York Central Lines, is accessible to the Chairman of the Local Committee, and our proximity to the headquarters in the city out of which the special would run, would make it possible for us to render the committee material aid. Let us have an expression from the committee and the members.

SECRETARY YARD, of the State Veterinary Examining Board of Colorado, announces that the midsummer meeting of the board, for examination of graduates will be held at Denver, June 6 and 7.

WE are in receipt of a copy of the Fourteenth Annual Report of the United States Live Stock Sanitary Association, which includes in its membership leading Federal and State Sanitary Live Stock officials. It is of great value to every one interested in improvement of general live stock conditions, live stock transportation and marketing. It also contains a large amount of useful information to every one engaged in the live stock business. The articles, addresses and discussions published are reported so that farmers and stockmen may easily understand them. The report is for general distribution, and can be had from the secretary, J. J. Ferguson, Union Stock Yards, Chicago, at \$1 per copy.

ORIGINAL ARTICLES.

SOME RECENT EXPERIMENTS ON INFECTIOUS ANAEMIA OF THE HORSE.

BY M. FRANCIS AND R. P. MARSTELLER, COLLEGE STATION, TEXAS.

In Bulletin 119 of the Texas Experiment Station there appears an account of a serious and fatal disease of horses and mules in which the most prominent symptoms are a progressive emaciation with periodical attacks of fever.

It seems quite probable that the disease is identical with what has been known for years as "swamp fever" in the Middle West. The authors made some effort to find the specific character of the disease by inoculation of horses, mules, cattle, pigs, sheep, goats and dogs, and found all but horses and mules were not susceptible. They made a large number of examinations of the blood for protozoa and bacteria, and attempted to cultivate a germ from the infected blood by the usual methods employed in bacteriology, but all their efforts were fruitless. They even passed virulent blood through a porcelain filter and found that the filtrate is infectious. As it is now more than two years since the bulletin appeared, and as during this period infected animals have been under daily observation, it would seem that the results of some experiments may be of interest to other workers in the same field.

EXPERIMENT I.

This experiment was made to ascertain how the infection spreads from one animal to another under natural conditions. In May, 1908, we put a middle-aged pony, named "Richard," in the same lot with several infected horses and mules. They associated with each other, ate from the same manger, drank from the same trough, and grazed together in a small pasture

containing about eight acres, for more than two years. During this time daily observations were made of the temperature of "Richard" and at no time did we find it beyond the limits of normal variation. As he had apparently every possible opportunity to contract the disease, but had not done so, the suggestions arose that he might have been already infected before the experiment began, or that he was immune to the disease. To eliminate the former possibility two horses were injected with his blood, both of which remained well. There remained the latter point to be cleared up. On June 30, 1910, which was more than two years since the experiment began, we injected him with 3 c.c. of blood from an infected mule. High fever began on the twelfth day and again on the twenty-third day, which proved fatal.

TEMPERATURE RECORD OF "RICHARD."

1910.		
Date.	Temperature.	Remarks.
June 30	.....	Injected with 3 c.c. virulet blood, subcutaneously.
July 1	100.2	
July 2	100.6	
July 3	100.4	
July 4	99.6	
July 5	100.	
July 6	99.8	
July 7	100.4	
July 8	100.6	
July 9	100.4	
July 10	100.6	
July 11	102.4	
July 12	104.8	
July 13	106.2	
July 14	106.4	
July 15	106.4	Injected 200 c.c. of a 2% solution of Trypan blau into jugular vein.
July 16	101.	Eats well. Mucous membranes blue.
July 17	100.8	No swelling at point of injection.
July 18	100.4	
July 19	100.	
July 20	100.	
July 21	100.4	
July 22	101.	
July 23	104.8	Gave 5 gms. Trypan blau intravenous in 250 c.c. sterile water.
July 24	106.	Mucous membranes very blue.
July 25	105.	Very sick, won't eat, petechiæ on conjunctiva.
July 26	....	Dead.

EXPERIMENT II.

Having seen that a healthy horse associated for more than two years with diseased ones, during which period it ate and drank from the same troughs, we now decided to ascertain whether or not a horse can be infected through the digestive tract.

On November 26, 1908, we drew four ounces of virulent blood from the jugular vein of Horse 11, which was at this time having an acute attack of infectious anæmia. (See Bulletin 119, page 19.) This was immediately injected into the back part of the mouth of Horse 12 with the ordinary dose syringe. Note the following data :

Date.	Temperature.	Remarks.
1908.		
November 26	98.	
November 27	99.4	
November 28	99.	
November 29	99.4	
November 30	99.8	
December 1	99.6	
December 2	99.	
December 3	98.8	
December 4	98.8	
December 5	98.6	
December 6	99.	
December 7	98.8	
December 8	100.2	} First Reaction.
December 9	101.8	
December 10	102.6	
December 11	102.	
December 12	99.8	
December 13	98.	
December 14	98.4	
December 15	100.	
December 16	102.6	} Second Reaction.
December 17	102.4	
December 18	101.8	
December 19	98.4	
December 20	98.	
December 21	99.	
December 22	98.6	
December 23	98.4	
December 24	98.4	

Date.	Temperature.	Remarks.
1908.		
December 25	98.2	} Third Reaction.
December 26	99.4	
December 27	99.8	
December 28	102.	
December 29	103.8	
December 30	103.	
December 31	103.	
1909.		
January 1	100.4	} Fourth Reaction.
January 2	100.	
January 3	99.4	
January 4	98.4	
January 5	98.4	
January 6	97.8	
January 7	98.6	
January 8	98.4	
January 9	99.2	
January 10	101.8	
January 11	102.	
January 12	104.2	
January 13	105.2	} Gave 4 oz. of blood to horse 13.
January 14	105.2	
January 15	102.6	} Fifth Reaction.
January 16	101.	
January 17	101.6	
January 18	99.2	
January 19	98.6	
January 20	98.6	
January 21	100.2	
January 22	100.	
January 23	100.2	
January 24	100.4	
January 25	100.	
January 26	99.6	
January 27	99.6	
January 28	99.4	
January 29	98.6	
January 30	99.	
January 31	101.4	
February 1	103.	
February 2	105.2	
February 3	105.	
February 4	103.6	
February 5	101.	
February 6	100.2	
February 7	98.8	
February 8	99.	
February 9	99.6	
February 10	98.	
February 11	98.8	

Date.	Temperature.	Remarks.
1908.		
February 12	99.6	
February 13	99.6	
February 14	98.	
February 15	98.	
February 16	100.6	
February 17	98.	
February 18	100.	
February 19	100.	
February 20	100.4	
February 21	103.2	
February 22	105.	Sixth Reaction.
February 23	103.8	
February 24	100.6	
February 25	100.6	
February 26	99.6	
February 27	98.8	
February 28	101.6	
March 1	99.2	
March 2	99.4	
March 3	99.2	
March 4	99.8	
March 5	100.6	
March 6	102.	
March 7	102.4	Seventh Reaction.
March 8	102.	
March 9	102.	
March 10	102.6	
March 11	102.6	
March 12	100.4	
March 13	101.	
March 14	100.	
March 15	99.	
March 16	100.	
March 17	100.2	
March 18	100.	
March 19	99.	
March 20	100.4	
March 21	101.4	Eighth Reaction.
March 22	101.	
March 23	102.6	
March 24	Dead.	

On January 16, 1909, just at the close of the fifth reaction, we drew four ounces of blood from the jugular vein of Horse 12 and immediately injected into the mouth of Horse 13, with the ordinary dose syringe. This caused the death of Horse 13 on April 10.

Please follow this record of Horse 13:

Date.	Temperature.	Remarks.
1909.		
January 16	99.	
January 17	99.	
January 18	99.	
January 19	98.8	
January 20	98.4	
January 21	99.6	
January 22	99.	
January 23	99.2	
January 24	98.6	
January 25	98.4	
January 26	98.4	
January 27	98.	
January 28	98.	
January 29	98.	
January 30	97.8	
January 31	99.4	
February 1	98.4	
February 2	98.	
February 3	99.	
February 4	99.	
February 5	98.2	
February 5	98.	
February 7	98.	
February 8	99.	
February 9	98.4	
February 10	98.	
February 11	104.8	} First Reaction.
February 12	101.	
February 13	100.	
February 14	99.8	
February 15	100.	
February 16	100.6	
February 17	101.	
February 18	102.6	} Second Reaction.
February 19	101.6	
February 20	100.8	
February 21	101.6	
February 22	101.	
February 23	101.8	
February 24	101.2	
February 25	100.8	
February 26	103.6	
February 27	103.6	
February 28	101.6	
March 1	99.8	
March 2	99.8	
March 3	99.6	
March 4	99.	

Date.	Temperature.	Remarks.
1909.		
March 5	99.2	Third Reaction.
March 6	102.	
March 7	105.4	
March 8	104.3	
March 9	103.	
March 10	102.4	
March 11	103.	
March 12	103.6	
March 13	102.4	
March 14	101.6	
March 15	102.8	
March 16	103.6	
March 17	101.6	
March 18	101.6	
March 19	102.4	
March 20	102.2	
March 21	101.	
March 22	100.	
March 23	102.	
March 24	99.6	
March 25	100.	
March 26	102.	
March 27	101.8	
March 28	102.	
March 29	101.8	
March 30	101.4	
March 31	100.	
April 1	100.6	
April 2	98.	
April 3	99.6	
April 4	98.	
April 5	100.	
April 6	100.6	
April 7	100.8	
April 8	100.2	
April 9	100.6	
April 10	Dead.	

On March 25 we gave another horse four ounces of blood via mouth from Horse 13, but this failed to infect him, though we recorded his temperature daily for seven months.

Surely no one who reviews this data can doubt that infection may occur through the digestive tract.

EXPERIMENT III.

Every one who has lived for some time in Texas must have frequently noticed that some horses become badly infested with cow ticks in the summer time, while others are almost free from them. This led us to a trial of collecting ticks from a horse whose blood we knew to be virulent and after hatching the young ticks in the laboratory, to try to infect another horse by placing the young ticks on it.

September 23, 1910, we collected about twenty mature female ticks (*Boöphilus annulatus*) from a horse infected with infectious anæmia. These were taken to the laboratory and kept in a glass dish, in a subdued light. Egg laying began at the usual time and in fifty or sixty days the vessel contained thousands of larvæ. On November 21, which was a warm, pleasant day, we emptied the ticks on a woolen blanket and then fastened the blanket to a horse's body, so as to bring the young ticks in contact with the skin along the belly, breast, and about the elbows. We left this on twenty-four hours, so as to insure warmth and contact. On removal of the blanket there were hundreds of small lumps on the skin, each containing a dozen or so erect hairs, where it seemed the young ticks must have bitten the horse. These lumps passed away in three or four days. The horse was kept isolated and his temperature recorded daily for seventy days, but no signs of sickness followed the experiment.

EXPERIMENT IV.

The periodical attacks of fever in this disease are very similar to those observed in malaria of man, and in diseases due to piroplasma. As quinine is quite successful in malaria we decided to try it on infectious anæmia. In this experiment the bisulphate was given in capsules via mouth.

On June 29, 1910, a ten-year-old mule, we will call "Stasney," was injected subcutaneously with 2 c.c. of virulent blood. The mule was in good physical condition, except a large ringbone for which he had been "nerved."

His record is as follows:

Date.	Temperature.	Remarks.
June 29	100.	
June 30	100.2	
July 1	100.	
July 2	100.2	
July 3	98.8	
July 4	98.6	
July 5	99.	
July 6	99.2	
July 7	98.8	
July 8	99.6	
July 9	99.2	
July 10	99.2	
July 11	99.6	
July 12	99.	
July 13	99.4	
July 14	100.6	
July 15	100.2	
July 16	100.	
July 17	99.	
July 18	99.	
July 19	99.	
July 20	99.6	
July 21	101.	
July 22	100.	
July 23	100.2	
July 24	99.6	
July 25	100.6	
July 26	103.4	
July 27	105.	
July 28	100.6	
July 29	99.6	
July 30	98.6	
July 31	100.4	
August 1	103.4	
August 2	103.	
August 3	103.	
August 4	100.	
August 5	100.	
August 6	100.	
August 7	100.6	
August 8	99.4	
August 9	99.6	
August 10	102.	
August 11	99.6	
August 12	99.6	
August 13	100.6	
August 14	101.	
August 15	100.4	
August 16	100.	
August 17	102.	

Date.		Temperature.	Remarks.
August	18	104.	
August	19	105.	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine.
August	20	103.6	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine.
August	21	103.4	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine.
August	22	101.2	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine. Don't eat.
August	23	100.6	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine. Mopes around.
August	24	99.	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine. Losing flesh.
August	25	99.	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine.
August	26	98.	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine.
August	27	100.	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine.
August	28	104.	No Quinine. Mule sick.
August	29	100.6	
August	30	99.6	
August	31	100.	

From September 1 the temperature remained within the limits of normal variation and continued so about twenty days. As a result of accident the foot affected with ringbone became swollen, the hoof sloughed off, and the animal was destroyed. The experiment was not a satisfactory one. The indications were that quinine produced an arrest of the fevers in this instance. Further trials should be made along this line.

EXPERIMENT V.

This was a trial of the preparation called "Atoxyl," which has recently been used with some success for infections with trypanosoma in Africa. It was dissolved in freshly boiled water, after it had been cooled to blood heat, then injected subcutaneously. Symptoms of arsenical poisoning were not observed as they were in some experiments made on cattle for Texas fever. The experiment was as follows: January 17, 1910, a middle aged bay gelding we called "Currie," was given five c.c. of virulent blood subcutaneously.

The record follows:

Date.	Temperature.	Remarks.
January 17	97.8	
January 18	98.8	
January 19	98.	
January 20	99.	
January 21	98.6	
January 22	98.6	
January 23	98.2	
January 24	98.4	
January 25	98.2	
January 26	98.4	
January 27	98.2	
January 28	98.	
January 29	97.6	
January 30	99.	
January 31	100.6	
February 1	104.6	
February 2	104.	
February 3	100.8	
February 4	101.2	
February 5	100.8	
February 6	101.	
February 7	100.4	
February 8	99.4	
February 10	99.	
February 11	99.6	
February 12	99.	
February 13	97.8	
February 14	100.	
February 15	103.4	
February 16	103.4	Gave 2½ grms. Atoxyl in 50 c.c. water subcutaneously.
February 17	101.6	
February 18	100.8	Repeated the Atoxyl.
February 19	101.8	
February 21	102.	Repeated the Atoxyl.
February 22	101.	
February 23	100.8	
February 24	101.	
February 25	101.4	
February 26	104.6	Repeated the Atoxyl.
February 27	103.6	Repeated the Atoxyl.
February 28	102.	Repeated the Atoxyl.
March 1	102.4	Repeated the Atoxyl.
March 2	103.6	Repeated the Atoxyl.
March 3	102.8	Repeated the Atoxyl.
March 4	101.4	Dead.

A careful post-mortem examination was made, but we were unable to say that the cause of death was poisoning, with atoxyl.

It seemed to us that atoxyl had failed to be of value for infectious anaemia of the horse.

EXPERIMENT VI.

On June 30, 1910, a twelve-year-old sorrel mare, we may call "Boriski," was given subcutaneously fifteen c.c. of porcelain-filtered blood from a mule whose blood was known to be virulent. When the fever reactions occurred we gave intravenous injections of a solution of trypan roth (Gruebler) to see what the result would be. The daily record follows:

Date.	Temperature.	Remarks.
July 1	100.	
July 2	99.6	
July 3	99.2	
July 4	99.	
July 5	99.	
July 6	99.6	
July 7	99.4	
July 8	99.6	
July 9	100.4	
July 10	101.6	
July 11	102.4	
July 12	102.4	Sick, mopes around.
July 13	103.	Sick, indifferent towards food.
July 14	103.	Gave 200 c.c. of a 2% solution of trypan roth, intravenous.
July 15	101.6	Urine red.
July 16	100.6	
July 17	101.2	
July 18	100.4	Eats grass only.
July 19	103.4	Repeated the trypan roth. Don't eat.
July 20	103.4	Repeated the trypan roth. Passed one gallon red urine.
July 21	104.	Don't eat, passing red urine, mucous membranes red.
July 22	104.6	Eats some to-day.
July 23	104.2	Gave 5 grammes trypan roth in 250 c.c. water.
July 24	104.	Won't eat. Mucous membranes red as losin.

Date.		Temperature.	Remarks.
July	25	103.8	No local swelling at point of injection.
July	26	103.8	Eats some, seems better to-day.
July	27	102.4	
July	28	101.2	
July	29	101.6	Eats fairly well; mucous membrane pink yet.
July	30	101.6	
July	31	103.8	
August	1	.....	Urine clear again. Mucous membrane becoming normal color.
August	2	102.8	
August	3	102.4	Anus relaxed, becoming weaker.
August	4	102.8	Urine pink yet.
August	5	102.6	Looks sick, mopes around.
August	6	101.	
August	7	103.4	Anus relaxed, frequent urination.
August	8	102.	
August	9	101.6	Won't eat sorghum. Fed bran and chops.
August	10	103.2	Becoming weaker every day.
August	11	102.4	
August	12	102.6	
August	13	101.2	
August	14	101.2	Down, can't get up.
August	15	Dead.	

This experiment shows two things:

First—That the virulent principle may pass through a fine porcelain filter.

Second—That trypan roth, as we used it, is of no value as a curative agent in this disease.

EXPERIMENT VII.

This is an experiment to ascertain the value of trypan blau (Gruebler) as a remedy for infectious anæmia of the horse.

January 15, 1910, a large grey mule we call "Langley" was given five c.c. of virulent blood subcutaneously and the tempera-

ture taken and recorded daily. We omit the long intervals of normal temperature:

Date.	Temperature.	Remarks.
February 6	104.2	First Reaction. No Medicines Given.
February 7	100.6	
March 29	102.6	Second Reaction. Injected 100 c.c. of a 2% solution of trypan blau into jugular vein. Thirty minutes after the injection he passed blue urine, but no sickness or swelling at the point of injection followed.
March 30	103.2	
March 31	101.6	
May 2	100.8	Third Reaction. No Medicine Given.
May 3	102.8	
May 29	100.4	Fourth Reaction. No Medicine Given.
May 30	104.2	
May 31	103.	
June 1	102.6	
June 2	101.	Fifth Reaction. Injected 200 c.c. of a 2% solution of trypan blau into jugular vein.
June 28	104.8	
June 29	104.8	
June 30	103.8	
July 1	101.2	Sixth Reaction. No Medicines Given.
August 28	104.4	
August 29	104.6	
August 30	103.	Seventh Reaction. No Medicines Given.
September 22	104.2	
September 23	104.2	
September 24	103.6	
September 25	103.6	
September 26	101.2	Eighth Reaction. Injected 8 grammes trypan blau, dissolved in 400 c.c. distilled water in jugular vein.
October 23	100.8	
October 24	103.6	
October 25	105.	
October 26	103.4	
October 27	102.	Ninth Reaction. No Medicines Given.
December 22	100.	
December 23	101.2	
December 24	102.6	
December 25	104.6	
December 26	103.4	
December 27	102.2	
December 28	101.	
December 29	101.2	Tenth Reaction. Injected 10 grammes of trypan blau dissolved in 500 c.c. sterile water into jugular vein.
December 30	100.4	
February 5	101.6	
February 6	106.	
February 7	105.	
February 8	102.	

The next day after making the injection we found the mule indifferent towards food. The mucous membranes were as blue as indigo, sub-mucous hemorrhages visible on the eyelids, and some swelling about the chest, but no swelling at the point of injection. In ten days the mucous membranes became about normal in color and the mule was eating as usual.

To review this experiment, we find that we have injected into this mule's blood:

First Dose, March 30	2 grammes in 100 c.c. water
Second Dose, June 30	4 grammes in 200 c.c. water
Third Dose, October 25	8 grammes in 400 c.c. water
Fourth Dose, February 6	10 grammes in 500 c.c. water

No marked sickness followed these injections. This mule is fed daily on corn chops and prairie hay, but he is losing flesh and strength and will probably die within sixty days.

* * * * * *

On June 30, which was during the fifth reaction, we injected 3 c.c. of this mule's blood under the skin of a horse we call "Richard," described in Experiment I., which caused the death of the horse twenty-six days later.

On the same day we filtered some of the mule's blood through a fine porcelain filter and injected 15 c.c. of the filtrate under the skin of a mare, which caused her death in six weeks. (See Experiment VI.) These two experiments were made before the trypan blau was injected into the mule.

On October 25, which was during the eighth reaction, we made the third injection of trypan blau. Eight days later we wished to know if the blood was virulent so soon after receiving this injection. To decide this point, we injected $2\frac{1}{2}$ c.c. of the "Langley" mule's blood into another mule we call "Froberg." The Froberg mule was kept isolated from all other animals and fevered three weeks later, showing

Date.	Temperature.	Remarks.
October 23	102.4	} First Reaction.
October 24	104.	
October 25	101.	
December 14	102.	} Second Reaction.
December 15	101.6	
December 16	101.	
January 11	101.	} Third Reaction.
January 12	104.6	
January 13	101.	

A study of the foregoing data shows that trypan blau, as we used it, to be of no value in checking infectious anæmia of the horse.

To review these experiments briefly we find that:

Experiment I. shows that a healthy horse associated more than two years with others sick with infectious anæmia without becoming infected.

Experiment II. shows that they may be infected through the digestive tract.

Experiment III. shows that in this instance we failed to transmit it with ticks whose parents had matured on an infected horse.

Experiment IV. shows some encouragement from the use of quinine. This should be repeated.

Experiment V. shows that atoxyl failed in this instance.

Experiment VI. shows that intravenous injections of trypan roth to be of doubtful value.

Experiment VII. shows that intravenous injections of trypan blau to have failed to arrest the disease.

PROF. W. REID BLAIR, of the Veterinary Department of New York University (New York-American Veterinary College), gave a stereopticon talk to the students at the New York State Veterinary College, Ithaca, on April 14. We congratulate the students at Cornell in having Dr. Blair, who is Professor of Comparative Pathology at the New York-American Veterinary College, and Veterinarian and Bacteriologist to the New York Zoological Park, address them.

THE PROBLEM OF A UNIFORM VETERINARY DEGREE FROM THE STANDPOINT OF HISTORICAL DEVELOP- MENT AND AMERICAN NEEDS.

BY OLAF SCHWARZKOPF, VETERINARIAN THIRD CAVALRY, U. S. ARMY.

[Continued from page 35.]

THE DEGREES OF THE VETERINARY SCHOOLS OF NORTH AMERICA.

The foregoing explanation of the historical origin and development of veterinary titles and degrees in Europe appeared necessary to show that they were largely dependent upon locality and the influence of time. These causes were also at work in the choice of the veterinary degrees by our American colleges, which exhibit interesting succession stages from the simplest title available to the presumptuous degree chosen without precedent or much judgment. Let us see how they came about.

In 1853 George Dodd started a veterinary college in Boston. It had no regular curriculum and but few students, as the need of veterinary colleges was still unknown in this country. The pupils of this school, in going into practice, signed behind their names V.S., indicating thereby the importation of the title from Great Britain.

In 1857 the New York College of Veterinary Surgeons was organized in New York City. It had a hard struggle for existence, but managed to live. The experience of this college paved the way for others to come and do better. The course extended only over two winter sessions, and the graduates were satisfied with the simple title veterinary surgeon (V.S.).

About 1862 the Board of Agriculture of upper Canada asked Professor Dick, of Edinburgh, to recommend a capable veteri-

narian to organize a veterinary college and Andrew Smith, V.S., was selected, emigrated and arranged a veterinary course of two winter sessions. This school had a steady growth and became the first successful veterinary college in America. Her early graduates, although lacking in education, spread all over North America, doing pioneer work in the cause of veterinary development. The graduates received the title of veterinary surgeon (V.S.).

In 1866 the Board of Agriculture of Quebec founded a veterinary college in Montreal, which was soon afterwards connected with McGill University. Under the guidance of the progressive principal, Ch. McEchran, F.R.C.V.S., it announced the first three-years' graded course, and the graduates received the degree of doctor of veterinary surgery (D.V.S.). The writer was informed, years ago, that this entirely new veterinary degree was chosen for its similarity to the degree of doctor of dental surgery (D.D.S.), because the medical faculty objected to a degree which would appear similar to the degree of doctor medicinæ. At any rate, this was the first veterinary doctor degree created on this continent, and was soon imitated by other colleges.

Also in 1866 Professor James Law, M.R.C.V.S., was added to the faculty of Cornell University, N. Y., and besides lecturing to agricultural students, he arranged a veterinary course. Four of the veterinary graduates received the degree of bachelor of veterinary medicine (B.V.M.), and one the degree of doctor of veterinary medicine (D.V.M.), after taking a four-years' course. The selection of these degrees proves historical study of veterinary medicine.

In 1875 the American Veterinary College was opened in New York City, and Professor A. Liautard, a French graduate, was made its dean. The college excelled from the start in the teaching of anatomy and surgery, and served as a literary centre for veterinary progress in this country. This college preferred the degree of doctor of veterinary surgery (D.V.S.).

The State Agricultural College of Ames, Iowa, opened a veterinary school in 1879, with Professor M. Stalker as dean. It was the first school to start and adhere to a full three-years' course of nine months each, and numerous excellent country practitioners have come from its ranks. The degree chosen was that of Cornell University, doctor of veterinary medicine (D.V.M.).

In 1883 the Chicago Veterinary College was started by Drs. A. H. Baker, V.S.; Joseph Hughes, M.R.C.V.S., and others. The initial degree given by this college was D.V.S., but in 1890 it was changed to that of doctor of comparative medicine (M. D. C.), and as reported this was done in compliance with a petition of the students of the college.

In the same year Harvard University, Boston, opened a veterinary department with Professor Ch. Lyman, M.R.C.V.S., as dean. The course was of three years duration. The senate of the university conferred upon the graduates the degree of *medicinæ doctoris veterinariæ* (M.D.V.), corresponding to the formula in use for the degree *medicinæ doctoris*. This was the first veterinary degree written in Latin, and had it been worded in accordance with the historical European formula, it would have saved later colleges from attempting to correct it. As it was it started the mixing up of the different degrees of doctor of veterinary medicine.

In 1884 a veterinary department was added to the University of Pennsylvania, with R. S. Huidekoper, M.D. (U. S.), V.S. (Alfort), as dean. It had from the beginning a three-years' graded course of nine months each, quite complete and thorough, and the school has yielded a strong influence for better in veterinary education. The degree conferred is that of *veterinariæ medicinæ doctoris* (V.M.D.), nearly a reversal of the Harvard degree.

The Ohio State University opened a veterinary school in Columbus in 1889, with Professor H. J. Detmers, a German graduate, as dean. It had, also, from the start, a three-years' graded course of nine months each, and steadfastly maintained a

high standard of instruction. The graduates receive the degree of doctor of veterinary medicine (D.V.M.).

In 1892 the Kansas City Veterinary College opened with Dr. S. Stewart, as dean. The degree given by the college is that of doctor of veterinary *science* (D.V.S.), the first degree in which the word science was used instead of surgery. A few of the graduates used the abbreviation D.V.Sc. in contradistinction to the degree of doctor of veterinary surgery.

The above comprise the earlier American veterinary colleges, from which the later-born adopted one or the other, perhaps with some minor changes.

Quite recently, however, a noteworthy action was taken in Canada as regards veterinary education and degrees. Similar to the action of Emperor William of Germany, King George V. of Great Britain decreed as follows:

“An Act Respecting the Ontario Veterinary College.”

HIS MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:

1. This Act may be cited as “The Veterinary College Act.” (It goes on to describe the continuance of the Ontario Veterinary College, the equipment of the college, the principal and officers, and the government and control of the college.)

Article 7, says: “Every student upon the successful completion of the course of study, upon passing the prescribed examinations, and upon satisfactory compliance with the rules and regulations of the college, shall be admitted to the standing of a Veterinary Surgeon and shall have all the privileges and rights accorded by statute to a Veterinary Surgeon, and there shall be issued to every such student a diploma granting him the title and standing of Veterinary Surgeon, such diploma to be attested by the signature of the Principal of the College and *the Minister of Agriculture.*”

(By this article the Ontario Veterinary College confers upon the graduates the title as a veterinary surgeon, V.S.)

Article II says: "The affiliation of the college with the University of Toronto is hereby approved, such affiliation to be to the extent of enabling the students of the said college to obtain at the examinations of the University such rewards, honors, standing, scholarships, diplomas and degrees in veterinary science as the University under its statutes and the acts of the legislature in that behalf may be allowed to confer."

By this authority the University of Toronto established the degree of Bachelor of Veterinary Science (B.V.Sc.) after three years' study and graduation, and the degree of Doctor of Veterinary Science (D.V.Sc.), after four years' study. The requirements of preliminary education for the degree of B.V.Sc. are as follows:

"English, history, arithmetic, together with any one of the following—Latin, French, German, or any two of the following—chemistry, physics, geometry, algebra."

The requirements for the doctor degree are as follows:

5. "A graduate holding the degree of Bachelor of Veterinary Science desiring to proceed to the degree of Doctor of Veterinary Science, shall apply to the Senate (of the University) for permission to undertake special research in a scientific laboratory or in some designated field of work allied to the live stock industry, and upon permission being obtained, he shall carry on special research and present a thesis, and upon the said thesis being approved by the Senate, the degree of Doctor of Veterinary Science shall be conferred upon said graduate, but only *after expiration of twelve months from the time of conferring the degree of Bachelor of Veterinary Science.*"

PRESENT DEGREES.

From direct information obtainable, the following are the present degrees of the veterinary colleges of North America:

Doctor of Veterinary Medicine—

Grand Rapids Veterinary College, Dr. of Vet. Med. . . D.V.M.

Indiana Veterinary College, Veterinary Medicine

Doctor V.M.D.

Iowa State Agricultural College, Vet. Dept., Dr. of Vet. Med.	D.V.M.	
Kansas State Agricultural College, Vet. Dept., Dr. of Vet. Med.	D.V.M.	
McKillip Vet. College, Dr. in Vet. Med.	M.D.V.	
N. Y. State Vet. School, Cornell University, Dr. of Vet. Med.	D.V.M.	
Ohio State University, Vet. Dept., Dr. of Vet. Med. .	D.V.M.	
University of Pennsylvania, Vet. Dept., veteri- narïæ medicinæ doctoris.	V.M.D.	
Total		8

Doctor of Veterinary Surgery—

New York-American Veterinary College.	D.V.S.	
San Francisco Veterinary College.	D.V.S.	
College of Vet. Med., George Washington University.	D.V.S.	
Total		3

Doctor of Veterinary Science—

Colorado State Agricultural College, Vet. Dept.	D.V.S.	
Kansas City Veterinary College.	D.V.S.	
U. S. College of Veterinary Surgeons.	D.V.S.	
Total		3

Scattered—

Chicago Veterinary College, Dr. of Comparative Medicine	M.D.C.	
North Dakota Agricultural College, Vet. Dept.		No degree decided upon.
Ontario Veterinary College, Veterinary Surgeon.	V.S.	
University of Toronto, Bachelor of Vet. Science.	B.V.Sc.	
University of Toronto, Doctor of Vet. Science.	D.V.Sc.	
Laval University, Veterinary School, Montreal, médecine vétérinaire	M.V.	
No replies received from four colleges.		4

Total degrees 23

A CRITICAL EXAMINATION OF THE CHARACTER OF OUR DEGREES.

The simple title veterinary surgeon, originally imported from Great Britain, is the equivalent of the *médecine vétérinaire* of France, of the *Thierarzt* (veterinary physician) of Germany, and other veterinary titles of European countries. It means just what it says and is understood by English-speaking people as signifying one who is specially educated to treat the diseases of domestic animals. It is *not intended to be a doctor degree*, but is given to students on graduation as a government license to practice our profession and enjoy therewith the legal rights and protection that go with it.

This title has been criticized as faulty, as it signifies a surgeon only, and because it constitutes a pleonasm in the light of etymology. The term "veterinarian" is certainly more correct if we go back to the original Latin, as is also the *noun* "veterinary," plural, "veterinaries," although many young veterinarians object to the latter nearly as much as to the old English term, horse-doctor. It is useless to fight this term, so deeply rooted in the language of the people, and it would be wiser to make it honorable by a high educational standard and good moral and professional conduct which allow a magnanimous acceptance of popular slang. Mark Twain gives the much abused and often ridiculed horse-doctor a high place in heaven.

Curiously enough, the old V.S. found more advocates at the first meeting of the Veterinary Faculties (1894) than any one had expected. It was hit upon as a wholesome reaction against the burlesque veterinary degrees that had just been invented. One of our veterinary professors put it this way: "Our professional schools and colleges are giving away all sorts of doctor degrees to illiterate men and women, and in consequence this degree has lost with us its original mark of distinction. We have arrived at a point where simplicity of title means more than the bluffness of a degree." This sentiment was applauded at that time.

But the custom of our American veterinary colleges to confer doctor degrees upon graduation, quite naturally imitated from the much older medical schools, had already taken too firm a root to be upset, and there developed the other sentiment to adhere to this custom unless the initiative to change was taken by the medical schools, which was not considered probable. Of the doctor degrees discussed that of doctor of veterinary medicine found the most advocates. It was considered the most correct degree, both from the standpoint of the original Latin use, as also from the adherence to it by European universities. The Latin "*medicina veterinaria*" certainly included *all the branches of our science and practice*. The term has been used in this conception for nearly two thousand years, and we can rest assured that it will be so used for an incalculable time to come. The degree of doctor of veterinary medicine is the only one acceptable as an international degree. It is readily understood by foreigners, while our other degrees (doctor of veterinary surgery, science or comparative medicine) cannot be understood by those who do not know the English language well. We must reckon with this fact, that we are no longer a secluded nation, but that our American veterinarians have established themselves in the Orient, in South America, in Africa, where they mingle with European veterinarians in free competition, and we should label them properly as our foreign missionaries.

It is really immaterial whether this degree is written on our diplomas in Latin or English, but it is expedient and necessary that we employ hereafter only *one* abbreviation for the several in present use. Exactly the same is done by our American doctors of medicine with their two degrees of M.D. and D.M., of which only the first abbreviation has become uniform. They were more fortunate in having only two letters to mix, while our three letters allow a more confusing combination. But this is a comparatively small difficulty to be overcome by agreement, particularly as the degree is otherwise without fault or flaw.

The degree of doctor of veterinary surgery was easily constructed from the old English veterinary surgeon (V.S.), but if analyzed, stands only for one branch of general veterinary medicine, and refers rather to handicraft than to medical knowledge. It is certainly limited in its conception, and is open to criticism as it invites unnecessary argument. It is not understood by foreigners, as the word surgery is a contraction from *Chirurgia*. It certainly cannot be recommended as a uniform degree.

More correct is the degree of doctor of veterinary science. It does include all the branches of veterinary medicine, but it does not properly convey the idea of practice. Etymologically it signifies one who knows rather than one who applies. Science is a high-sounding word with us, but so much abused by unbridled application, that it is easily made ludicrous. The corn-doctor, the rat-catcher and many other small specialists call themselves scientific. Its true interpretation depends upon surroundings. In university circles, in scientific laboratories or similar institutions, a doctor of veterinary science may find his rightful place, but the degree falls quickly to a lower level if seen on the walls of the livery stable office. Of course, the personality of a man and the surroundings he lives in make or unmake any degree, but none other does drop so sharply if seen in a wrong place than the degree of so-called sciences. Moreover, the word science is a corruption from the Latin *scientia*, a stumbling block to foreigners, except the French. It is a nice term, but slippery and not without fault, so that it cannot be recommended for general adoption.

The degree of doctor of comparative medicine is not strictly a veterinary degree. Veterinary medicine is only comparative in so far as it includes the study of the diseases of the various domestic animals and, perhaps, human medicine. Comparative medicine, analogous to comparative anatomy, would include the whole zoological scale of animals from the anthropoid apes down to snakes and mollusks, etc. The average veterinarian could not possibly master the knowledge of the diseases of these myriads of animals, nor would he likely find a place of work, except in

zoological gardens. The degree is out of question as a uniform degree.

If we reflect now on the development of our widely different veterinary degrees, it is quite clear that mistaken rivalry and untamed ideas of progress are largely the cause of their existence. No doubt they were all chosen with the best intent to improve on the preceding degrees, because instinct made the newly born colleges feel that hardly any previous degree was faultless. On the other hand, it is apparent that few of those responsible for the choice of a degree, took the time and trouble to seriously study the question, if they were not actually in want of correct knowledge and foresight. Then, too, material progress, of more importance at that time, overshadowed the seriousness of a proper degree. After nearly half a century, it is now becoming plain, that the matter was left to be corrected by the survivors of that time and the younger generation of veterinarians. Who can deny that this is the characteristic American way of doing things! Push and a certain superficiality go together, and while they have worked wonders in forming rapidly a new country and a new people, and in bringing forth the professions as soon as their need became manifest, after-pains of some sort are liable to occur from overzealous action. In our case, we are now charged to correct the error of confusing the veterinary degrees, perpetrated by our professional predecessors, and if we do it now properly, later generations of American veterinarians will gladly give us credit for better knowledge and greater wisdom.

THE FORM AND THE VALUE OF DEGREES.

The need of a proper *form* of the veterinary degree is confined to a testimony of the special training received by the graduate, and this together with the abbreviation used for the degree, ought to be easily understood alike by the common people, the educated people, the other professions and the authorities of the government, national, state and municipal. Historical precedent of a degree will go a long way in making it plain to all, as tradi-

tion has always been obstinate in preserving the old, and still is so.

The abbreviation of degrees has come into use for the sake of brevity, and as it is much more applicable in the daily routine of life than the degree written in full, it is the more important of the two. In all countries, including our own, where doctor degrees are still written in Latin, the people have substituted for such degrees an equivalent in the spoken language, so that practically a uniformity of degrees does not exist in an international sense. Yet, it must be our aim to make them as nearly so as practicable.

There are two aspects to the *value* of degrees, the ideal and the material. To European veterinarians the ideal side of the question appeals more strongly than it does to us. Pride in the veterinary profession, yet comradeship with all other professions, the wish for cultured society, are well developed among them, and the public acknowledgment of the dignity of veterinary titles and degrees is jealously guarded. It takes time there to earn a degree; it is only gained by much longer study and greater intellectual capacity than we demand. The poorly educated and flat minded cannot attain it. The European veterinarians have a *reason* to be proud of their profession and degree.

Not so with us. We can meet any day dissatisfied veterinarians, who express their sorrow not to have chosen the medical profession, which—as they believe—guarantees a better social standing, offers greater advancement, and a larger income. Some of these malcontents take so little pride in our profession that they do not exactly know their degree or what it means, particularly if it is written in Latin. The value of the degree is small to them, because it was acquired without great effort, and—in some instances—almost given away to them. Yet, if some of the possessors of a doctor degree are asked why they do not prefer the more simple V.S., they will reply, No, there is money in the doctor.

Such sentiment would be absolutely resented by European veterinarians. Yet it is generally true, that with us the doctor degree has a superior material value and an inferior ideal value.

We shall have to count with this sentiment in trying to choose a uniform degree for present needs, but, looking forward, must also try to raise at the same time its moral value in accordance with the higher educational standard of our time; to make it more difficult to obtain, more appreciated when earned, and less of a farce in the judgment of educated people or even in the minds of many recipients. A doctor degree without a correspondingly high school education must and does invite censure or ridicule.

THE CHOICE OF A UNIFORM VETERINARY DEGREE.

After all that has been said above, there should be no great difficulty in arriving at the choice of a degree for our American needs. By elimination of the degrees having no fixed or permanent standard, we have left for a choice the old V.S. and the more modern D.V.M.. The Toronto Veterinary College, improved, has maintained the V.S. as a graduating title, and the signature of the Minister of Agriculture on the diploma will carry the necessary authority with it throughout the Dominion and beyond it. Besides, the University of Toronto holds out the two veterinary degrees of B.V.Sc. and D.V.Sc., to be obtained upon proof of a higher educational standard and prolonged professional study. This is a timely move upon which we can most heartily congratulate our northern colleagues.

We cannot exactly do the like in the United States, limited. The old title V.S. is no longer conferred by any of our veterinary colleges, and we have to persuade over twenty schools to unite in a compromise upon one degree, instead of legislating for one college. To fall back on the V.S. would be too great a reaction after we have allowed the veterinary doctor degrees to permeate the country. We cannot now break with the custom of the American professional colleges, medical, veterinary, dental, etc., to confer doctor degrees on graduation, which is too well established to be upset without revolt.

Thus, if we must have a veterinary doctor degree for our graduates, let us choose the D.V.M. which is correct by prece-

dent and tradition, conferred by the majority of our American colleges and European universities, and understood everywhere. It is not fanciful, not ostentatious, and constitutes altogether the most reasonable and practical degree that can be recommended to those of our colleges that have not already adopted it. The only point to be definitely settled about this degree is its abbreviation. If we take the well-established M.D. as guide, the V.M.D. would perhaps be the best imitation. But as our degrees of doctor of veterinary medicine are now all written in English with the exception of one, the most proper American abbreviation is that of D.V.M. Its acceptance would create little disturbance among the eight colleges conferring this degree, and as soon as the other six colleges, granting various degrees, swing around by accepting it in good grace, a uniform degree and abbreviation are an assured fact.

To help the stragglers along, the Association of Veterinary Faculties and the American Veterinary Medical Association can do much by requesting the Secretary of Agriculture to officially sanction this uniform degree and to raise its value by an increased educational standard. Such move may be rather foreseen by our colleges and is expected by many graduates who would welcome the chance to procure a more suitable degree than the one they possess. Thus the colleges would be compensated for the inconvenience of changing the degree, and many hundreds of graduates would try to secure the new degree which would carry with it the high authority of the Secretary of Agriculture.

AN ADVANCED VETERINARY DEGREE.

Dr. Glover recommends an advanced veterinary degree similar to that of the British F.R.C.V.S. Properly, we cannot accede to this suggestion, because we already confer the highest degree obtainable on graduation, leaving us without a choice for a higher or advanced degree. Let us be careful not to make another blunder. It would be nothing short of a calamity should our

colleges start to grant such degrees as that of doctor of veterinary hygiene on mere post-graduate work. The greatest value of a degree lies in the fact that it represents the *whole* knowledge of one profession. At the present time, or until the question of a graduating degree has been definitely settled beforehand, it would be extremely unwise to add to the confusion of our veterinary degrees.

But the writer wishes to plead here for the acceptance by the foremost of our colleges of the commendable European custom to confer honorary veterinary degrees upon the worthy members of our profession. It has not been done so far. Young as our American veterinary profession is it has already produced a number of men of high purpose and scientific merit, and some of them have been allowed to die without proper recognition from our own ranks. Until now we have followed the Roman proverb, *De mortuis nil nisi bene* (about the dead speak only well), but how much would every one of them have enjoyed our liberal acknowledgment of their good deeds and well-spent lives. If the wish for an advanced veterinary degree is already born and gaining ground among us, let our veterinary faculties join with those of the old world in crowning the worthy lives of our foremost members by a D.V.M., H.C., as none other title or degree could equally well decorate the name of its recipient. So altered, Dr. Glover's suggestion is practical, and is the undoubted sign of a natural process of evolution towards higher aims of our profession.

RECOMMENDATION FOR ACTION.

As the writer cannot be present at the coming meeting of the American Veterinary Association at Toronto, he wishes to contribute his mite to bring the subject of a uniform and more valuable degree a point nearer for action by suggesting the tenor of a resolution to this effect. This can be corrected, altered, enlarged or shortened, as the case may be and as a majority may decide.

Resolution recommended:

WHEREAS it is desirable that the entrance requirements for students of the recognized veterinary schools and colleges should be raised to a more satisfactory and modern height; and

Whereas it is necessary that the degrees conferred by these schools and colleges be made uniform in term and value, therefore, be it

RESOLVED, That this association request the Secretary of Agriculture of the United States, to induce these schools and colleges to require as matriculation for veterinary students the certificate of graduation from a high school or an examination equivalent to fifteen unit credits as specified by the North Central Association of Colleges and Secondary Schools; and be it further

Resolved, That this association request the Secretary of Agriculture to approve the degree of Doctor of Veterinary Medicine (D.V.M.), as the uniform degree of the rightful graduates of these schools and colleges.

Department of State, Washington, March 28, 1911.

The Honorable

The Secretary of Agriculture.

SIR—I have the honor to inform you that the Uruguayan Government wishes to make a four years' contract, at a salary of three hundred dollars, gold, per month, with three professors for the government veterinary schools. Applications should be addressed, as promptly as possible, to the Director of the Veterinary School, Montevideo, Uruguay.

The requirements are described as follows:

“First. Surgical pathology, operative medicine clinics. *Second.* Microbiology investigations, production of vaccines and serum. *Third.* Pathological anatomy, histology, embryology.”

The above information has also been communicated to the Secretary of the Interior.

I have the honor to be, sir,

Your obedient servant,

(Signed) P. C. KNOX.

AMERICAN VETERINARY HISTORY—ITS MEANING AND ITS SCOPE.

BY D. ARTHUR HUGHES, LITT.M., PH.D., D.V.M., CHICAGO, ILL.

"HISTORY IS THE ESSENCE OF INNUMERABLE BIOGRAPHIES."—CARLYLE'S ESSAY ON HISTORY.

Veterinary journalism must take into account all lines of thought which together compose the veterinary intelligence and education of to-day. It is not well, in a periodical aiming to represent the profession of the continent, to cover the pages entirely with ultrascientific articles; nor yet with strictly practical articles only. A veterinary journal in America, to be representative, must be a mosaic—a composite of the profuse intellectuality which belongs to the vitalized, progressive profession found on this continent. Why should we not, therefore, in speaking of the meaning and the scope of American Veterinary History, survey the profession from the point of view of the investigator who seeks to get a masterly knowledge of current events for the purpose of narration?

Not long ago Dr. Liautard, in his monthly "European Chronicles," referred to the printing of a "History of Alfort"—the national veterinary school in the environs of Paris. The name Alfort is written large in French veterinary history. Its teachers, its policies, the doctrines that it has promulgated, the new scientific data that it has accumulated, have been vital in modern France. Its professors have been lights of the first magnitude in European veterinary education. Its policies have been adopted with acclaim in other veterinary institutions. Its

doctrines have been received with reverence and accepted as from authority. The results from its laboratories have challenged the interest of all scientific bodies in any way working along similar scientific lines. Who has not heard of its masters, such men as Bouley, Nocard, Vallée, Moussu, Cadiot? Who does not know that the history of Alfort is a large chapter in the volume of the history of scientific advancement in France?

In Europe there is reverence for the past. Men remember that the fortunes of the present are the fruition of the past—that present success is a result of previous events due to an earlier history. Hence the publication of the chronicles of Alfort in book form, which was noted in the REVIEW. What has gone on in Alfort is going on in American veterinary colleges—the molding of men; the establishment of worthy educational precedents; the inauguration of policies in national and state associations based upon a vision which discerns better things for the future of the profession than are recognized to-day. The history of an American veterinary college is yet to be written. Nevertheless the facts are accumulating day by day, for events are transpiring which some time will be recorded in favor of a college or colleges, in the manner that the history of Alfort has been written.

Occasionally a speech is made, or an article appears in the veterinary press, which indicate that thinkers are at work on veterinary historical topics.

When Dr. W. Horace Hoskins made a biographical address, about a year ago, before the New York Practitioners' Club, on veterinary leaders in the east, now dead, whom he had known and admired; and when he expanded that address into an oratorical eulogy, under the caption, "A Nation's Loss, A Profession's Tribute to Fallen Leaders," pronounced before the American Veterinary Medical Association in San Francisco last September, he was dealing with all any leader in life "can traverse between hope and despair." He saw, in these biographical studies, bits of the clay out of which the life of man is formed. "But

now, Oh Lord, Thou art our Father: we are the clay and Thou our Potter; and we are the work of Thy hands."

"All that is at all
Lasts ever past recall,
Earth changes, but thy soul and God stand sure;
What entered into thee
That was, is, and shall be:
Time's wheel runs back or stops: Potter and clay endure."

Dr. Hoskins' speech was not essentially mournful, like a resolution of a committee on necrology; rather the purpose was to record in the spirit of eulogy the deeds of great men fallen. They came to life again by the work of his hands—Huidekoper, Pearson, Roscoe R. Bell, Harger, Andrew Smith. Whatever be its virtues, Dr. Hoskins' speech is but a speech. It went a step further than the obituary notices in the newspapers or the reports of necrological committees of associations. Alive with memories of personal friendships, at times it bubbled like champagne. The speech consists of short biographical memorabilia and brings out the influence of noble friendships and leadership in professional advancement.

Dr. Olaf Schwarzkopf is another man who, throughout a busy life, has stored away in his notes numerous facts on American veterinary history, and has cherished the hope of recording them as an encouragement for men to come after men now living. There is no closer student of veterinary tendencies than he. Wherever you find a German scholar—visiting the art treasures of the Sistine Chapel, Rome; in Egypt among the pyramids; in the Amazonian wilds studying insects and birds; in the war camp perspiring with excitement—you will find him taking notes. The Germans are the most laborious note takers in Europe. There is profit in the habit. Dr. Schwarzkopf, in the first installment of his article on the historical aspect of the question of the conferring of veterinary degrees in Europe, is at point. He has there sketched historically the development of European veterinary education as it is illustrated in the attitude of Europeans to veteri-

nary degrees. That article serves a double purpose—it throws into relief the contrast between European methods of conferring veterinary degrees and our own; and it traces the ascent of the veterinarian from his earliest days in Europe of social obscurity and intellectual nothingness to his present happy status as the compeer of men in the other professions.

In my leisure hours, which are not many, I have written biographical articles on leading veterinarians or teachers in veterinary schools, and published them in certain eastern magazines and newspapers. About four years ago, for instance, by request of the editors of the Cornell University *Alumni News*, I wrote biographical sketches of the services to their country and the profession, of Drs. Salmon, Pearson, Farrington and Moore. At present I am engaged, by agreement with the editors of a famous London veterinary periodical, in writing of the achievements of other prominent veterinarians in America, who have done much for the making of American veterinary progress. A short time ago Henry Holt & Company, of New York, published a book entitled, I think, "The Makers of Modern Biology." Dr. Mark Francis, of College Station, Texas, the investigator of immunization against Texas fever, has suggested to me that a similar book, entitled, "The Makers of Modern Veterinary Science," also should be written. Written it will be by some one some day. The work deserves doing. It is easy to lay hold of established facts and apply them practically. But who were the men who turned theory into fact. Who were the men who established the great veterinary truths; who discovered them; who were the men who, through sacrifice, made us the gainers? Infection, immunity, sera, these are easy words to understand to-day; but who established the facts about them in veterinary science? Who were the pioneers who started the colleges? Who pointed the ways for veterinary progress? Who quickened the veterinary conscience in the press and rebuked humbug in veterinary practice? Who were the men, strong in administrative gifts, who made the way for the upbuilding of a national system of control of animal disease? These, whoever they were, were some of the

makers of veterinary science, were some of the makers of American veterinary history.

Among those who have contributed much to the making of veterinary progress, and in the making of American veterinary history, are the leaders, past and present, who are, or have been, presidents of the American Veterinary Medical Association. In the speeches of the presidents, year by year, direction has been given to lines of thought which meant progress. These are the men intimately acquainted with the flow of current veterinary events. Their speeches—those of Law, Dalrymple, Rutherford, Melvin—are indices to the veterinary history of the day. If a man made a digest of these speeches he would have many a cue for a study of the history of our chosen profession. The leaders sense the directions in which progress can best be made. Taken together, and examined from the historical viewpoint, the speeches exemplify the value of such a study, and the encouragement to our membership which such a study of veterinary history would give.

These thoughts, on the value of veterinary archives, lead me into a discussion of "American Veterinary History—Its Meaning and Its Scope."

Great events in political history have this as a prime characteristic—that their impact upon the times is such that they change the current of subsequent events. Great gatherings of men are among the events which have strong impress and effectiveness on the events to follow. In modern European history the daring of Martin Luther at that astonishing ecclesiastical gathering, the Diet of Worms, strengthened the Reformation movement and gave it impetus. In early American political history the Declaration, in the City of Philadelphia, of the Independence of the American Colonies, steeled the hearts of all men, from Massachusetts to Virginia. The gatherings of to-day have their effectiveness on the events of to-morrow. In the scientific world, the declaration of Koch at the International Congress on Tuberculosis in London, in 1901, denying the intertransmissibility of bovine and human tuberculosis, kindled anew the spirit of investigation amongst us on this almost thread-bare theme.

Well did the Congress on Tuberculosis, held in Washington in 1908, leave its impression on events veterinary in America from that time until the present.

Similarly, the assemblages of veterinarians, when they meet in national convention, aye, in international convention, as in the last International Veterinary Congress at The Hague, a year ago, are bound to direct the currents of veterinary events. When we met in national convention in historic Philadelphia, in 1908, the occasion was peculiarly felicitous to remind us of the influences borne by the past upon the present. In 1909, in Chicago; in 1910, in San Francisco; as shown by an examination of the Proceedings of the American Veterinary Medical Association, for the two years, both of which have been published; American veterinary history was in the making. Such gatherings pre-eminently dispose the hearts of men to better purposes, and awaken God-given enthusiasm for vaster issues in the veterinary progress of to-morrow.

I.—THE MAKING OF AMERICAN VETERINARY HISTORY—WHAT AMERICAN VETERINARY HISTORY IS, AND HOW IT IS BEING MADE.

You ask me, what American veterinary history is and how it is being made.

The subject, the writing of anything on American veterinary history is a virgin one. Though American veterinarians have written much, and done much, to forward events for the advancement of the profession, no narrative of the salient events since the profession, as a profession, first came into existence here, has ever been written. We have been barren in the writing of biography or autobiography. The lives of many learned American physicians have been written. I do not know of a single well-executed biography on any American veterinarian. We have been barren in the narration of the course events have taken which have carried forward to success great movements for our good.

The function of the American veterinary historian is not to relate meaningless and inconsequential facts about ordinary

experiences in this workaday world; nor, Boswell-like, to set down idle talk of idle individuals which has had no effect on veterinary progress, nor has lent any color to events. Ordinary and commonplace events in veterinary experience indicate nothing of what progress will be made. American veterinary history is the narrative of the course important events have taken in all things concerning the veterinary profession, since that branch of learning was introduced into America, which has made for the enlargement of the interests of the profession, to increase the bounds of its usefulness, and to give it place and power among the learned professions.

The narration may take many forms, phases, chapters. It may, in part or whole, be a narrative of the events in veterinary sanitary progress, national or state, from the beginning. It may be a narrative of the chief advances in all forms of investigation in veterinary sciences and the effects on veterinary progress. It may be an account of the progress in practical work, from the days of cow-leeches and the days when charlatanism reigned supreme everywhere, to the present. Our American veterinary progress has had many hues and shades. Just as American political history has had many epochs, many aspects, so our veterinary history has had many phases, many sides. Whether the important facts be related in one or all, each or all constitute American veterinary history.

American veterinary history has been made in the events which transpired since the beginning. Truthfully, that history includes everything good or bad done in a professional way by veterinarians—as citizens of specialized knowledge working in society. Hence it has its varying chapters. These chapters together constitute the range of our professional history.

II.—THE MAKERS OF AMERICAN VETERINARY HISTORY—THE PERSONS AND EVENTS WHICH ARE THE ESSENTIAL FACTORS OF AMERICAN VETERINARY HISTORY.

Though Thomas Carlyle is not counted an historian at all by historical scholars of our day, because his work is rather the

product of a perverted imagination than that of an adherent to facts, his acumen and his intuition make him utter sayings about history in general which are close to the truth. He did so when he wrote: "History is the essence of innumerable biographies." For history, in any form, is taken up with men and events in their lives. The stream of events, which compose the material of historical narration, is often enough directed in its course by movements, and these are begotten by, encouraged and made purposeful, by leaders of men. The meaning of the word movement, when applied to the turns events take in American veterinary history, is no different from the meaning of the word in political history, except that movements which are set up in veterinary affairs are for scientific ends; their purpose is for some form of professional betterment. The great movements for veterinary sanitary improvement; for pure food laws; for meat or milk hygiene, all are examples of movements for good in recent veterinary history.

The effects, in the formation of events in our professional history, are produced by leaders of every sort. They sense the tendencies of the age in our science. They intellectually discern the desires of the masses of men. They know the direction the currents of events should go. They make them go in that channel which will be for the greatest good of the greatest number. They are utilitarians. But they are utilitarians in veterinary matters because they clearly see what would make for scientific progress and what would not.

III.—THE MATERIALS OF AMERICAN VETERINARY HISTORY—THE RECORDS, DOCUMENTS AND OTHER SOURCES OF INFORMATION ON AMERICAN VETERINARY HISTORY.

Commonly the acts of men, particularly of leaders of men, and events in their lives, are made a matter of record. What are the recorded acts which will go to make the material for the historian of the American veterinary profession? The evidence, which constitutes the materials out of which our history is to be written, is almost bewildering in its variety. Yet all evidence

must be consulted, and the judgment of the writer exercised upon the trustworthiness of the materials.

Of such material is the profusion of national veterinary literature—all that has come from the government printing office touching veterinary science—annual reports, special reports, bulletins, circulars, tables of figures on animal industry, maps, leaflets, even the orders of administrative officers. Any or all of this, part of which to some may appear trifles, may be valuable data for the historian of veterinary progress in this land. Again the veterinary literature of all sorts issued by the states—the laws, regulations and ordinances, the manifestos and decrees, are of the greatest worth to indicate to the veterinary historian the way events are going, or rather have gone, in the different sections of the country.

Furthermore, the records of veterinarians as leaders in all the more unofficial walks of life—veterinary materials of all forms issued from the press; our scientific periodicals, whether the magazine still is being issued or is defunct; sporadic essays appearing in popular magazines, or the daily press, or in the scientific press other than our own; the publications of all sorts of the American Veterinary Medical Association, or the United States Veterinary Medical Association, even the unpublished records of the veterinary associations, national, state, or local—all these are indices to the historian of veterinary advancement. The veterinary publications of all sorts and classes, whatever leaves the printing press in any way concerned with our work, as well as all unpublished records, constitute our veterinary archives. They should all be guarded and preserved as memorials of a revered past.

Moreover, biography, autobiography and letters, journals and records of personal work of every kind, which is of the best professional service, are priceless materials for the historian who is to work upon them when the maker of personal record is gone. Such personalia as painted portraits, busts, photographs, photogravures, electrotypes, which are the artistic expression of personal appearance, have an increasing value to the historian

as time goes on. Opinions of men of the day on professional labors of their fellows, after the historical writer has made the necessary discount for underestimation or overestimation, and has discovered the truth from the sorting of evidence, constitute valuable historical material. In veterinary history, as in political history, florid eulogies of men, or acrimonious satires, have a place among an historian's materials. The opinions of men of the day on veterinary happenings explain much to the historian. All printed or unprinted records of the lives of veterinarians, particularly leaders of thought and action, the spirits which stand out like cathedrals amongst us, constitute the materials of American veterinary history.

If it is urged that all I have just said is worse than vain, the answer is, that the canons of historical scholarship of our day require the writer to learn the truth for his narrative and to consult every bit of evidence in the known records of the lives of men, to sift and weigh the evidence, and relate the truth as it is found. You may read a chapter in any great political historical work of our times, such as Mommsen's "History of Rome," or Von Ranke's "History of England in the Seventeenth Century," or Von Holst's "Financial History of the United States," and there see how strictly adhered to are the canons of historical scholarship.

I dwell upon this point because it bears a moral for us all, which is that we should carefully preserve our veterinary archives; we should jealously guard all these memorials of the past that I have mentioned. Show me a man that does not reverence the doings of his forebears, or who is not proud of what has been accomplished in the old time before him, and I will brand him as a man who is himself probably of little worth. Show me a veterinarian who is not jealous of the accomplishments of his advancing profession, and does not understand that the records of those accomplishments should be enthusiastically and religiously preserved, and I will mark him at once as a man of little worth himself.

IV.—THE VETERINARY MEDICAL HISTORIOGRAPHY—WHO SHALL WRITE AMERICAN VETERINARY HISTORY AND HOW SHALL IT BE DONE?

We hear much of the history being written of a political period, of a revolution and its aftermath, of the reign of a sovereign, of the events happening during the presidency of one of our chief executives. Who has yet ventured to write the history of American medicine, still less of American veterinary medicine? We may well ask, who shall write American veterinary history? Not a man, surely, who will jabber simplistically on common events. But he who can range over the lapse of years covered by American veterinary medicine since its beginnings; who has been a researcher into the full records of the advancing science; and who, with dignity and scholarship, ventures to write a narrative of the progress made under the converging light of many minds.

How shall it be done? After a complete search among the vast records; with an eye to the truth, and a ravishing desire to truthfully and glowingly relate the advances made. He who would write American veterinary history must have acumen, to know the worthy things thought and done; must have literary sensibility, to properly narrate the events in their onward course; must have incision, to know the essential factors which have made progress and continue it.

V.—AMERICAN VETERINARY HISTORY OF YESTERDAY, TO-DAY AND TO-MORROW.

Though we cannot, in this article, enter upon a discussion of veterinary history, in its few interesting epochs, with any particularity, we may indicate, in some of its broader outlines, remarkable events in the American veterinary history of yesterday; survey a few conditions to-day, and indulge in hopes for to-morrow.

Some of the main events in our professional history have been associated with the many important discoveries in our

science since comparative medicine began to be studied and practiced amongst us. They are connected with the progress made on the American continent in the principles and application of the principles of sanitary science to conditions here. These events, too, have followed the repression of charlatanism in veterinary practice and the substitution of veterinary knowledge. They have consisted in laying the solid foundation of sound veterinary education. The main events in our past have been revolutionizing in that everywhere we have endeavored to prepare the way for the utilization of veterinary science for the common good.

He who writes the American veterinary history of to-day will have to speak of the sparseness of veterinarians amongst the eighty millions of our people and the reasons for it. He will speak of the limited and unextensive veterinary organizations; of the lacking sense of what national calamities animal infections are; of the backwardness of education; of the fewness of the discoveries in the science and the inconsequentiality of many investigations. On the other hand he must write of the zeal and the ideals of the veterinary leaders. He must speak of the expansion of knowledge of comparative medicine; of the bettering of the rank and file of the profession; of the recognition, everywhere, of the unsatisfactory conditions in the profession; which is indeed, an encouraging sign of immediate professional betterment. For discontent leads to reflection, when the burning fires of ambition urge men to the assertion of will, and change for the better follows.

He who writes the veterinary history of to-morrow we hope will have to commend the systematization and unification of the work of the schools. He will surely record our professional equality with Europe; except that the profession here is set to American standards, and the work has a suitability to American conditions. We hope he will be able to speak of the zeal of our investigators; our sanitarians; our publicists; of our admirable military veterinary corps; of our complete national, state and municipal food hygiene. It is true that the work of the his-

torian, the historian of American veterinary medicine as well, has nothing to do with the present or the future, only with the past. His narrative is concerned only with what has been done, not with what is being done, nor what will be done or is planned for to-morrow. Nevertheless, men fain would indulge in the pleasures of hope, believing that coming events cast their shadows before.

What has been accomplished speaks for itself. No garnishment of the imagination is needed to bear it into our minds. Precisely the same is true of events set into an historical narrative of any sort. He who purposes to write the history of comparative medicine in America must record the facts and allow the truth spoken, and the work done, to be its own reward.

For the narrative of our professional history, or any part of it, should conform to the standard for all good historical writing voiced by a warm personal friend of mine, a first-honor man of the Modern History School of Oxford University, now Professor in the University of California, when he says, "The aim of the historian is to discover the truth with regard to the past, as far as his limitations allow; and having so far discovered it to narrate the truth without obtruding his own personality or his own ideas more than his weak humanity makes inevitable. It is a hard enough and a difficult enough task that the modern historian sets before himself. Truth is a very unapproachable mistress. The harder the labor of approach, the further off she goes, and however laborious and careful the steps that may be taken, the more distant seems her icy throne. It is disheartening and heart-breaking to the historical student to know how little the most accomplished and most hard-working historian can do towards building a palace in which Truth may live. * * * The work of the historical student must be its own reward."

DR. JOHN W. ADAMS, Philadelphia, sailed for Europe March 31, where he will visit a number of veterinary schools during the summer.

SERO DIAGNOSIS OF GLANDERS.*

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PART I.

An accurate method of diagnosing glanders is a most important factor in controlling this disease; yet, not all the usual methods have proved to be always reliable. If we depend only on objective symptoms, we will in the majority of cases be unable to determine the character of the disease, and will overlook many horses which are affected with the chronic, occult type of the disease, and which to a greater extent than all others, act as distributing agents for new outbreaks of glanders. Therefore, it has long been the aim of all investigators who have had to deal with glanders, to find a way of early recognizing the glandered animal, so that proper protective action can be taken at once. Only within the last two years have apparently reliable methods of diagnose been perfected, and it is not only our hope, but our belief, that the methods that I shall now describe will prove both efficacious and practicable.

The first step toward finding a diagnostic method for the detection of glanders was made in 1890, when Hellmann applied the mallein test. The subcutaneous injection of mallein, which was at first generally considered to be the best diagnostic method for glanders, has gradually lost its reputation, and I myself have come to realize that practicing veterinarians cannot depend on this method. Through reliance upon it many false diagnoses have been made, and had mallein proved efficient we would not

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now find glanders so prevalent in all countries of the world. Practically all the preparations—mallein brute, mallein dry (Foth) and others—give so many and varying results that, from my own experience, I came to the same conclusions as all other investigators of this subject, namely, that the mallein test is not a reliable and conclusive method of diagnosing glanders.

On the other hand, I admit that under certain special conditions it may be valuable as a diagnostic agent, especially when used in form of the ophthalmoand cutano-reaction as described by Schnuerer¹. Nevertheless, even with these methods it has frequently happened that from the reaction obtained the presence of glanders has been denied, and if other modern methods had not demonstrated the presence of glanders, diseased animals would have been released from quarantine, and new sources of infection have resulted.

A new method of diagnosing glanders was introduced into veterinary science when Macfadyean² proved that the serum of a glandered horse contains agglutinins. The methods I have in mind originated from this observation and are all classified under the term sero-diagnostic or immuno-diagnostic methods of determining glanders; they have been introduced only recently into the laboratory of veterinary bacteriology. These are tests of an intricate nature and therefore require the most accurate technique and can be carried out only in a laboratory. The practitioner is relieved of the arduous work of observing temperatures, etc.; he has only to bring to the laboratory a small amount of sterile serum collected from the suspected animal. All else is done in the laboratory, and the practitioner will be informed in twenty-four to forty-eight hours of a definite diagnosis. The serum should be collected as follows:

Draw from the jugular vein from twenty to thirty cubic centimeters of blood into a sterile test tube, which can be obtained from the laboratory. Let the blood coagulate and with a pipette collect the serum which has been pressed out of the coagulum. Place the serum in a sterile bottle and send by express to the

laboratory. To preserve the serum an addition of five-tenths per cent. of carbolic acid is advisable.

This serum has been employed by the scientific world for the past two years for the following tests, which I had modified somewhat so as to adopt them to conditions peculiar to tropical countries. These tests are:

1. Agglutination test.
2. Deviation of complement test.
3. Precipitation test.
4. Sero-anaphylactic test.

Our attention will be directed only to the most important one, namely, the deviation of complement. The other methods have not proved to be so conclusive and reliable. In a later paper I will discuss in detail the agglutination test and its correlation to the new test referred to. The sero-anaphylactic test was used by Schern³, Miessner⁴, Wladimorff⁵ and myself on several hundred samples of sera with varying results. Till now I have published nothing on this subject, but from recent literature I am informed that my observations were entirely correct and correspond closely with the results obtained by Wladimorff. I hope to discuss the details in a special paper.

The precipitation test has been used by Wladimorff,⁶ Bonome,⁷ Mueller,⁸ Pfeiler,⁹ Schnuerer,¹⁰ Miessner,¹¹ Mohler¹² and others with fairly good results. The experiments conducted by Mohler follow more or less closely the method described by Konew. In my publication in the "Annual Report of the Department of Agriculture, Transvaal, 1910," I referred to the results I obtained following the methods of Pfeiler, and expressed the hope that the precipitation test may in time be valuable for diagnosing glanders at an early date when no clinical symptoms are present, because the animal is in a stage of incubation. The results with this test, which is the simplest one for the practitioner, are very encouraging, but still are in such an experimental stage that I do not dare to recommend the test, and have therefore to refer the reader to the literature on this subject.

The principle of the test which I shall discuss in detail in this paper, the deviation of complement, is so closely related to

our knowledge of immunity and immunity reactions, that I cannot exclude elementary theoretical explanations. Inasmuch as this reaction has been mentioned in connection with the diagnosis of syphilis, contagious abortion, etc., interest in the mechanism of this reaction is probably very great.

If we inoculate into the body of a rabbit small and increasing doses of red blood corpuscles of the sheep, at intervals of seven days, the rabbit will develop in its serum substances which have the property of dissolving the blood corpuscles of sheep. The substances formed are anti-bodies or immune bodies, which because they dissolve the blood corpuscles are hæmolysins. The red blood corpuscles inoculated are called the antigen on account of their property of producing in the animal body anti-bodies. Not only blood corpuscles but also bacteria, albuminoids and toxins can produce anti-bodies and, therefore, all are antigens. The dissolution of red blood corpuscles which takes place when serum of these rabbits is added to the red blood corpuscles of a sheep is called hæmolysis, and is microscopically easily observed in the test tubes used for this experiment. The opaque blood bulk becomes transparent and lacky, the hæmoglobin escapes from the erythrocytes into the surrounding fluid (serum plus physiological water) and stains it red.

If we take serum from a rabbit which has been treated with sheep blood in the way indicated, and expose it for half an hour to a temperature of 56 degrees to 58 degrees C., we will see that no hæmolysis takes place when this serum is added to sheep blood corpuscles. The hæmolytic action will be restored, however, when we add to this test tube a few drops of fresh serum of an untreated rabbit, or better, of a guinea pig. If this new mixture is incubated at 37 degrees C. we find that no hæmolysis takes place after two hours. We have to conclude from this result, which has been corroborated by very interesting experiments which have been carried on during the past fifteen years in the best known laboratories of serology, that two substances are present in the hæmolytic serum; one, which is not destroyed by 56 degrees C. and is therefore

called the thermo-stabile component, and one which is always destroyed, but, on the other hand, is always present in every normal serum, namely, the so-called complement. This complement, because it is easily destroyed, is called the molabile. An immune serum which has lost its complement is an inactivated serum.

The complement, probably a ferment, activates the hæmolysins, which are also generally called the hæmolytic amboceptors, and only in its presence do the blood corpuscles become dissolved. Graphically, we can demonstrate this by showing that the hæmolytic action depends upon three elements, namely, the red blood corpuscles, the complement and the hæmolysin. The hæmolysin has two sidechains, one of which has a close relation to the red blood corpuscles, and the other a connection to the complement. Only when all three substances are present in the test tube will hæmolysis take place. The connection of the amboceptor with the red blood corpuscles is a very close one. The complement, however, is but loosely attached and acts only indirectly. These three substances—complement, hæmolytic amboceptor and red blood corpuscles—together form a theoretical system, and we use the term hæmolytic system to indicate the close relationship of these three elements to the action of hæmolysis.

The complement is present in small amount in all fresh sera of all animals. At room temperature it loses its action, and at a temperature below zero C. ("Frigo" apparatus) it may be retained in the serum for a certain time (four to ten days).

The hæmolysins are specific. For example, immune serum prepared in a rabbit for bovine blood will not dissolve canine or equine blood. However, it has been found that the normal serum of several animals, when used in large quantities, will dissolve the red blood corpuscles of certain other animals. For example, hog serum dissolves human blood under certain conditions. As this normal hæmolysins would interfere with the reaction, we always use a serum against the blood corpuscles which has none of these bodies present. We select a serum which con-

tains the specific antibodies in large quantities, which means a serum of high standard.

Before we can use our serum we have to find the limits of its binding properties to the red blood corpuscles. Unless we first do this, we will obtain a false standard and will form a false estimate of its solving properties, should we follow the table shown below :

Antigen.	Hæmolytic Serum of Rabbit.	Result After 2 Hours.
1 c.cm. 5% sol. of sheep blood	1 c.cm. of active serum 1.10	Hæmolysis.
1 c.cm. 5% sol. of sheep blood	1 c.cm. of active serum 1.20	Partial hæmolysis.
1 c.cm. 5% sol. of sheep blood	1 c.cm. of active serum 1.50	Partial hæmolysis.
1 c.cm. 5% sol. of sheep blood	1 c.cm. of active serum 1.100	No hæmolysis.

We are diluting the complement in the same way as we dilute the hæmolysins, and soon we will reach the stage where nothing of this substance is available to anchor itself to the amboceptor and therefore no hæmolysis will occur. We therefore test our serum by using a constant quantity of complement and decreasing doses of the amboceptor in the way indicated in the following table :

STANDARDIZATION OF HÆMOLYTIC SERUM.

	Antigen.	Amboceptor.	Complement.	Saline Solution.	Result After 2 Hours.
1	1 c.cm. 5% sol. of sheep's blood..	1 c.cm. diluted A 1.10	1 c.cm. diluted C 1.10	2 c.cm.	Complete. Hæmolysis.
2	"	" " 1.100	" "	"	"
3	"	" " 1.250	" "	"	"
4	"	" " 1.500	" "	"	"
5	"	" " 1.750	" "	"	"
6	"	" " 1.1000	" "	"	"
7	"	" " 1.1500	" "	"	"
8	"	" " 1.2000	" "	"	Incomplete. Hæmolysis.
Control 1	"	" " 1.10	" "	3 c.cm.	0
Control 2	"	.....	1 c.cm. diluted C. 1.10	3 "	0
Control 3	"	.....	.....	4 "	0

We judge the reaction as follows: If no hæmolysis takes place the red blood corpuscles are deposited as a red cap at the bottom of the tubes. Just the contrary takes place when complete hæmolysis is present—all the red blood corpuscles have dis-

appeared, and the fluid in the test tube resembles diluted red wine. Naturally, intermediate stages may be present and we then distinguish half, complete or nearly complete hæmolysis, etc. The result is generally judged during the first two hours after the substances have been mixed.

For every correct test it is also necessary to find the quantity of the complement in the serum of the guinea pig, which is the animal we generally use. It was Schubert¹³ who pointed out that the smallest complete solving quantity of complement necessary to dissolve the quantity of the red blood corpuscles with the standard solution of hæmolysin should be used. The long explanations of Schütz and Schubert¹⁴ as to why this should be done, especially in glanders, have no importance, as every one familiar with the complement deviation test knows that we must test every component part of the fluid we use for deviation. The standard of the complement in the serum of a guinea pig is generally obtained in the way indicated by the following table:

STANDARDIZATION OF COMPLEMENT.

	Antigen.	Amboceptor.	Complement.	Saline Solution.	Result After 2 Hours.
1	1 c.cm. 5% sheep blood.	1 cc., Hæmolysin Dil. A 1:1000	1 c.cm. 1:10 (0.1)	2.0 c.cm.	Complete Hæmolysis.
2	"	"	0.5 c.cm. 1:10 (0.08)	2.2	"
3	"	"	0.6 " 1:10 (0.06)	2.4	"
4	"	"	0.5 " 1:10 (0.05)	2.5	"
5	"	"	0.4 " 1:10 (0.04)	2.6	"
6	"	"	0.3 " 1:10 (0.03)	2.7	"
7	"	"	0.2 " 1:10 (0.02)	2.8	Incomplete.
8	"	"	1.0 " 1:100 (0.01)	2.0	0
9	"	"	.....	3.0	0
10	"	.....	1c.cm. 1:10 (0.1)	3.0	0
11	"	.....	.....	4.0	0

This table shows that 0.03 complement is necessary to dissolve the red blood corpuscles. It is therefore advisable to dilute the guinea pig serum to such an extent that just one cubic centimeter of the dilution contains 0.03 serum of a guinea pig (97-degree c.cm. saline solution, 3.0 c.cm. guinea pig serum) and add one cubic centimeter to the test tube for the hæmolytic reaction.

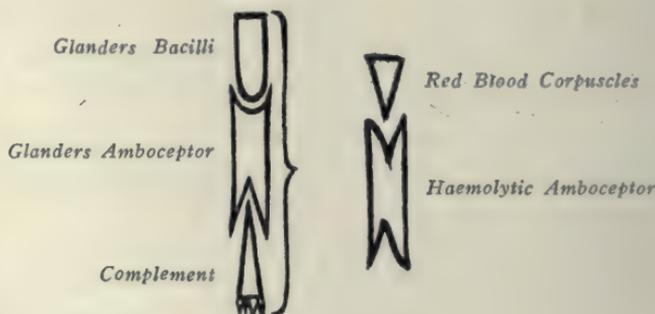
The hæmolytic system is only one part of the entire complex of the complement deviation test; the rather weak connection be-

tween complement and amboceptor can be demonstrated in a mixture of certain immune bodies, in which the complement will, under certain conditions, be removed from the hæmolytic system and become connected with another amboceptor and its antigen.

The second part of the deviation test has to do with two factors; in the disease under consideration, the anti-bacterial amboceptor of glanders and the glanders bacillus. A horse which has become infected with glanders, develops while the specific bacilli are multiplying in its body an anti-bacterial immunity, with the formation in its serum of antibodies. As explained before, every bacteria may act as an antigen. These anti-bodies (cytolytic and lytic) produced in the serum of the horse affected with glanders are specific, and have a great avidity to connect themselves with their antigen—the glanders bacilli—when brought in contact with them in the test tube. We know from experiments carried out by Ehrlich, Morgenroth, Bordet, Gengou and others, that when the homologous immune serum is mixed with the bacteria in the presence of the complement a very stable connection of the amboceptor with the antigen takes place. This reaction, however, is not visible in the test tube, and we use therefore the method of Bordet and Gengou, in adding the hæmolytic system to the mixture of antigen, bacteriolytic amboceptor and complement. By this method it was shown that when the real immune bodies are present, the antigen connects itself to its bacteriolytic amboceptor, and the complement attaches itself to this amboceptor. Nothing of the complement is left over, and the system—hæmolytic amboceptor plus red blood corpuscles—is incomplete and no hæmolysis occurs. The method of Borget and Gengou when first carried out had quite a different object, namely, to show that the complements in the serum of different animals are identical; but more recently the test has been employed to demonstrate the action of the amboceptors. If, however, no specific immune serum be used, the experiment will show fully hæmolysis, a proof that the antigen does not find its specific amboceptor and therefore does not use the comple-

ment, which is free and anchors itself to the hæmolytic amboceptor, dissolving the red blood corpuscles.

This fact, that by the method of deviation of complement in such sera as are not acting bacteriolytically, specific amboceptors can be demonstrated, gives the reaction at once a diagnostic importance. We are able by means of this genial combination and fine technique to demonstrate specific antibodies in the serum of sick animals and human beings. The method was used to find antibodies in man suffering from syphilis, tuberculosis, typhoid, plague or any other kind of bacterial infection. In veterinary medicine Dedjulin¹⁵ carried out some experiments on hog cholera and swine plague with the complement deviation test; Bach¹⁶ applied the test for tuberculosis; McFadyean¹⁷ for contagious abortion; Lichtenfeld¹⁸ for horse sickness and East Coast fever (I may mention here that the results do not correspond with mine, which were carried out before Lichtenfeld started his experiments and proved to be so varying that a continuation seemed to be inadvisable); by the writer¹⁹ for a specific nephritis in equines, and so on. The reaction is so strictly specific that no other substances will anchor itself to the amboceptor than just the antigen producing them. The following drawings explain the reaction graphically:

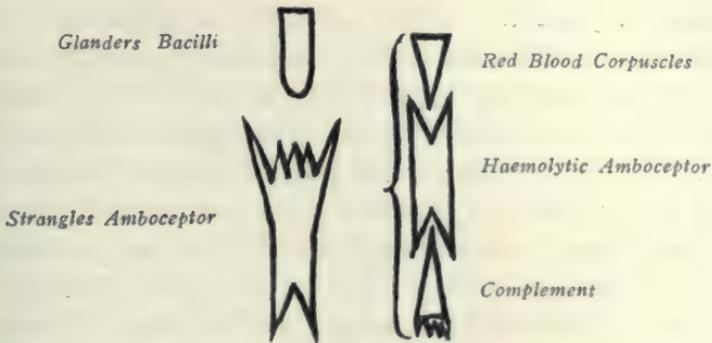


I.

Glanders Bacilli (1. Antigen).
Inactive Glanders Horse Serum (Glanders Amboceptor).
Complement.

Hæmolyisin (Hæmolytic Amboceptor).
Sheep Blood Corpuscles (2. Antigen).

Result—The complement became fixed to the complex; Glanders Bacillus, Glanders Amboceptor; no Hæmolysis.



II.

Glanders Bacilli (1. Antigen).

Inactive Serum of Horse (Strangles Amboceptor) Suffering from Strangles.
Complement.

Hæmolysis.

Sheep Blood Corpuscles (2. Antigen).

Result—The complement became fixed to the Hæmolysin and the red blood corpuscles;
Hæmolysis.

If a horse is suffering from glanders its serum contains a bacteriolytic amboceptor for the glanders bacillus. The complement will at once connect itself with the amboceptor in the horse serum and is therefore not free, and when new hæmolytic serum and blood corpuscles are added, no hæmolysis of the latter takes place. The complement is bound, or it has been, perhaps, better to say, deviated from the hæmolytic system.

A horse suffering from strangles and not from glanders has no specific antibodies in its serum, and the action of the complement on the glanders bacillus will not take place. It remains, therefore, free, and will attach itself to the hæmolytic amboceptor which is anchored with the red blood corpuscles, and hæmolysis takes place at once.

All these facts were well known from experiments with other diseases when, in the year 1908, Schutz and Schubert²⁰ in Berlin published an article in which they showed that the deviation of complement can be applied for the eradication of glanders. Their experiments were carried out in the same laboratories where, for the first time (1904), the agglutination test was made, tested and found to be a great help in the diagnosis of glanders.

At the same place it was proven that the agglutination test is not absolutely reliable, and that, therefore, an additional test was needed to diagnose glanders in horses, especially as the agglutination test is also often difficult to interpret. To find a more reliable method, Schutz studied the complement deviation, and showed that by this test it is really possible to detect glanders in any horse affected, if the disease is not of too long standing. He studied the test on a large number of animals and finally declared the test to be still in an experimental stage. From experiments conducted in South Africa and in America I am prepared to certify as to the value of the test. The great number of publications which have been issued on this subject during the last two years, all emphasize the splendid results obtained with the new test.

Schutz and Schubert²¹ tested over 3,000 animals and declared that by the complement deviation test practically 100 per cent. of the cases affected with chronic glanders were detected easily and quickly, including those cases in which difficulty usually arose when the agglutination test was used.

Keyser²² in two publications declares that the complement deviation test is more sensitive than the agglutination test. He obtained in six cases positive results where microscopically (by means of animal inoculation) the glanders bacillus was demonstrated.

Valenti²³ declares the Bordet-Gengou method to be of great value for the diagnosis of glanders. He experimentally produced glanders in guinea pigs and tested their serum; also two horses suffering from glanders gave positive results.

DeHaan²⁴ obtained better results with the complement deviation than with mallein. Pfeiler²⁵ had also very good results, especially when used in connection with the precipitation and agglutination tests.

Miessner and Trapp²⁶ by thorough investigation completed the work of Schutz and Schubert, and declared that the complement deviation test in connection with the agglutination test will

give the best results in diagnosing glanders. Shirrow²⁷ in Russia declares the reaction to be very satisfactory.

DeBlicck²⁸ declares the complement test to be reliable as a specific reaction for glanders. Schnuerer²⁹ points out the importance of the reaction, but warns the investigators that they must not rely upon only one test, because during the time of incubation no reaction will be present.

Nevermann³⁰ was able to show statistically that in many instances 100 per cent. of the glanders cases can be detected where the agglutination proves to be negative. From his publications the deduction can be made that the complement deviation test is more valuable and conclusive than the agglutination test. An exception has to be made, namely, in cases of acute glanders in which the agglutination test proved that glanders is really present and when the complement deviation is still negative. This point will be treated by me in a special publication dealing with experiments and observations, which I made on six mules, where the day of incubation was known and the necessary daily blood examinations were carried out. I am able to show that Nevermann's criticism is correct, because in four cases amboceptors could only be demonstrated ten to twelve days after infection, when the agglutination gave a standard of 1.1000 or 1.2000.

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(Concluded in June issue.)

"BACTERINS: THEIR RELATION TO VETERINARY PRACTICE."*

BY M. GILBERT GEORGE, AGRICULTURAL COLLEGE, EAST LANSING, MICH.

The interest of the veterinary profession and of the profession of general medicine in biological products is greater now than ever before, and the usefulness of various sera and bacterins in prophylaxis, now centres in the possibilities of bacterins as curative agents.

Whether the general practitioners will give bacterins their unqualified endorsement, it is yet too early to state. But this much is certain, there are many cases where bacterins are of great value; where they are almost, if not quite, a specific. There is also unquestionably cases where they will fail.

The principle involved in the whole procedure of bacterin therapy is the stimulation of the leucocytes to take up the infecting bacteria, and this is accomplished by increasing the opsonic substances in the blood by vaccination. There are certain substances in the blood serum which we designate as opsonins (Greek—opsonos, to prepare food for, or I convert to palatable pabulum) which are distinct and separate from toxins, anti-toxins, etc., which are also found in some sera. The opsonins are constituents of the normal serum, but may be markedly increased on actively immunizing the animal. Opsonins are only one class of a series of antibodies protecting the body from infection. It is said that the opsonins act chemically or physically on the bacteria. It is further stated that the leucocytes cannot normally phagocytize a bacterium which has not come in contact with the opsonins in the serum.

*Presented at the February, 1911, meeting of the Mich. State Vet. Med. Ass'n.

A free streaming of lymph, fresh from the circulation and laden with opsonins, should be promoted and maintained in every focus of infection. Wright has shown that the locality in which bacteria cultivate themselves is deficient in antibacterial substances on account of the sluggish circulation and the clotting of lymph in the sinuses. He also calls especial attention to the paralytic action brought to bear on the leucocytes, by the tryptic ferments liberated from the disintegrating pus cells in abscess cavities and sinuses, and to the futility of attempting to cure them by bacterin therapy unless they are emptied frequently and flooded with opsonic fluid fresh from the circulating blood.

Bacterins.—What are they? They are the dead bodies of bacteria prepared by propagating the etiological microörganism directly from the disease, and suspended in physiological saline solution. The bacteria are then counted in comparison with the red corpuscles in an equal volume of normal blood and adjusted to the desired number by dilution, or they may be standardized by the use of a MacFarland nephelometer. The suspension is so adjusted that it represents approximately a certain number of bacteria in a cubic centimeter. These bacterins contain from twenty million to a hundred million killed bacteria to the cubic centimeter of normal salt solution. By the repeated injection of these doses of dead bacteria, the patient's body is stimulated to produce those complex elements which either dissolve the living bacteria in the blood and tissues or render them more vulnerable to the attack of white blood cells.

The technique of preparing an autogenic or stock bacterin is as follows: Clean the field of infection thoroughly with weak solution of bichloride of mercury, alcohol and ether, or any other good disinfectant. Express the first pus from the inflammatory tract in order to exclude accidental saprophytic bacteria, and with a sterile platinum needle make a bacterial culture on several agar slopes from the deep pus. After the tubes are inoculated they are incubated at 37 degrees C. for from twenty-four to thirty-six hours. The cultures are then washed off carefully with sterile .85 per cent. sodium chloride solution, shaken

to destroy clumps of bacteria and heated in a water bath for one hour to attenuate the bacteria.

There are two general classes of bacterins—autogenous and stock, the former being used by some for chronic suppurating conditions.

Many stock bacterins are now on the market, but we are reluctantly compelled to state that a number of careful experiments have demonstrated that such preparations are practically inert and without therapeutic value. Much more encouraging results, however, are reported from the use of the autogenic type in all infectious maladies. We must admit, however, that stock bacterins have many points of advantage over the autogenous type and are the ones most commonly used. They are convenient, being ready for use when wanted, freedom from contamination, and accurate dosage. The latter feature is in their favor, as considerable technique is involved in the standardization of the autogenous type, which the veterinarian cannot command with his limited laboratory equipment. The stock bacterins are further divided into single and polyvalent bacterins. Stock bacterins are made from multiplied cultures of bacteria from many cases of the same infection and used in the treatment of a like infection in another patient.

What ailments are treated with bacterins? Fistulous withers, poll-evil, quittor, nail punctures, stab wounds, wire cuts, open joints, pulmonary congestion complicating a mild case of strangles, strangles, double pneumonia, swollen collar bruises, pitchfork injury, pus discharging from an opening about the anus in superior sacral region, snag wounds, distemper in puppies, canker, umbilical infection, influenza, anasarca, adenitis, etc.

As to Dosage.—The question of dosage apparently cannot be arbitrarily settled. Each individual case presents new features and conditions, which modify the doses of the suitable bacterin and, especially, the frequency with which it is given. There is a tendency to rely more and more upon the clinical signs for the control of dosage. This has caused a closer study of clinical symptoms and a consequent demand for more accurate methods.

This has been subject to many and wide variations among practitioners of veterinary and human medicine. The typical reaction to bacterins consists of, first, a "negative phase" when the animal's opsonic index is lowered, its resistance to the infection decreased and the disease process intensified, followed by the "positive phase" when the opsonic index rises above normal and improvement takes place.

How often should an animal be treated? Dr. Wright believed and taught that frequent calculations of opsonic indices were necessary to accurate dosage. No doubt this is true, but the above technique would limit their application as the veterinarian could not command laboratory equipment to carry out such. This difficulty of controlling bacterin therapy by taking the opsonic index has resulted in the adoption of clinical control as a more practical method of determining the proper dosage and the intervals at which the doses may be given for the purpose of stimulating the cells. Therefore, while the taking of the opsonic index is generally admitted to be desirable, the use of this method is not employed to any great extent outside of specially equipped laboratories and by those who are especially trained in laboratory technique.

What are the clinical symptoms? A loss of appetite, elevation of temperature, or increased discharge from the wound thirty-six to forty-eight hours after the injection indicates a full reaction to the bacterins.

It is interesting to note how strangles in horses is treated by Capt. A. G. Todd of the United Kingdom. He isolates and fortifies the *Streptococcus equi* from strangles pus, by passing it through white mice and growing it on inspissated blood-serum at 37 degrees C. for twenty-four hours, large flasks (500 c.c.) of ten-per cent. serum-bouillon are inoculated and incubated for one month, six per cent. sterilized glycerin is now added, after which it is exposed in an incubator at 60 degrees C. for two days over unslaked lime. This kills the organisms and causes evaporation of the culture down to a thick paste, which is dissolved in one-half per cent. carbolic acid and sterilized distilled water, and

brought up to one half its original bulk, which makes it thin enough to pass through an ordinary hypodermic needle. It is now run into five c.c. sterile tubes hermetically sealed and stored ready for use. This material, which he has called Strangline, was injected subcutaneously in doses varying from one to ten c.c. The horses receiving the maximum dose had a large local reaction lasting four to five days, and a thermal reaction lasting two days, so it was decided to use it in five c.c. to ten c.c. doses in the treatment of the disease.

The efficient and practical use of Bacterins should be borne in mind by the progressive veterinarian, and put into practice when found worthy and useful in classes of cases where their application proves beneficial. Let us hope that the veterinarian of to-day will make an added effort to familiarize himself with Bacterin Therapy.

DR. B. F. KAUPP, of Fort Collins, Colorado, has been testing hogs on the college farm, for tuberculosis, using both the intradermal and subcutaneous methods.

DR. D. D. KEELER, Salem, Oregon, in renewing his subscription to the REVIEW, which he says he will keep up as long as he is able to read veterinary literature, sends the following interesting letter: "We are having quite a number of cases of 'staggers,' as the farmers call it, but which is, in reality, we think, ergotal poisoning, such as the cases reported in the December number of the AMERICAN VETERINARY REVIEW. There has been some loss, but not so great as some former years, as we think we know what it is and are learning how to manage it. Some farmers persist in feeding the patient with oat-hay or oat-straw, and so keep putting the poison in. The muscles cramp badly, and the patient has much difficulty in keeping its feet, especially if on a plank floor, for on the floor they seem to have a swimming sensation, and when they go down a few times they are unable to rise, and the muscles of the bowels become cramped; the bowel is constipated, and death soon puts an end to the scene. I feel like thanking you, certainly congratulating you, on so fine a number as you *continue* to give us, twelve times each year."

REPORTS OF CASES.

“ A PIG TALE.”

By JNO. MERRIMAN, M.D.C., Bear Lake, Mich.

Without the usual preliminaries that most writers exhaust the patience of their readers with before the villain is captured, I will try and describe an interesting case of last summer.

History of the Case.—The flour mill of my town has been keeping hogs for a few years and have always had sick pigs for some reason and, as the story goes, they suspected some unscrupulous person of giving them some poisonous substance. Last year they built a new house and pen and started anew with a few sows with fair-sized litters, and in a short time these acted peculiar, as their others had done.

Semiology.—When I looked into the pen I saw so many symptoms I did not know where to start first. Some were dull and wouldn't move unless treated quite roughly; others were excitable and hard to keep track of. Some were hiding their heads under straw or wood piles. The majority were humped up and had a crampy gait. Dyspnoea, flatulence, constipation and eyes wild and congested. Some were on their backs pawing the air and yelling; others laying on the abdomen all stretched out, and enjoyed that position, seemingly. The owner said they frothed at the mouth, had convulsions, and a few had died.

Diagnosis.—I came to the conclusion that gastric impaction was the cause, as there was considerable dyspnoea and bloat, but the owner thought differently as he fed nothing but slops. I thought of the migrating stage of the *Trichina spiralis*, and suspected internal parasites. I told the owner I suspected some stomach and bowel trouble, and suggested killing one (of course the runt) and we soon found out the cause.

Post Mortem.—It is not in accordance with the rule to give the post mortem or pathological anatomy before treatment has

been expounded, but I have on a few occasions found it a good move, especially with a bunch of young pigs. As before stated we soon arrived at the cause, that the professors so easily tell us to remove before naming over about half the drugs in the Pharmacopeia. The principle feature of the post mortem was an impacted stomach, its contents being a chewed-up, stringy looking material resembling the interior of a sweat pad. On removing the stomach it felt like an indoor baseball. There was extensive enteritis around the pyloric portion of the small intestine. Contents of bowels, semi-solid.

Prognosis.—Unfavorable.

Therapeutics.—I believe surgical treatment would have been advisable if the hogs were washed perfectly clean and the operation performed on the kitchen table under aseptic precautions.

I prescribed a few simple drugs as: mag. sulph., four ounces; powd. gentian and zingiber, each two ounces; calomel, ten grs. Give as one dose for big ones, divide into four for little ones, three times a day. They got this medicine and all the water they wanted for two days, when they seemed all right.

We thought the contents of the stomach to be an old sweat-pad or rope that they might have eaten, but after some investigation found out it was from the bags and frayed ends of strings used at the mill, and was fed to them with the sweepings of the floor.

A CASE OF CANKER OF THE SOLE CURED BY AUTOGENOUS BACTERIN (CRUDE) METHOD.

By W. T. WEBB, V.M.B., Quarryville, Pa.

During the month of October, 1910, I was called to attend a case of canker of the foot, in a fine seven-year-old road gelding. Two other veterinarians had tried their luck and failed.

The frog, bars and quarters of the sole were in a suppurating condition. Excretion of a foetid greenish pus was present with proliferative horn of a damp, shiney, character, in abundance. I administered a local anesthetic over the plantar nerves and performed an heroic operation with scalpel, hoof knives, forceps and scissors.

I then soaked the foot in a creolin bath and applied equal parts of calomel and iodoform and bandaged. I instructed the owner to follow the same treatment once daily until my return a week later.

On my next visit I began using a stock, polyvalent bacterin, with alternate soaks once daily of ten per cent. creolin and lime and sulphur dip; after which iodoformed ether was used and foot dressed with cotton and a steel plate inserted under the shoe to keep the dressing in place. The frog took on a healthy appearance under this line of treatment.

I gave six doses of the bacterin in accelerated doses and used nuclein solution (15 c.c. P. D. & Co.) the last two times the bacterin was injected.

On January 4, 1911, I called to see the horse. The frog at this time seemed perfectly healthy, but there was no improvement of the sole.

The owner was disgusted and told me he had decided to destroy the animal. I argued the case and explained the autogenous bacterin treatment and asked him to let me try it as a last resort. He thought he had gone to enough expense and did not believe the foot would get well under any treatment. At last he offered to sell me the animal at almost nothing if I would promise not to sell him unless he was cured. I assented and had the horse brought to my stable where the foot was washed out with water, dressed with oakum and a bandage and left alone for two days. I then collected the material, macerated in a mortar with about four times the quantity of .85 per cent. sodium chloride solution, filtered the solution and heated at 130 degrees F. in a water bath for four hours. The solution was again filtered and five c.c. of the bacterin injected. I continued this treatment every fifth day, gradually bringing the dose up to fifteen c.c.

The foot improved rapidly and only six injections were made when no more material could be collected. One small abscess developed after the last injection, which responded readily to treatment. I noticed no negative phase, but had a rise of temperature of one degree F. to 1.5 degrees F. after each injection.

I used in connection with the bacterin treatment occasional applications of iodoformed ether, 1.8; about four doses of nuclein solution 15 c.c. at intervals and two courses of Fowler's solution in increased and decreased doses. I also blistered the coronet with boniodide of mercury and cantharides ointment, 1.8.

On February 20 the horse was shod, the foot padded with oakum soaked in pine tar and a thick felt pad nailed under the shoe. I then began to exercise him daily and finding him an excellent roadster began to use him occasionally in my practice.

On March 2 the former owner stopped at my place. I took him for a drive with the horse over a stone road and then stopped at a shop and had the shoe removed. The foot was still a trifle hollow, especially in the extreme corners of the heels, but all horn was in a dry healthy condition.

I offered to let him have the horse at a nominal sum, but as he had bought one to take his place and seemed afraid that the canker might show up in the future, he told me to dispose of him as I saw fit, which I have since done at an excellent profit.

UNUSUAL AND INTERESTING CASES OF DYSTOKIA.

By WALTER S. NICHOLS, B.V.S., Ravenna, Neb.

Case No. 1.—On March 23, 1911, I was called to attend a case of dystokia in a mare, sixteen years old, weighing 1,400 pounds.

On examination I found the foetus in the uterus transversely, the head to the left, the fore feet and legs were in the left uterine cornu, and the hind feet and legs were in the right uterine cornu. The uterus was ruptured just anterior and to the left of the entrance to the pelvic cavity. The head and neck of the foetus protruded through the rupture into the peritoneal cavity of the mare. The colt being dead and the mare in a hopeless condition I ordered her destroyed. This mare had not been seen to labor at all, but evidently she had been in labor the night previous.

Case No. 2.—On March 28, 1911, I was called to attend the following case of dystokia in a mare, seven years old, weighing 1,200 pounds.

This mare was not due to foal until six weeks later. On the day previous to being called she had been severely kicked by another horse in the right flank, just below the right lumbar region. On examination I found breach presentation with tarsal joints flexed and in the entrance of the pelvis. The foetus being small I had no trouble in delivering it. After delivery I examined the uterus carefully and to my surprise found it rup-

tured about six inches anterior to the bifurcation, involving the right cornu. The rupture was not less than six inches in diameter. Several blood clots were present, but there was no hemorrhage at that time. This indicated that the rupture had taken place some hours previous. I gave an unfavorable prognosis and advised that the animal be killed to avoid more suffering.

To ascertain the opinion of my professional brethren I ask this question, Was this rupture due to the kicks received the day previous to the delivery of the foetus?

My opinion is in the affirmative.

DR. J. A. McCLURE, of Billings, Mont., writes: "After a delay of a few days I am permitted a few moments of time to attend to a very pleasant duty and privilege, that of *renewing my subscription* to the *best journal* I have come to be acquainted with for a busy practitioner of veterinary, medicine. I thank your staff for so *faithfully* looking after the interest of our worthy calling. Wishing you a *prosperous* year I remain as ever yours."

THE ALUMNI ASSOCIATION of the NEW YORK-AMERICAN VETERINARY COLLEGE (Vet. Dept. of New York University) held its annual dinner on Wednesday evening, April 26. The occasion was honored by the presence of Commissioner Raymond A. Pearson, of the New York State Department of Agriculture, whose address was one of the finest that has probably ever been delivered before a body of veterinarians by one without the profession, on subjects of such vital importance and so closely related to those within it. It was not the commissioner's first visit to that body, and it is sincerely hoped it will not be his last; as his visits are very much appreciated and very much enjoyed.

Prof. Harry D. Gill proved the wisdom of the dinner committee in appointing him toast-master, as his versatility made him peculiarly fitted for the role. Hoskins came out with his usual forcefulness, Dean Coates, poetic; Blair, eloquent, and finally the venerable Ferster, humorous. President R. S. MacKellar's introductory remarks gave voice to the satisfaction that his beaming countenance expressed, in the affairs of the organization. Which, by the way, have again been entrusted to his care by his re-election at the afternoon meeting. Secretary Carey and Treasurer Harms were also re-elected.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

FRACTURE OF THE TIBIA IN CATTLE [*F. J. Dunning, M.R.C. V.S.*].—The writer when at first was called to cases where setting was difficult to apply and prospects of recovery doubtful, had a tendency to recommend slaughter. But now by long experience, he has learned not to be in such a hurry and he does not hesitate to set the fracture and he has success in following this method: A bandage between three and four inches wide, of thick, unbleached calico, is soaked in plaster of Paris or any ordinary paste, which, by the way, he has found best to use. He then commences winding it round above the hock, until a level surface of practically the same circumference is obtained, reaching from the flexure and point of the hock to as close up to the stifle as possible to bandage. Short wooden splints are then applied outside and in and fastened tight with paste or plaster bandage. When set the limb is absolutely rigid from the stifle to the hock and slings are unnecessary. In three or four weeks consolidation has taken place.—(*Veter. Record.*)

RUMENOTOMY IN CALF—REMOVAL OF FOREIGN MATTERS [*J. P. Hamilton*].—A four-months Short-horn calf has been ailing, he is dull, breathes heavily with a grunt. He has fits after feeding. Impaction of the rumen or one of the stomachs due to a foreign body is suspected. Oleaginous purgatives, stimulants and anodynes form the base of a treatment which is without effect or gives only temporary relief. As the calf gets worse, an operation is decided upon. Rumenotomy was performed with all indicated care and when the hand was introduced in the rumen it found a mass consisting of a large quantity of binder twine with undigested food, all squeezed into a lump. This was extracted and on examining the binder twine was found to be in

short lengths which the calf had picked out from the straw bedding. The operation was concluded by the closing of the wound and cicatrization took place without any serious complications.—(*Veter. Record.*)

CASE OF GOITRE IN THE HORSE—OPERATION—DEATH [*A. W. Noel Pillers, M.R.C.V.S.*].—Twelve-year-old pony had swelling in the throat which has grown considerably since three weeks and has recently caused difficulty in deglutition. When seen the growth was a rounded, well-defined mass, extending from an inch behind the vertical ramus of the lower jaw, nine inches down the neck. It projects on both sides, but more so on the right. It is about six inches in breadth across the front of the neck. The general condition of the pony is otherwise very good. The diagnosis of goitre was made and medicinal treatment first tried. Injections of iodine, iodide of potassium internally, but all gave no results. The animal was then cast, chloroformed and operated. The dissection and removal of the tumor was accompanied with unexpected hemorrhage. The wound left was very large and was dressed with chinosol. After a little reacting fever which lasted a few days the pony did well for a short while, but on one morning his breathing became very distressed, he fell down, had a profuse hemorrhage and was then destroyed. The tumor had made a deep groove in the trachea and measured eight inches in length, four in width and weighed four pounds. Its nature of cystic adenoma was made out by microscopic examination.—(*Veter. News.*)

OPHTHALMIA IN TETANUS [*S. J. Matton, M.R.C.V.S.*].—A mare had lockjaw, and nine days after the first manifestations the cornea of both eyes was cloudy. There was a discharge from both eyes. After recovery from tetanus the eyes cleared off entirely, except the left cornea, which remained slightly blemished by small yellow specks. The trouble of the eyes was treated with lotions of sulphate of zinc.—(*Veter. Journ.*)

ABDOMINAL ABSCESS IN A HORSE [*Capt. E. S. Gilbert, M.R.C.V.S.*].—Four-year-old gelding had slight fever and has been in poor condition; he was said to have frequent loud borborygms. He died without a positive diagnosis being made. At the post mortem a large abscess uniting the stomach and spleen was found. It contained over one quart of pus. A number of small

ones were also situated on the diaphragm, the mesentery and the large colon. The liver weighed twenty-five pounds.—(*Ibidem.*)

ADRENALINE AND ACUTE LAMINITIS [*Capt. E. A. Nicholas, M.R.C.V.S.*].—Two new cases of successful treatment of laminitis by adrenaline injected on each side of both fore legs. Cold bran poultices were also applied to the feet.—(*Veter. Journ.*)

HERNIOTOMY IN A VALUABLE RUSSIAN HORSE [*A. Chinniah, G.B.V.C.*].—After describing the *modus operandi* the author writes: "Having decided not to adopt the conservative process of retaining the testicles, I hurriedly opened the left sac and felt the ring which I found free. The whole scrotum with the testicles were enclamped in my metal clamp, and I screwed up both very tight. On the third day the scrotum and testicles were cut away about three inches below the clamp. This dropped on the eighth day."—(*Ibidem.*)

INTRAMUSCULAR INJECTIONS OF A SOLUTION OF COLLARGOL IN ECZEMA [*J. A. N. Da Cunha, G.B.V.C.*].—This treatment was applied to a terrier dog which had a troublesome eczematous eruption which had been treated in various ways for nearly a month and a half without result. An intramuscular injection of three c.c. of one-per cent. solution of collargol^h every alternate day with external applications were followed by radical recovery after a few days.—(*Ibidem.*)

ASPIRINE IN CANINE PRACTICE [*Capt. E. S. Gilbert, M.R.C.V.C.*].—The author has had excellent results by the use of aspirine in dogs where ordinary febrifuges had failed. The effects being marvelous and the temperature rapidly being reduced. He mentions a case where a dog whose temperature had been 106 degrees F. for a week, often going over 107 degrees, which in short notice was relieved with aspirine.—(*Ibidem.*)

POST-PHARYNGEAL TUMOR [*Arthur New, M.R.C.V.S.*].—A horse that has been ailing for some time, had strangles. He presented some difficulty in swallowing and he had the throat considerably swollen. There were several abscesses in the maxillary space. He was treated as having strangles, rather a bastard attack, with post-pharyngeal abscesses. Tracheotomy

had to be performed and the horse got some relief. Four days later a large quantity of fœtid blood and pus were discharged from both nostrils and the whole head became very swollen. He then had bloody urine. He grew worse and was destroyed. A fibrous tumor attached to the outer wall of the pharynx and adherent to the guttural pouches and hyoid bone was found. It weighed one pound; there was considerable infiltration all round.—(*Veter. Record.*)

POISONING BY CHARCOAL FUMES [*Capt. E. P. Argile, A.V.C.*].—Nine-months old dachshund was placed in an unventilated room with a bitch and three puppies. A bucket of burning charcoal was lighted in the room to prevent them from catching cold. The next morning the bitch and puppies were dead and the dachshund very ill. He had no power in his forelegs, kept his head on the ground, howled continuously, had spasms of the neck and hind legs. The pupils were dilated. He seemed unable to see anything. He howled much when he was handled. His pulse was 170 and weak. The temperature normal. The respiration irregular and shallow. If left alone, he remained quiet, but became excited and had convulsions with any motion or touch done on him. Treated with fresh air, warm covering, soap-suds injections, he improved very little. After two days he was able to stand and walk. Yet he was blind and had convulsions. As he did not improve fast enough the owner had him destroyed after one month of care and treatment.—(*Veter. News.*)

SPINAL ANKYLOSIS FOLLOWED WITH RUPTURE OF THE AORTA [*Lieut. H. C. Stewart, A.V.C.*].—An army horse has worked for ten years with only twelve entries at the infirmary. One day while being ridden, he was found in great pain; the near hind leg is continually raised and lowered. He has cold, clammy sweat and is shivering. The temperature is 102 degrees F. Stimulants were given and after two hours' rest he was able to walk into camp. The case was considered as one of contusion of the hind leg and treated as such. Seven days later, he had but a slight stiffness behind, the lameness had entirely disappeared. The next morning the horse was found down and dying in his stall. At the autopsy a rupture of the posterior aorta was revealed with abundant hemorrhage within the abdominal cavity. The bodies of the fifth, tenth and fourteenth dorsal vertebræ were nearly double their normal size from adventitious

bony growths; that on the tenth being the largest. The rupture had occurred under this last growth. The whole of the vertebral column from the fifth to the fourteenth vertebrae were completely ankylosed. The fifth rib on the near side was double at its upper third and the sixth twice its normal width.—(*Veter. Record.*)

FRENCH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

OBSERVATIONS ON THE TREATMENT OF TETANUS WITH SERUM [*Mr. A. Chazeau*].—Is antitetanic serum in large doses indicated in developed lockjaw? Is it equally indicated in both, the acute and the chronic form of the disease?

While the action of the serum as a preventive is adopted by all, its curative properties are doubted. A record of six cases is given. No slings were used in either of these. They are clinical facts. In two acute cases treated by injections of antitetanic serum in large doses, death took place. In three cases of acute disease, which were treated without serum, recovery took place in the three. In one case of chronic tetanus treated with antitetanic serum, there was also recovery.

Conclusions of the writer: In the acute form, the serum in large doses has no curative effects. On the contrary it seems to increase the acuity of the disease which is almost always followed by death. In the chronic form the injections of serum seems to increase the resisting power of the organism by neutralizing the tetanic toxins. If the serum has made its proofs as a preventive, it is not so as a curative. Its action may be efficacious in chronic lockjaw but in the acute form it is contraindicated.—(*Rev-Gene. de Mede. Veter.*)

INTOXICATION OF PIGS WITH MUSHROOMS [*Mr. Morel, Sanitary Veterinarian*].—Having received an evening meal made of potatoes, cabbage and leeks mixed with water in which about five pounds of mushrooms (*Armil laria mella*) had been boiled, four pigs the next morning are very sick. One, which is about dying, is bled and the author sent for. He found the three that remained very ill and after a few days they died. The symptoms

that they exhibited were: Loss of power, animal standing against surrounding objects to prevent falling, cutaneous sensibility much diminished, staggering walk with automatic motions and dropping on the ground; abundant salivation, no vomiting nor alvine dejections. Post mortem: Irregular red patches on the skin, muscles and thoracic and abdominal lymphatic glands congested; liver, kidneys and lungs also. These organs have the aspect observed in animals that have died from asphyxia. Stomach distended by food. The mucosa is highly colored, and eroded here and there. Small intestine empty, bloated and congested. Treatment with tartar emetic and ipecac failed. The meat was thrown away.—(*Journ. de Zootech.*)

BIER'S METHOD WITH CUPPING [*A. and R. Lasserre, Army Veterinarians*].—Following their investigations on the advantages of this method the authors relate two cases where they have obtained superior results by resorting to the use of simple dry cupping. One was in a mare which, from a kick on the right stifle, became very lame with an attack of acute arthritis which remained rebel to all ordinary treatment. Cupping was then used for five days and from that date improvement began to show, the local and the general condition improved and after a month of treatment recovery was complete.

Again in a horse the kick which he had received on the lower internal side of the left hock was complicated with extensive arthritis and severe periostitis. Temporarily relieved by firing, he soon returned lame after a short time with suppuration of the hock joint and all the manifestations of purulent synovitis. Treated without good results it was thought that it would be better to destroy him and Bier's method was just tried as a last chance. After three days there was slight improvement and in two weeks the animal began to put weight on his leg. The application of cupping which had been used, was continued for nearly one month and complete recovery, although slow, permitted him to resume his work after having been laid up only two months.

The authors have had a number of successful recoveries by the use of Bier's method and cupping and while they have obtained those results they prefer the simple use of the band to apply the method in preference to the use of cupping.—(*Rev. Veter.*)

VERMIFORM DERMATITIS OF DOGS [*Prof. L. G. Neumann*].

—A certain number of observations have permitted the establishment of the presence of embryos of nematods in the morbid liquids of some dermatosis. Sometimes they were microfilaria and at others Rhabdites. The former are the same as those found quite often in the blood of dogs, they are embryos of *Filaria immitis* or of the *Filaria recondita*. The latter are small worms of the *Anguillulidæ* family, which live as saprophites in damp ground, plants or putrifying substances and which may be carried on the body of dogs. It has seemed useful for the author to resume what is known on the subject. The observations of microfilariosis were made by Rivolta (Italy), Jansen (Japan), Rosso (Turino), Mazzanti (Verona), Del 'Acqua (Milano), Tabasso (Turino), Bonvincini (Bologna), Miller (Calcutta). Among the anguillulidæ are known the observations of Siedamgrotzky, of Schneider (Giessen), Kunnemann (Hanover), Horne, Lemke, Liebre, of Hanover. The concise description of the manifestations and history of these cases are quite interesting for those who are likely to meet dogs with their peculiar forms of dermatosis.—(*Rev. Veter.*)

TREATMENT OF PNEUMONIA BY ANTISTREPTOCOCCIC SERUM

[*Mr. G. Parant*].—This is to rehabilitate a treatment which has been condemned by some as having given rise only to serious complications. In this case a mare, which had refused her food the evening before, was presenting all the symptoms of pleuropneumonia of the base of the left lung; yellow membrances, thick cough, rusty nasal discharge, complete dullness on percussion on the postero-inferior part of the left lung, thick mucous râles on the upper part and loss of respiratory murmur below. Pulse, 66; respiration, 30; temperature 42.2 degrees C. Mustard poultices and acetanilide internally were prescribed. As there was no change in the symptoms, 30 c.c. of serum were injected and 50 gramms of alcohol at 95 degrees given internally. From this moment the temperature begins to run down to 39.6 degrees, 39 degrees, 37.4 degrees. The disease followed its short course, the serum having been injected four days when it was stopped and the treatment continued with stimulants and laxatives. The disease lasted ten days altogether when resolution was almost complete. In this case the temperature began to drop as soon as the first injection of serum was made.—(*Report. Veter.*)

BRONCHIAL LITHIASIS [*Dr. V. Ball*].—This case was observed in a cat, aged thirteen years. He had had spells of coughing corresponding to true crisis of pains from calculi, which were complicated with dyspnea, loss of appetite and great emaciation. The expectoration of a *broncholith* by the patient, if it had taken place and if it had been detected, would have permitted a diagnosis. The cat died in a crisis of asistoly with pulmonary edema. This disease has not yet been mentioned in veterinary works. The author has already observed in an aged horse a case of *pneumolith* on the posterior lobe of a lung where it was situated on the surface in a small cavity having calcareous walls and forming a loose calcareous little mass, somewhat rough and measuring three centimeters in length.—(*Journ. de Zootech.*)

AUTOMUTILATION IN ANIMALS [*Mr. C. Blain*].—Referring to the cases of so-called automutilation already recorded, the author speaks of the case of a seven or eight-months spaniel dog which had weakness of the hind quarters and slight chorea. He also had on the belly and on the internal face of the thighs cutaneous eruption. These symptoms grew worse rapidly, the paralysis became more marked and the symptoms of chorea quite strong. The dog constantly licked his stifles and the muscles of the thighs. He was muzzled, but the next day he was found with the muzzle off and the muscles of the anterior face of the femur as well as the skin all torn away. He was killed. In this as in the cases described by some already, subacute meningo-encephalitis lesions were found and it seems that lesions of the nervous system play an important part in the etiology of automutilation in modifying the general sensibility.—(*Ibidem.*)

BELGIAN REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

RUPTURE OF THE UTERUS IN THE DOG [*Professors Hebrant and Adj. Antoine*].—These two cases are recorded as being interesting by the fact of the rupture having taken place from similar causes. In both, the various stages of the pregnancy were

normal, and the manifestations of labor were observed. But the very marked atresia of the vulva, with that of the vagina, explained satisfactorily the rupture, the neck, the os uteri having failed to give away, notwithstanding the muscular contractions and the work of the uterus, its coats gave away and the rupture took place.

First Case. Sheep dog was covered ten weeks ago, all the normal signs of gestation followed and when arrived at term the dog prepared herself and suddenly all subsided without any fœtus being present. Exploration of the external genitals shows a vulvar and vaginal atresia, a probe can scarcely be introduced in the uterine cavity. The abdomen exhibits all the indications of ascitis, exploring puncture gives escape of brownish fluid, odorless, which by examination justifies a diagnosis of purulent peritonitis. Laparotomy is performed. On opening the abdomen very abundant quantity of fluid escapes. It was similar to that drawn with the exploring puncture. Hairs were mixed with it. After thorough washing of the peritoneal cavity a fœtus is exposed among the intestinal circumvolutions and taken away. The uterus is brought out and found to contain another. The left horn is torn transversely and the edges are indurated. The right horn is empty. The uterus is emptied of its contents, the rupture sutured and the abdomen closed after a thorough disinfecting washing and a drain tube, being well secured, the dressing is completed. The dog has torn it the next day. New sutures and new bandaging. Dog dies the next day. At the post mortem with the discovery of extensive lesions of peritonitis, there were found the cadavers of four fœtuses, one between the liver and right hypochondriac region, and the three others concealed by the intestines.

Second Case. This was observed some six months after the first in a griffon which presented the same history about the signs of gestation and parturition. Afterwards, since three or four days, she makes violent expulsive efforts. She also has a marked vulvar atresia. Laparotomy is suggested. A large bag of suspicious looking fluid is seen as the abdomen is opened. In the fluid there is floating a dead fœtus. Then two others are found. The uterus is torn on its inferior face with an opening involving the body of the organ and the right horn. The dog was destroyed.—(*Annals de Brux.*)

DIAPHRAGMATIC LACERATION IN A DOG [*Mr. Facs*].—Result of an autopsy made on a dog to which the owner had administered a dose of twenty grammes of castor oil, and which had been found dead the next morning. During the afternoon that the oil had been given, the dog had made violent efforts to defecate and manifested severe colics. Death had taken place during the night. On opening the abdomen, no inflammatory lesions were found, but the stomach was not seen. Tracing the duodenum it was found having passed through a laceration of the diaphragm in its middle close to the vertebral column. The stomach in the thoracic cavity was much dilated, congested and pressing against the lungs and must have interfered considerably with respiration during the lost moments of life.—(*Bullet. de Med. Vet. Pratique, Itali.*)

THE Local Committee of Arrangements of the New York State Veterinary Medical Society are busily engaged making preparations for the coming meeting in Brooklyn; but are not quite ready to make an announcement this month. We would urge members to respond with as much expedition as is possible to queries they may receive from the committee relative to their literary contributions, so that an outline of the program may be formed without unnecessary delay.

ONE of our Western readers writes: "I have just finished reading in the REVIEW an article on the reformation of veterinary degrees by Dr. Hughes, of Chicago, and thought that the degree which Mr. — has given himself may be of interest.

"The degree is very characteristic of the man, as he went to the Islands several years ago as teamster on the 'Dix'; he failed to make good as a farrier, and upon his return got out this card:

<p>—————, A. V. S., U. S. A.</p> <p>Late Acting Veterinary and Chief Farrier Dep't. of the Phillipines</p>
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"For some reason he has given up his profession. I hope no one will adopt this degree."

ARMY VETERINARY DEPARTMENT.

MEETING OF ARMY VETERINARIANS AT THE DIVISION MANEUVER CAMP, FORT SAM HOUSTON, TEXAS.

A meeting of the veterinarians of cavalry and field artillery present at the Division Camp, Texas, took place on April 14. Present were: Drs. Le May, Schwarzkopf, Gage, Gould and Mitchell. Dr. Geasson was absent, as also Dr. Johnson, Commissary Department, U. S. A., who could not attend.

Dr. Le May was elected chairman. In an informal discussion plans were considered for future army veterinary legislation. It was agreed that the old Senate Bill 1692, should be considered as dead, and that an entirely new bill, on more modern lines, should take its place. The consensus of opinion was that by fighting for the old bill, years of progress had been lost, for which compensation must now be found in an attempt to gain an army veterinary organization with enough of rank and promotion for the veterinarians composing it to guarantee greater efficiency of the veterinary service and a just status of the veterinarian.

It was further agreed that the new bill should first be endorsed by all army veterinarians to insure unanimous satisfaction and consent, and if this was reached, to introduce the bill directly into Congress without submitting it to official channels.

It was, finally, the opinion of the veterinarians present, that the fight for the new bill should be left to properly selected men outside the army, and that the American Veterinary Medical Association be petitioned to select a strong legislative committee to consist, in the majority, of veterinarians known to be democrats of political standing, as otherwise any attempt at army legislation would be futile.

One of the veterinarians present was instructed to draft the new bill along the lines suggested, to be further considered at the next meeting to be called as soon as all would be again present in camp.

OLAF SCHWARZKOPF.

ARMY PERSONALS.

Veterinarian Richard B. Corcoran, Twelfth Cavalry, has been retired from active service on account of age. He will make his home in Utah. There are many army officers who wish him a happy and quiet life in his declining years, after fighting hard for any good cause throughout his career.

There are thirteen veterinarians present at the Division Maneuver Camp in Texas: Six of the regular army, one as meat inspector of the Commissary Department, U. S. A., and six civilian veterinarians of the Quartermaster's Department, who were engaged by telegraph for the camp. A Division Field veterinary hospital has been established with stabling facilities for one hundred horses and it has shown its need, as there are over six thousand horses and mules in the camp.

O. S.

THE Report of the Milk Commission of Philadelphia: Through the courtesy of Dr. C. J. Marshall, of Philadelphia, we recently received a copy of the report of the Milk Commission of Philadelphia. This is without doubt the most complete report on such a subject that has ever been published by any city. It is full of instruction, and bespeaks the fitness of the Commission. It is not possible to do justice to said Commission by any descriptive account of the published report; it must be seen in order to thoroughly appreciate its scope.

THE South Carolina Association of Veterinarians is the name of an organization started in that state last year; and while the membership is necessarily small, their ambitions are large, in their endeavor to aid in the work of advancing the profession that is going on everywhere in America to-day. The officers are: Benjamin McInnes, Charleston, President; M. Ray Powers, Clemson College, Vice-President, and Clarence E. Smith, Greenville, Secretary-Treasurer. The next meeting of this association will be held in Charleston, in August.

CORRESPONDENCE.

THE COMING MEETING OF THE A. V. M. A.

Editors AMERICAN VETERINARY REVIEW—As the time is fast approaching for the next annual meeting of the American Veterinary Medical Association, a word or two concerning the place of meeting selected by the Executive Committee would seem to be in order about this time.

As has already been announced, the City of Toronto, situated on the North Shore of Lake Ontario in the Province of the same name, has been selected for the great event.

The city itself is recognized in the Dominion as the Queen City of that portion of our Hemisphere. The name itself is of Indian origin, and for our purpose seems apropos, for, when it is literally translated, it signifies "a place of meeting;" and, in early times, was a rendezvous for Indian tribes in Councils of War. It covers an area of about twenty-five miles, and is provided with all the modern improvements of an up-to-date metropolis, having a most excellent street-car system, as well as other convenient means of transportation. The streets have recently been illuminated at night with a most brilliant system of electricity, the power for which is derived from the Niagara Falls, as is also that for the street-car system above referred to. The hotel accommodation is as good, perhaps, as any on the Continent.

At the foot of Yonge street, which may now be regarded as one of the principal business thoroughfares of the city, is to be found a nicely equipped fleet of steamers which run in all directions—to Hamilton, at the head of the lake; to Lewiston, on the south shore of the beautiful and historic Niagara River, and east to Montreal, Quebec and other ports of interest and importance on the banks of the romantic, rapid-flowing St. Lawrence River. As a railroad centre Toronto is second to none in the Dominion, and can be readily reached from all railroad points of North America. The government of the city is vested in a Municipal Council, consisting of Mayor and Aldermen, whose

duties have hitherto been conducted in a most satisfactory manner.

As an educational centre it is perhaps in advance of any other city in the Dominion of Canada, having a university with federated colleges, the students of which run up in numbers to between four and five thousand. One of the most interesting features from an educational standpoint in the broadest sense of the term is the Canadian National Exhibition, which is generally conceded to be the largest and most important of any exhibition of the kind in the world. It may be well in this connection to say here that this exhibition, which is even worthy of the name of a World's Fair, opens the day after the meeting of the A. V. M. A. closes, and it is hoped this institution, together with the meeting of the society, will very richly repay one for a visit to the Queen City of the Dominion.

Turning, for a few moments, to the stamping ground of the meeting, it may be interesting to intending visitors to learn that the Property Committee of the University of Toronto authorized the President of that Institution to assign whatever buildings we needed on the Campus for the entertainment of the association. The local committee have selected the Convocation Hall for holding the principal meetings of the association. Those who have visited this building have all been most eulogistic in its praise, some even going so far as to say that a better place for the meeting could hardly be conceived in anything like reason. The hall itself is arranged to seat 1,700 in the main building with 100 chairs on the rostrum. The room, which is circular, is surrounded by a foyer about fifteen feet in width, exquisitely tiled and otherwise ornamented to give it a very classic appearance. Across the foyer and to the west of the building, is a large oblong room, 100 by 60 feet, and well illuminated. It has been thought that this would be a good place to use for a Liberal Veterinary Arts Department, in which could be exhibited instruments, books, medicines, etc. Good street-car service within a "stone's throw" of the building.

The Queen's Park, on which the university and Parliament buildings are situated, is within walking distance of some of the principal hotels of the city, providing the pedestrian does not object to a stroll of from three-quarters to a mile in the morning and the evening, the most of which would be along University avenue, a boulevard which is decorated with handsome trees, monuments and buildings, notable amongst the latter being the

Parliament House, which contains, amongst other things, the Department of Agriculture, where veterinary affairs in the line of education are officially controlled in this Province, and from this department much encouragement is given to the local committee of the A. V. M. A. for their efforts in securing the coming meeting for this city, and the signs of the times indicate that a very large and enthusiastic meeting and a great educational treat is in store for those who take advantage of that which is offered.

E. A. A. GRANGE,
Chairman Local Committee of Arrangements.

State of New York, Department of Agriculture, Albany.

April 10, 1911.

Editors of AMERICAN VETERINARY REVIEW, New York, N. Y.:

I am pleased to inform you that I have appointed Dr. John G. Wills as chief veterinarian in this department, salary \$3,000. Dr. Wills came to us a little more than a year ago to serve as first assistant veterinarian under Dr. Devine, who was then chief veterinarian. Since Dr. Devine's withdrawal to resume practice a diligent search has been made for the best qualified man available who might succeed him. Dr. Wills secures the appointment as the result of a civil service examination, but in addition to this he was entitled to the appointment because of his excellent record under the civil service. By reason of his promotion, Dr. Charles Linch, of Albany, assistant veterinarian, has been promoted so that he now ranks as the second officer in the bureau. So long as is necessary, Dr. Devine has generously arranged to spend an occasional day in Albany for the purpose of giving advice and assistance.

Very truly yours,

R. A. PEARSON, Commissioner.

Editors AMERICAN VETERINARY REVIEW—Please permit me to express through the columns of the REVIEW my interest in and appreciation of the contributions of Drs. Glover and Schwarzkopf on the "Problem of a Uniform Veterinary Degree." This

is a subject which should enlist the interest of every veterinarian on the American Continent, for certainly the great variety of degrees and appellations is almost absurd if not, indeed, disgraceful.

Some years ago, in 1895 I think, I contributed a few lines on this same subject to the then *Journal of Comparative Medicine and Veterinary Archives*, to which Professor Schwarzkopf replied; and while he did not entirely disagree with me in the main, being manifestly a much better scholar than I, he presented a much more lucid philological treatment of the subject.

At the time the article in the *Journal of Comparative Medicine*, above referred to, appeared my friends here in the East seemed to regard the matter of very trifling importance. I trust that through the able contributions of Drs. Glover and Schwarzkopf, the problem will be treated with the amount of respect which its importance demands. If every officer in our army could be induced to read Dr. Schwarzkopf's articles, now appearing, I feel that the establishment of a Veterinary Corps in the army would be only a question of a short space of time.

F. M. PERRY, M.D.V.(?).

DR. JOHN LYNN LEONARD, of Spencer, N. Y., has gone to San Juan, Porto Rico. We wish the doctor success in his new field.

DR. J. F. BUTTERFIELD, South Montrose, Pa., has gone to Riverside, California, where he will start an orange grove. He is also shipping his herd of Ayshires and will establish a breeding farm and dairy. The doctor will continue the practice of veterinary medicine.

IN commemoration of the late Mr. Harriman's love for the horse, it was decided to erect a memorial fountain in the city of Goshen, N. Y. The dedication took place in that city on February 25, the anniversary of Mr. Harriman's birth. The fountain was designed by Mr. Chas. Cary Rumsey, Mr. Harriman's son-in-law. The base and drinking trough are of marble, while four horses' heads in bronze are the medium for supplying the water.

OBITUARY.

CLAUDE D. MORRIS, V.S.

Dr. Claude D. Morris was born at Glenora, Yates County, N. Y., April 7, 1857, and died at Binghamton, N. Y., March 20, 1911, of acute pneumonia.

His death removed from his family circle and friends one who was held in high esteem by all, and whose services as chief veterinarian were highly prized by the Borden's Condensed Milk Company. The late Dr. Morris was essentially a self-made man, the admirable product of a well-balanced mind, fortified by those sound principles of integrity and morality that inspire confidence and respect. His youth was a struggle against adversity, his mother dying while he was yet an infant. The father, James W. Morris, of Glenora, N. Y., remarried, and young Morris' home was uncertain until he was adopted by Rufus Henderson, of that locality.

Industry and perseverance were his dominant traits. In 1882, he graduated from the Plainville Business College, Ohio, and went to Texas as an assistant civil engineer. It was in 1886 that he discovered the road to real success when he entered the Ontario Veterinary College, graduating in 1888. He engaged in the practice of veterinary medicine at Pawling, N. Y., at which period he was associated with the New York Central Railway. It was in 1893 that Dr. Morris became associated with the Borden's, whose business grew rapidly and soon demanded his entire time. He moved to Binghamton in 1897. It was his complete mastery of hygiene and sanitary methods applied to the Borden's interests that strongly entrenched the company in public esteem. Sanitation was his keynote, the essential corner-stone of success in all branches of the milk business. He studied constantly in medical science and his lectures in his special line were widely quoted. He had found the niche in the world for which nature had built and fitted him. The company trusted his judgment implicitly and he was worthy of their confidence in the widest sense.

The funeral services of Dr. Morris, held in Binghamton, March 22, bore ample testimony of the high esteem in which he was regarded. The officials and employees of the Borden Condensed Milk Company were numerously represented. The bearers had been selected from associate veterinarians: Dr. W. H. Phyfe, Dr. C. D. Pearce, Dr. H. R. Ryder, Dr. Casius Way, Dr. F. D. Holford and Mr. Fred. Blizzard.

Dr. Morris was united in marriage in 1892 to Minnie Van Wie, of Bath, N. Y., who died eleven years later, leaving three children, Charles, Helen and Minnie. He is also survived by a twin brother, R. O. Morris. To these afflicted ones is directed that measure of sympathy that comes only from the deeply stirred hearts of those who have known and loved a loyal friend, an ideal father and an affectionate relative.

At the time of his death he was secretary of the Ontario Veterinary Society; member of the New York State Veterinary Medical Society, also honorary member of the Beta Chapter Alpha Psi, of Cornell University, as well as a member of the Masonic fraternity.

Dr. Morris was an official such as every citizen may well admire. His was a marked individuality. The seriousness of life did not rob him of his appreciation of its curiosities, or education affect the genial spirit that was born in him. No man was richer in his sympathies, or kinder in his heart, or more genuine in his love for his fellows. Broad in his information, always charming in his humor, frank and sincere in every impulse, a friend of Claude D. Morris felt that he really knew him, and that he was worthy of all the respect and affection that he attracted. His was a genuinely thoughtful and sober mind, blended with a temper of moral earnestness that attracted the admiration and respect of friends. The world held no more choice and beloved spirit; none that leaves a sweeter memory.

F. D. HOLFORD, D.V.M.

DR. C. ARLOING.

The American Veterinary Medical Association has just lost one of her most worthy Honorary Members.

Dr. C. Arloing died on the 21st of March with pulmonary congestion.

Graduated from the Veterinary School of Lyon in 1866, he was first adjunct to the chair of Anatomy in the school of Toulouse, then returned to Lyon in 1876 as Professor of Physiology and ten years after became Director of his alma mater.

Licentiate es-sciences, graduated Doctor of Medicine in 1879, he was appointed Professor of Physiology and later to the chair of Experimental and Comparative Medicine at the Faculty of Sciences at Lyon.

Dr. Arloing was Associate Member of the Academy of Medicine, of the National Society of Agriculture of France, of the Centrale de Medecine Veterinaire, and also of several other scientific organizations.

It is to his efforts that were due the foundation and the success of the Pasteur Institute of Lyon. To him was due the discovery of the vaccine of symptomatic anthrax, that of the microbe of puerperal septicemia, that of the albuminoid nature of microbial toxins, etc., etc.

Dr. Arloing was a firm believer in the unity of bovine and human tuberculosis and he gave much of his active attention to the important question of anti-tuberculous vaccination.

Veterinarians that have attended the International Congress of Tuberculosis in Washington will remember the active part he took in the discussions. The many friends that he has made, while in the United States as well as all the scientists of the whole world, will regret the death of this celebrated professor, investigator and valiant fighter in the cause of control of tuberculosis. Veterinary science has lost with him one of her grandest sons.

DR. H. E. KINGMAN, of the Colorado State College, was recently elected National President of the Alpha Psi, the National Veterinary Fraternity.

THE 1913 Freshman class, U. P. (Veterinary Department), held their first banquet April 4 at Continental Hall. There are 59 members in the class, which was well represented. Drs. Klein, Moyer, Mashall, Harshberger, Gay, Lentz, Meyers, Booth and Neubold were among the guests, and addressed the gathering.

SOCIETY MEETINGS.

SEMI-ANNUAL MEETING OF THE MISSOURI VALLEY VETERINARY ASSOCIATION.

This above meeting was called to order by President Kaupp at the Coates House, Kansas City, Mo., January 24, 1911, at 11 A. M. The secretary announced card system of registration. Committee on Certificate of Membership reported unfavorably to the issuing of such certificates, but suggested in lieu that a card be issued, said card to take the place of a receipt annually to those paid in advance. Motion carried.

Dr. E. Biart reported a very unusual case in a mare, and a number of others reported somewhat similar cases of mares having twin colts, one being either very purulent or else mummified. Consensus of opinion was that condition was due to uterine stimulation with an attempted abortion, which was in turn aborted.

Dr. W. J. Cleveland reported a case of "Precocious Lactation in a Colt"; others had similar conditions that usually stopped of their own accord in a few weeks.

Dr. R. T. Bourne presented "The Physiology of Parturition," which was one of the good things of the meeting; after which difficult parturition, particularly torsion of the uterus and closure of the os was discussed.

"Cæsarian Section" for the first and pessary saturated with belladonna for from twenty-four to forty-eight hours with slight incisions if then needed for the other.

Dr. L. D. Brown presented a paper on "Hemorrhagica Septicemia" which was freely discussed; it was suggested that petechia were nearly always found in the thymus glands, kidneys, heart and around the base of the aorta. The relationship between this condition and "Corn Stalk Disease" was also brought up. One suggestion regarding the latter was that there are some stalks hollow which, when cut, give off a peculiar odor that is much relished by cattle.

Dr. K. W. Stowder reports a bulling steer which caused some discussion.

Dr. H. T. Palmer presented his paper on "Immunity." Discussion led by Dr. A. T. Kinsley and participated in by others.

Dr. F. M. Starr presented a paper entitled, "My Experiences with Bacterins," was very freely discussed. Their use in "Jack-sores" had some warm adherents; others claimed that it was necessary to use an autogenic bacterin in those cases, as there was usually two types of strepto and one necroforis in these cases. Bacterins and nuclein have given very nice results for a large number of practitioners in Pyemic Arthrtis. Consensus of opinion was that the one great indication is to increase resistance of the animal in fistulous conditions.

Dr. S. A. Peck reported some peculiar cases.

Dr. C. D. Folsie, mare that kicked every time in heat. Once on returning from an eight-mile drive flatulence developed which later acted like meningitis. Autopsy showed worms in heart which had destroyed endocardium. Ante-mortem clot and general circulatory troubles.

A horse after tenotomy a few days later fell dead, with legs doubled up under and hind legs back like a dog. Autopsy showed pneumonia, and there had been no symptoms of lung trouble previous to death.

Dr. R. Ebbitt reported some of his observations about parturient paresis. Several spoke of the fact that those cases where coma is complete recover much quicker than those where coma is only partial.

Dr. B. Conrad gives stimulants and as soon as cow is in condition to swallow gives physic of salts as it stimulates larger flow of milk. For those cases where the condition continues for some time and reinflating does not get them on feet, arecoline will sometimes succeed.

Dr. S. R. Peck suggests two one-fifth-grain tables of nitroglycerine and repeat the inflating in one to two hours.

Dr. J. E. Stayer's report of "Fistula of the Ear," was read by the secretary, and was discussed by a number. Dr. C. H. Stange reported one case located so near the articulation it was impossible to remove all, judicious use of caustics helped healing.

Dr. L. L. Hewitt's report of a number of surgical cases was read by the secretary, and caused considerable discussion.

Dr. Kinsley reported immense growth of bone following uncovering from an injury with no results from treatment. Drs. C.

E. Stewart and J. W. Haxby recommend dry dressing, oakum pad and *tight* bandage. Dr. L. D. Brown removes all possible granulating tissue and uses nitric acid to cauterize with, later Lugol's solution. Dr. A. H. Quinn uses Fowler's solution as dressing.

Several reported cases of "Sand Colic." One case in particular had two large dilations of the duodenum filled with sand and earth.

Dr. C. E. Stewart reported peculiar case in mare, breathing very hard; pressure over one spot on trachea would stop respirations. A short distance either way had no effect on them. Opened up and found a cyst. Opened this and curetted. Refilled within twenty-four hours. Repeated curetting and put trachea tube in. Recovered.

Dr. P. Juckness reported bulls turned in pasture during the forenoon; by noon one sick; died in one hour. Soon another. A veterinarian called, pronounced rabies, three died within as many hours. They would go through fences, take after persons. Post mortem showed extravasation of blood into lung tissue. This soon absorbed and lung tissues looked normal.

Dr. W. Warren read his report of "Cases That Have Interested Me." Jack, with enlarged testicle, size of water pail, treated by hot applications and K. I.; for a long time no result, finally discovered pus and operated; abscess cauterized, recovery, but testicle no good. Many similar cases resulted in suppuration.

Dr. Slater started a discussion on choke. Pulls up head, puts hose in the mouth and turns water on. Recommends operation also.

Dr. H. Jensen gives pilocarpine and eserine, thirty minutes later gives atropine.

Dr. C. E. Stewart passes the stomach tube and pumps a small amount of water slowly. Drs. Gaines and Humphrey report successful operation.

Dr. Bates' one case choked for five days, three times under chloroform; complete anesthesia for thirty minutes. Recovery. Time is essential; do not hurry.

Chairman of Committee on Food and Meat Inspection read the report of the committee and the report was thoroughly discussed by other members of the committee.

Third Day. Dr. V. Nesbit's "Demonstration of the Preparation of Anti-Rabic Vaccine and Animals Showing Influence of the Vaccine." This was one of the valuable features of the

meeting and a number of very valuable points were brought out. Nitric acid is the best agent to cauterize a bite with. Take treatment early, as nearly two weeks expires before immunity is complete; bile is a destructive agent to the virus. When sending specimen to laboratory for examination, best plan is to send complete head well packed in ice.

"Demonstration of the Intradermal Tuberculin Test on Hogs and Cattle Tuberculin Testing," by Dr. O. E. Troy, followed; the reading of the paper by the secretary, all being discussed by a number. The reaction of the intradermal test was typical. Autopsy was made by Drs. C. H. Stange and L. D. Brown, which proved the reliability of the test.

Demonstration of the "Russian Precipitation Test for Diagnosis of Glanders," by Dr. W. L. Boyd, was new and very interesting to all, more so to those engaged in state work. The animals shown had also reacted to mallein.

Dr. G. Babb opened the discussion on "Ulcerous Stomatitis," and a number of others took part with various theories. In some localities the disease appeared before rains, others after the rains. Where much ergot was present there was considerable more necrosis. Milk cows were affected more than other cattle and, when lame, mouths were not badly affected and *vice versa*. Horses were reported as being affected also and condition yielded to same treatment, drinking from same trough was quoted as where disease originated in one outbreak.

Dr. C. E. Stewart reported outbreak of Garget in cows receiving good care. Udder dries up, if attempt to milk is made the teat pulls off. When amputating no hæmorrhage. Occurs before and after calving.

Dr. A. W. Whitehouse's report of cases of Infectious Anaemia was read by the secretary and came in for considerable discussion by those living in infected areas. Fowler's solution alone or combined with alcohol seems to have given them the best results. Trypan blau had not given good results to those who had tried it.

Dr. K. W. Stowder presented his paper, "Operative Technique—the Value of Habit," which was freely discussed by a number, and because some animals do well after an operation with no special preparation is no argument why due precaution should not be taken. This is a paper that should be reread by every veterinarian.

A large number of cases were presented to the clinic for diagnosis and treatment; as usual the treatment varied.

In the Executive Committee meetings the following business was attended to:

RESOLVED, That the Missouri Valley Veterinary Association request the Examining Board of the respective states to supply the secretary with a list of the veterinarians who are eligible to membership, it being desired to revise the mailing list.

Committee, composed of Drs. H. Jensen, A. T. Kinsley, J. V. La Croix, appointed to buy a typewriter.

Hereafter all applications must be accompanied by the fee before they can be acted on.

The Kansas City Veterinary College Band rendered some very pleasing music during the afternoon, and a vote of thanks was extended them.

Sixteen new members were elected.

HAL. C. SIMPSON, Secretary.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the above association was held in Hartford, at "The Garde," Tuesday, February 7, 1911. The meeting was called to order at 12.45 P. M., by First Vice-President Dr. Judson. Members present: Drs. Thos. Bland, H. E. Bates, F. F. Bushnell, H. C. Balzer, Geo. T. Crowley, B. K. Dow, Oscar Schreck, L. B. Judson, J. H. Kelley, P. T. Keeley, G. W. Loveland, H. L. Tower and J. E. Underhill.

Reports of secretary and treasurer were read and approved.

Dr. R. P. Lyman, having located in Michigan, sent in his resignation from membership, which was conditionally accepted by vote.

B. D. Radcliff, M.D.C., and Arthur T. Gilyard, D.V.M., were admitted to membership.

Seven members, having lost all interest in the association and neglected to reply to official communications, were dropped from membership for non-payment of dues.

Officers elected :

President—Dr. L. B. Judson.

First Vice-President—Dr. J. E. Underhill.

Second Vice-President—Dr. G. T. Crowley.

Secretary—Dr. B. K. Dow.

Treasurer—Dr. Thos. Bland.

Board of Censors—Drs. G. W. Loveland, J. H. Kelley, H. E. Bates, P. T. Keeley and H. L. Tower.

Hon. Abner P. Hayes was present and gave a brief description of some of the bills that had been presented to the legislature, and of the efforts that were being made to enact laws that would very materially affect the profession in the state. A vote of thanks was extended to Mr. Hayes for his interest in the matter.

It was voted that the president, with the secretary, appoint a committee on legislation at some future date.

Dr. Kelley mentioned that the association was always welcome in New Haven, and that he would be pleased to have the semi-annual meeting held at his hospital, if the members cared to do so. No action was taken as to time and place of holding the meeting.

Meeting adjourned at 5.15.

B. K. Dow, Secretary.

DR. I. E. NEWSON, of the Department of Anatomy, Colorado State College, was recently elected Master of Collins Lodge, F. and A. M.

VETERINARIAN RICHARD B. CORCORAN, U. S. A., retired, will spend the summer in Idaho. We wish him all the pleasure that can be derived from it.

At the closing exercises of the Ontario Veterinary College, in Convocation Hall, on April 25, Prof. W. Horace Hoskins, U. P. Veterinary School, addressed the gathering.

DR. L. A. GRUENER, Veterinary Inspector of Komtchatka, has been detailed by the Russian Government to come to America to study certain phases of Veterinary Science. At present he is pursuing special study in the laboratory of pathology, Colorado State College.

NEWS AND ITEMS.

COPY OF OPINION RENDERED BY SUPERIOR COURT
OF PENNSYLVANIA SUSTAINING STATE
BOARD OF THAT COMMONWEALTH.

IN THE SUPERIOR COURT OF PENNSYLVANIA.

JOHN JONES JOHNSON, <i>vs.</i> THE STATE BOARD OF VETERIN- ARY MEDICAL EXAMINERS.	}	No. 85, October Term, 1910.
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Appeal by the plaintiff from the judgment of the Court of
Common Pleas No. 5 of Philadelphia County.

Filed March 3, 1911.

ORLADY, J.

The plaintiff presented his petition to the Court of Common Pleas for an alternative mandamus to compel the State Board of Veterinary Medical Examiners to register him as a person duly qualified to conduct the practice of the science of veterinary medicine and surgery, in this commonwealth, and to issue to him the proper certificate, etc. The defendant filed an answer setting forth certain facts, which the plaintiff traversed, and the issue of facts so raised was tried before a jury, resulting in a verdict in favor of the plaintiff, which was subsequently set aside, and a judgment *non obstante veredicto* was entered in favor of the defendant.

The first legislative attempt in this State to regulate the practice of veterinary medicine and surgery is found in the Act of April 11, 1889, P. L. 28. The purpose of the act was to reduce to a scientific method, under legislative control, the care and treatment of domestic animals, and to prevent charlatans from practicing their impostures on the credulous public. Preparatory study and training were provided for, and the skill and proficiency of the veterinarian was to be evidenced by a diploma

of graduation from legally chartered institutions, and a registration on our public records.

To avoid doing injustice to those who had been practicing a bond fide calling, but who were without collegiate training, the second section of the act provided, that any person who had assumed the title of veterinary surgeon or analogous title, for the five years preceding the passage of that act, without being entitled to the degree of veterinary surgeon or analogous title, was authorized to continue the use of that title, but to do this it was imposed as a duty on such person, that he should make an affidavit to that fact and be recorded as an existing practitioner.

The requirements of the act are not ambiguous, and the limit of time within which persons of the plaintiff's class could avail themselves of the terms of the proviso was extended, by acts of 1891, 1892, 1895 and 1905, until January 1, 1906. This plaintiff did not take advantage of any of the earlier statutes, and did not apply for registration until November, 1905, when he was rejected, and in December following he filed another application which the State Board again refused. While he was within the statutory time for filing his petition, the authority of the Board was enlarged by the terms of the act of April 18, 1905, which he now invokes as his statutory authority for being registered, and he must submit to the tests therein required. In determining his rights we must look to the Act of 1889, as the provision in regard to "for the five years preceding the passage of this act" (1889) is carried through all the subsequent enactments, and it is as mandatory now as when that statute was passed. He must show that he assumed the title for five years prior to April 11, 1889, not intermittently but continuously, and in good faith, as a practitioner of the science of veterinary medicine and surgery.

The legal principles controlling such cases are clearly defined and have been frequently declared by the courts. The writ of mandamus is but a command to exercise a power already possessed, or to perform a duty already imposed by a statute, and where the duty to be performed is judicial or involved the exercise of discretion, mandamus will lie to compel the official to act in the premises and exercise his judgment and discretion, but will not direct how the duty shall be performed or the discretion exercised. If, however, such judgment or discretion is abused, or there is a mistaken view of the law as applied to the admitted facts of the case, the writ will issue to compel action according

to law: *Runkle vs. Commonwealth*, 97 Pa., 328; *Kell vs. Rudy*, 1 Pa. Superior Ct., 507; *Douglass vs. McLean*, 25 Pa. Superior Ct., 9; *Curran vs. Philadelphia*, 211 Pa., 85.

The good faith of the Board in refusing to register the appellant is to be ascertained by the record and the testimony adduced before it when it determined the question, and not from the testimony taken at a subsequent trial of an issue in court.

The terms veterinary surgeon or analogous title as used in the several statutes, were not intended to embrace quacks, grooms, farriers or others of pretended skill in the mere care of domestic animals, but only persons of such proficiency and experience, who in good faith held themselves out to the world as qualified to render surgical and medical treatment to domestic animals, and the legislative requirement that this professional occupation should be "for the five years preceding the passage of this act" (1889) was as important as any other. No other time of actual or pretended service could be substituted, nor could any fractional part of the required five years be added to other years.

An examination of the testimony submitted to the Board when it refused to register the plaintiff does not satisfy us that it acted from mere caprice, arbitrarily or for unsubstantial or unjustifiable reasons, but fairly shows that the petition was refused because the appellant did not then show by proper and competent evidence, that he had assumed the required title, and had been continuously engaged in the practice of veterinary medicine and surgery for the five years preceding April 11, 1889, as required by the several statutes relating thereto.

The judgment is affirmed.

State of Pennsylvania, }
Philadelphia County. }

I, Alfred B. Allen, Deputy Prothonotary of the Superior Court of Pennsylvania, do hereby certify that the above and foregoing is a true copy of the opinion in the above-entitled cause, so full and entire as appears of record in said court.

In testimony whereof I have hereunto set my hand and affixed the seal of said court at Philadelphia this 14th day of March, A. D., 1911.

(Signed)

ALFRED B. ALLEN,
Deputy Prothonotary.

AMERICAN VETERINARY REVIEW.

JUNE, 1911.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, April 15, 1911.

PARASITISM AND TUMORS.—Prof. Panisset in the part "Pathological Anatomy" of the *Revue Generale*, has presented a concise review of a report made by Prof. A. Borrel before the International Commission for the Etiology of Cancer:

"Up to the present time it has been possible to transplant indefinitely cancerous tumors, providing the operation was performed on animals of the same species, same breeds and living in conditions as similar as possible. But the cancerous cells have always been indispensable in those operations of transplantation; in fact these were simple graftings and, for this reason, most investigators have left aside the parasitic theory of cancer.

But for Borrel, the experimental cancer of laboratories represents only the second act of the development of the cancerous tumor, the proliferation of the cancerous cells. In spontaneous cases, this proliferation is always preceded with the transformation of the normal into cancerous cells and it is the study of this first act which must throw light upon the etiology of malignant tumors.

In a tumor, in its way of formation, one can very well observe the progressive peripheric transformation of the cells,

marking the surface of the invaded zone by the transformation of the surrounding cells into cancerous. In the cancerous area the two processes of cellular proliferation and of transformation march together; later the proliferation becomes the predominant phenomenon and conceals that of the transformation. To this point of view, the cancerous lesion does not behave differently from the infectious processes known, pustules or tubercles. These observations prove more in favor of some infectious cause, they do not answer very well with a diathesis or embryonic theory. Clinical observations and statistics are as many arguments which speak in the same sense, presence of cancer in some regions and rarity or complete absence in some countries, localizations of some forms, etc. In mice breeding, there are observed a percentage of tumors which are very different or of forms of cancers varying according to the locality.

With others, Borrel has observed that the cancer of mice is rare when the animals were placed in glass jars kept relatively clean and that in wooden boxes left uncleaned purposely, the percentage had increased from year to year from 0.6% to 2 and 9%. The tumors have appeared more frequent in April, May, September and October. But up to this day, it has not been possible to create at will in a selected cage the positive condition of the production of tumors.

* * *

Tumors of mice appear most often in the groin or the axilla, which are the parts of selection for fleas or other biting insects to bite them. At the beginning, the young tumor can be mistaken with cysts, very frequent in the localities or places where breeding is carried on and which occur in the same selected spots. In the cysts and around them, there are always found helminths or cestodes, neighbors of microfilarias. The presence of cysts in mice seems surely, says Borrel, connected with the presence of these helminths.

In the case of adeno-carcinoma, at the onset, Borrel has found several times the same nematod. The same parasite

seems to have given rise to a cyst or a tumor, according to the place where it was lodged or according to the infection that it carries with it. Similar helminths have been found by Gorescu and Borrel on two mice affected with general lymphoma. At the present time Borrel thinks that it would be interesting to admit that such nematods, transported by some pricking insects, are the roots of cancerous infection and perhaps the carriers of some virus or varieties of virus.

Concerning the sarcoma of the liver of rats, it is easier and more justified to incriminate the cysticercus of the *Ten. Crassicola*. More than fifty observations have been collected in Europe, America and Africa. As there exist many cases of helminthiasis or of cysticercosis, which does not give rise to sarcoma, it is a proof in favor of the thesis advanced by Borrel, that some cysticerci, but not all, are able to carry some virus of cancer. In two occasions, the author has found in the tumor or in the neighborhood of the parasite, microbes of various types.

Sarcomas of the liver can be compared to some parasitic tumors of vegetables and trees and Borrel asks, if larvæ deposited on vegetal structure cannot also be the cause of some microbial infection.

And again, in an epithelial cancer of the omentum of rabbits, observed by Petit, the part played by cysticerci seems to have been made evident by microscopic examination.

Ecto like endo-parasities are able to localize a cancerous infection. In adenomas of the sebaceous glands of mice, an acarion, which has not been recognized, was found. In dogs, in a case of lympho-sarcoma of the vulva, Borrel has been able to connect with it important parts of acarions. The study of cancer of the face in man shows the influence of demodex. In the etiology of cancer, demodex can be compared to the nail puncturing the foot of a horse, in the etiology of tetanus. Alone the microbe of tetanus could not develop in the organism, it had to be introduced by a foreign body into the intimate structure of tissues. Therefore it is necessary that the demodex as well as the cysticercus be infected and be the carrier of a virus to de-

termine epithelial cancers. Foreign bodies of various nature may promote the development of cancer. Borrel has found a needle in the center of a cancer of a pancreas in a dog; a large splinter of vegetal nature in a cancer of the intestine of man. Adjuvants are very varied, radio dermatitis due to Roentgen rays may be transformed in epithelial cancers. The cancerous virus or viruses cannot be inoculated except on a prepared soil and thus is explained why direct inoculations fail.

Borrel believes that pigmentary cells of the epidermis or of the pigmentary type play a part similar to storing cells for cancerous infection. Accumulated and disorganized cells are found in radio dermatitis, in epithelial cancers. Their action is certain in melanotic tumors but, to a very general point of view, one may ask if many others tumors, by their own stroma, are not melanotic tumors.

* * *

ARTIFICIAL SERUM AND INFECTIOUS DISEASES.—At first, when salt entered in the treatment of sick animals, far was the thought that it was the inauguration of a therapeutic method, which is now of almost universal application. Chloride of Sodium, common salt, absorbed by animals under the effects of acute infections has almost proved itself as the best means to eliminate the toxic principles existing in the organization.

Those were about the words with which Prof. Cadeac in the *Journal de Zootechnie* opens his general review on the application of artificial serum in the treatment of diseases by intoxication and then continues:

“It is the best curative agent of those intoxications, almost always improving the condition of the animals, that it does not cure. There is no therapeutic agent from which as much could be expected; there is none that keeps so well all that it has promised. It would be useless to enumerate the diseases that it may relieve, as their number is too great; and moreover, the specific action of the Chloride of Sodium does not affect one disease more than another, it acts on all; it does not work on the mi-

crobes, but on their poisons. And after all, is not pathology of infectious diseases resumed in one expression, *intoxication*? As almost all the diseases are governed and kept up by infectious germs, salt becomes the general antidote of their specific poisons.

"The rapid elimination of these poisons diminishes or suppresses the action of the microbes and reduces it to the modest condition of a commensal or a simple vaccinating agent.

"As soon as these poisons cease to interfere, there are no more symptoms, no more lesions, there is no more disease. The plasma is no longer altered, the nutrition of the cells is no more endangered, and normal life resumes its course.

"The recovery in disease is then depending on the rapidity of the elimination of these poisons. If it takes place early, the alterations of the parenchymatous cells and the evolution of the lesions are prevented; if it is late, it is often inefficacious. The toxic elements have disturbed the vital apparatus and given rise to irreparable lesions. Salt can only restrain or limit them. Administer this salt to a dog affected with old paraplegia due to distemper, little change in the condition of the animal will be observed; its recovery is at least problematic. But it becomes certain, if the injections of artificial serum are resorted to at the beginning of this paraplegia. With dogs suffering with paresis or even paralyzed since one or two days only, this medication has a marvelous effect. After a first injection, it is almost a resurrection. The dog gets up, runs, he is cured. Other injections reinforce this almost instantaneous recovery. The animal recuperates its motricity and sensibility as if coming out of a chloroformic sleep or the beginning of an intoxication by a narcotic."

* * *

Having thus examined the advantages obtained by artificial serum, Cadeac reviews the condition of the mode of action of this agent, which has already been given by Prof. Porcher some years ago. It is a question of microbial toxins, which destroys the osmotic equilibrium, by a retention of the chloride. This re-

ention in inflamed organs, as the lungs in pneumonia, the pleura in pleurisies, the subcutaneous connective tissue in œdemas or anasarca, has for effect the retention of a certain quantity of water, which holds the chloride in solution with the biologic and pathologic poisons; then the animal urinates no more, the poisons accumulate in the serum of the blood and impregnate the cells, the inter-cellular and the circumcellular surroundings constitute two *isotonic* solutions, having the same osmotic pressure, and their reciprocal exchanges are merely *one go and come* of the same poisons. It is a permanent toxic equilibrium.

By the accumulation of the products of waste of the tissues and by the concentration of the microbial toxins, the intensity of this equilibrium is increased; the nervous cells degenerate, the dog affected with distemper becomes choreic or paralytic, the hepatic cells undergo granulo-fatty degeneration or a true necrosis, the kidneys lose their filtering properties, the nervous system, the regulator of the tissues' life stops its functions; it is a rapid or a slow death, but nevertheless certain, of the intoxicated subject.

Injections of artificial serum, under the skin, in the veins, or in the rectum overcome this fatal equilibrium in producing a new call for water, which dilutes the poisons accumulated in the blood, in re-establishing an exosmotic current which draws from the cells, the toxins, which impregnate them, raises the bloody tension, reopens the renal functions and at the same time gives rise to a chloruric and a polyuric crisis.

The artificial serum promotes the debacle of the toxins and of the chloride of sodium detained in the tissues.

This expulsion of the chloride, abnormally detained, prevents a new retention of the water necessary to establish the osmotic equilibrium and does not permit the poisons, that it holds in solution, to remain in it. This *washing* of the organism is most beneficial in all infectious diseases without exception. Now, what are the indications? In *solipeds*? It must be used in pneumonias, in all the typhoid diseases, in pleurisies, in purpuras, in intestinal occlusions, in metritis. In *cattle*, it is the

best treatment for gangrenous coryza, in uterine and mammary infections. In *dogs*, in simple jaundice, piroplasma, in all forms of youth diseases (distemper). Tested with some success in some dermatitis of man, it may be advantageous to resort to it in veterinary medicine in cases where the disease has proved rebellious to usual therapeutic means.

It must, however, be remembered that this excellent mode of treatment, if used, must be resorted to at once, not to wait until the disease has gone through all its stages. It is not a remedy of the last hour, it is efficacious in the entire duration of the disease providing it is not used parsimoniously or in such small doses that it has no effect. Whatever contraindications or objections have been made against its application in human medicine, they have no value in veterinary medicine.

* * *

RADIO-ACTIVE MUDS—THEIR THERAPEUTIC APPLICATIONS.—In connection with a series of lectures relating to the therapeutic action of *radium* to which I have alluded in a previous chronicle, one was delivered which offered a more important and possibly more practical interest; it was the one which took the above title as that of the subject and which at the same time treated principally of radio-active muds, which have received the name of *actiniferous* from their specific nature.

This lecture that Prof. Adjunct Doctor Oscar Claude has published in the *Archives Generales de Medicine* and the excellent paper that Prof. G. Petit, of Alfort, has presented before the Societe Centrale will permit me to present our readers, not only points of interest and generalities upon the muds, but also their application in therapeutics.

Actiniferous radio-active muds are the industrial waste of certain minerals of Urane (oxide of Uranium), which have been considered for a long time as useless, but which nevertheless are powerfully radio-active, containing quite an appreciable quantity of radium, polonium, and principally of actinium, from which their name is derived.

The constant presence of actinium in those muds is most important, as it is to it that their radio-activity is due, and one must know that this property exists in actinium in quantity considerably superior to that possessed of by Radium itself. Leaving aside the initial analysis made of these muds, I will merely say that their composition is most complex, containing iron, aluminium, uranium, magnesium, sodium and calcium.

These muds consist of a soft, reddish paste, generally very homogeneous, of butter or soft clay consistency, which permits their direct application as plasters; or in suspension in water, as baths, general or local. Petit, who has experimented with them, remarks that they have great astringent properties and that on that account, to avoid their tanning hardening effects on the skin, comparable to that of formol, it is better to resort to a spoon or spatula in manipulating them.

Actiniferous radio-active muds have been compared to the natural muds as they are found in some mineral thermal watering establishments. But the action of the former is very different. They have permanent radio-active properties, they are *permanent* radio-active muds, while with the thermal products these properties are lost as the "emanation" from the Radium soon itself rapidly passes away. Thermal muds transported from their original ground lose their properties rapidly and become inactive, actiniferous do not. And while their radio-activity is, it is true very weak, and varies with the samples of muds, it is nevertheless lasting and continues; new emanation being always added by the presence of the radio-active elements which they contain and continuously produce.

* * *

Pertaining to the class of radio-active elements such as the Radium, it was indicated that actiniferous muds should also be tested in relation to their therapeutic qualities. Dr. Claude was the first who utilized them in human medicine and he has related the successful results he has obtained with them in the

treatment of rheumatisms, arthropathies of various nature in some diseases of the skin and also of the nervous system. The example given by the doctor has been followed by others and several indications have presented themselves where in the practice of others satisfactory results were also recorded.

It was interesting to find out to what extent veterinary medicine could also be benefited by the use of permanent radio-active muds. Prof. Petit who since months has made a special study of the subject, has also obtained excellent results with dogs affected with generalized eczema which were treated with some twenty baths and recovered. In rheumatisms, in adynamic condition of animals, to stimulate their vital energy, activate their convalescence or to treat various chronic infections of different severity, in all Petit can record encouraging results.

With horses, either in baths or local applications, Petit has tried actiniferous muds in arthropathies, sprains, lymphangitis, common scratches, etc., and he seems to have great faith in the good that such treatment might give. Two cases of lymphangitis and one chronic thickening of an extremity were also successfully relieved with mud applications.

We are promised detailed records of several more cases with similar results.

The technique of the indications are simple. For baths or lotions, prepare them with 150 or 200 grammes of mud in water at 37° C. The bath can be used several times by the addition of a small quantity of fresh mud not used. For plasters, delay the mud in a little glycerine. If the surface of the skin is too large, treat it in sections say by half, in two seatings. For skin disease generalized, for instance, treat one side of the animal and afterwards the other. When the anatomical configuration of the animal allows it, rub a thick coat of mud over, put on an impermeable sheet over it and apply a moist bandage firmly secured with pins. If the anatomical shape prevents this dressing, the mud is mixed with glycerine and applied over the parts only; the glycerine being to avoid a too rapid desiccation. Baths or lotions are better in such cases.

It is sure that the introduction of this treatment with actiniferous radio-active muds in veterinary medicine is a new thing and that for the present it would be difficult to say what future is reserved to it. But Prof. Petit and those with whom he is now experimenting will no doubt at an early date bring before the profession facts which will speak for themselves and will be conclusive. As it is, let those who may have the opportunities try this new treatment.

* * *

MYDRIASIS AND MYOSIS.—In ophthalmology, for some inflammations of given structure, it is often recommended to use alternatively mydriatics and myotics, so as to act upon the iris and prevent the definite formation of synechia, which have for result to immobilize it. Most generally mydriasis is obtained with the sulphate of atropine, and the salicylate of eserine is used as myotic.

However, reports Prof. Porcher, before the Societe des Sciences Veterinaires of Lyon, "If the experiment is made to test the antagonism of these two alkaloids, one readily sees that atropine does remove the eserinic myosis but that eserine has no effect on the atropinic mydriasis." Opinions, however, are contradictory. And Porcher has experimented on the question using eserine as myosis and as mydriatic, atropine and afterwards cocaine and he has found that atropine produces a strong and lasting mydriasis upon which eserine has no action; but if the atropinic mydriasis has existed for a few days, the action of atropine beginning to lose its strength, the instillation of a strong solution of salicylate of eserine is followed by myosis, which may disappear because the effects of atropine, not being entirely gone are yet acting. Therefore one must not depend on eserine to overcome with certainty an atropinic mydriasis in full development. However, if cocaine is used as mydriatic the result is different. The effects of cocaine are not as strong as those of atropine and the iris remains still under the influence of light. If mydriasis is obtained, not by the instillation of strong dose of

cocaine, but by a subcutaneous injection as Porcher has done it in dogs, rabbits and horses, the two pupils are simultaneously affected and the mydriasis is well marked, and almost as strong and lasting in dogs and rabbits at least, as with atropine mydriasis.

Then the instillation of eserine in one eye only gives rise to myosis in that eye, as clearly and rapidly as if the iris was not under the influence of cocaine and the myosis remains. Therefore eserine suppresses without return mydriasis with cocaine. To these remarks Prof. Maignon added some explanation of physiological nature.

The alternate use of atropine and eserine with the object of moving the pupil and avoid adhesions between the iris and the crystalline lens is more theoretical than real. In practice, one or the other is employed; atropine in cases of internal diseases of the eye, and eserine in wounds of the superficial membranes of that organ. In this last condition, atropine must be left aside because of the hypertension it produces in the ocular media, which interferes with cicatrization. Eserine that reduces intra-ocular tension is to be preferred.

Atropine produces mydriasis in paralyzing the terminations of the common oculo-motor nerve in the sphincter muscle of the iris. The tonicity of the organ being removed, the pupil dilates. Eserine acts in a very different manner. It renders all anatomic elements inert, it is a coagulating agent of all protoplasm. With atropine the dilation of the pupil is the essential phenomenon with cocaine the result is far off. The mechanism of action of the two alkaloids is essentially different.

* * *

INTRA-TRACHEAL SPRAY.—Years ago Dr. Levi, of Pisa, became the pioneer of the treatment of pulmonary diseases by intra-tracheal injections of medicamentous solutions, convinced as he was that it would realize a progress in the treatment of the diseases of the respiratory apparatus, which heretofore have been and are yet treated only by indirect ways.

The proposition advanced by Dr. Levi gave occasion to many investigations from others and Barner having demonstrated that the liquids injected in the trachea did not in any case go beyond the first bronchial ramifications and the base of the anterior pulmonary lobe, the theory and hopes based on Dr. Levi's method were soon given up.

Yet the idea was not abandoned altogether and other experiments were started. Fumigations and inhalations have not given any satisfactory results, it is true, but when the drugs are used in solution and applied with a spray, the results seem to be different. The *Deutsche Tierärztliche Woch* has published the experiments made by veterinarian Albert Wosshage under the direction of Prof. Malkmus of Hanover. A "Spray Apparat" is the instrument used. It is a kind of vaporizer, atomizer, to which are adapted a strong bellows and a trocar with a special curve. The trocar is introduced into the trachea between two cartilages after incision of the skin, which is made to prevent the displacement of the canula and facilitate the introduction of the instrument.

The experiment had for its object to find out: (a) How would the pulverized liquid thrown by the spray apparatus act on reaching the lungs; (b) How would healthy animals behave when submitted to experiments made with several kinds of medicamentous sprays? The results obtained so far are encouraging and can be resumed as follows:

1.—Liquids pulverized in the trachea with the Spray-Apparat are immediately resorbed by healthy lungs; therefore it is possible to irrigate the whole alveolar surface at the same time as the trachea, larynx and pharynx. The efficacy of the pulverization depends on the duration of the operation, the minuteness of the spray, the quantity of the liquid used and the strength of the inspiration of the animal, which can be increased by closing alternately and more or less the nostrils of the animal.

In relation to the minuteness of the spray, oily solutions are considered as the best and preferable to others. Then come the glycerinated and lastly the alcoholic and the aqueous.

2.—Healthy animals stand very well the spray of the various medicamentous solutions. They rarely have, during the operation, spells of coughing.

The quantity of liquid to use varies between 60 and 100 grammes. The dose of the drugs primitively indicated by Levi and others as being fixed to the 10th or 20th of the therapeutic dose per mouth, is sufficient, as part of the liquid is swallowed during the operation.

The very simple technic of the atomizer of Malkmus makes it certainly a new mode of treatment for diseases of trachea, larynx and pharynx and it will be soon definitely adopted for those affections of the bronchia and of the lungs also, where it is said, it will be called to render great services.

* * *

BIBLIOGRAPHIC ITEMS.—The second part of Vol. IV. of the transactions of the Ninth International Veterinary Congress at The Hague is published. It contains the discussions of the meetings of the various sections. This closes the publications of the work done at the Congress. In the preface of the present volume, Dr. A. De Jong, General Secretary, pays a gracious souvenir to the memory of the late Dr. Leonard Pearson, member of the permanent Commission of the International Veterinary Congresses. "Those who had the opportunity of knowing and seeing our benevolent learned American colleague and who remember what excellent support his presence was for the Congress of Budapest will understand that our congresses and the permanent Commission have lost in him one of their most worthy members."

Such remarks coming from the pen of one of the most prominent veterinarians in Europe will be fully appreciated by all who have known and learned to love the departed Professor and Director of the Veterinary Department of the University of Pennsylvania.

* * *

The *Archives Générales de Médecine* have reserved one of their numbers to the series of lectures delivered relating to radium in its various applications in medicine.

Those who are interested in the subject will do well to provide themselves with the July number, 1909, of this valuable journal.

* * *

The No. 1 of the 16th volume of the *Archives of Biological Sciences*, published by the Imperial Institute of Experimental Medicine at St. Petersburg is also at hand. It contains four interesting articles: The *chemical processes of fermentation in Koumiss and Kephir* with illustrations, The *influence of functional rest in the evolution of tuberculous process in the lung*, The *processes of oxidation and their influences on the extracts of Horse-radish* (*Raphanus Sativa*); *Septic tanks as destroyers of organic substances in sewers*.

* * *

The *Agricultural Journal* of the *Union of South Africa* has made its appearance. It is to take the place of that of the Cape, *Natal and Transvaal*, published by the Department of Agriculture at Pretoria, and at a nominal price; it is a monthly which is called to do much work. The first number among its veterinary matters of importance contains an article on *Stiff Sickness* or *Stijfziete* in Cattle, by Dr. Arnold Teiler, the Acting Director of Veterinary Researches, which as conclusions says: "1. The disease *stiff sickness* in cattle resembles in all respects laminitis in horses. In fact it may be called laminitis of cattle. 2. The experiments undertaken at two different places show that *Grotalaria Burkenna* is the cause of stiff-sickness."

In this number there is again from Mr. J. M. Christy, Assistant Principal Veterinary Surgeon of Transvaal an article illustrating the means of control of farm stock and from Mr. Thomas H. Dale, M.R.C.V.S., one on Heredity which is illustrated with photos of Zebras and Hybrids of great interest.

—A. L.

THE GREAT TORONTO MEETING.

In less than a hundred days the great Toronto meeting of the American Veterinary Medical Association will be at hand; and present indications point toward the fact that it will not only be great, but greater than on any previous occasion. We published a part of the literary program in our May issue, and hoped at that time to be able to publish in the present issue the titles and authors of the papers of some of the other divisions, together with an outline of the general program, but find we were crowding the local committee a little faster than they were able to arrange the many details that go to make up a program of so great a gathering; a fact which emphasizes more strongly than anything else, the magnitude of the convention that the American veterinary profession is looking forward to in August next. We are assured by Secretary Marshall, however, that we will be in possession of the necessary data in sufficient time to publish a complete program in the July issue of the REVIEW, which will be sufficiently early to permit the profession throughout the entire country to arrange to be a part of this great congress of veterinarians.

Under the head of correspondence on page 346 of the present issue, President Glover has addressed the "Resident State Secretaries" on the work that he anticipates they are doing in regard to securing applications for membership to be presented at the coming meeting. We are glad to be able to assure President Glover that the "boys" are hard at work and will not disappoint him; as we have had the pleasure of reading three circular letters issued on April 8th and May 6th, by probably the youngest state secretary among his appointments, if not the youngest one who has ever been honored with that important office, Dr. H. Preston Hoskins, of the great state of Pennsylvania. Dr. Hoskins on the above dates, in view of the fact that the convention will be held in Toronto, sent a letter to all eligible Ontario graduates in his state, calling their attention to the fact that the A. V. M. A. will convene this year in the home of their Alma Mater and urg-

ing them to file an application for membership so as to be elected there. He issued another letter on the same date to all Pennsylvania veterinarians who are already members, urging them in view of President Glover's expressed desire to double the membership of the A. V. M. A. this year, to secure one new member each as their share in the work toward that end. On May 6th the doctor issued a third letter, addressed to *all* eligible veterinarians in his state who are not members of the A. V. M. A. not covered by his Ontario graduate letter, urging upon them the great advantages to be derived from membership in the national organization. Each of Dr. Hoskins three letters is strong and argumentative, and surely will be productive of much good to the American Veterinary Medical Association and consequently to the American veterinary profession. The REVIEW, therefore, feels assured by this sample of the work being done by this *youngest* resident state secretary, that President Glover's aids will not disappoint him, but will, on the contrary, overwhelm him with their accomplishments.

Another movement to strengthen the hands of the president of the A. V. M. A. was started by the B. A. I. Veterinary Inspectors' Association of Chicago, at its May meeting, in the passage of a resolution by that organization, indorsing the movement inaugurated by President Glover for uniformity in veterinary degrees and instructing their delegate to the national organization to convey the action taken, to that body. We believe with Dr. H. D. Paxon, whose correspondence on this matter appears on page 349, that it would be a good move for all local organizations to take similar action.

EXAMINATION FOR VETERINARY INSPECTOR.—The United States Civil Service Commission announces the postponement to July 5, 1911, the examination announced to be held on May 24, 1911, for the position of veterinary inspector in the B. A. I. at \$1,400 per annum. Applicants should at once apply to the United States Civil Service Commission, Washington, D. C.

ORIGINAL ARTICLES.

ARSENICAL POISONING FROM SMELTER SMOKE IN THE DEER LODGE VALLEY, MONTANA.

BY D. E. SALMON, D. V. M.

II.

THE PRESUMPTIVE EVIDENCE OF ARSENICAL POISONING. POISONING ADMITTED IN 1902.

It is hardly necessary to refer to the well-established facts of arsenical poisoning from the fumes of smelters in European countries, more especially in England and Germany, as presumptive evidence of poisoning in the Deer Lodge Valley. These, however, have some bearing as showing that copper ores are liable to contain arsenic, that this arsenic is volatilized and escapes with the smoke, and finally that it may be condensed and deposited upon the grass and forage growing or standing in the neighboring fields, in quantities sufficient to poison the farm animals.

In the case of the Washoe Smelter, there is the much more direct evidence furnished by the admitted poisoning which occurred in the year 1902, almost immediately after the beginning of smelting operations at the site now occupied. The admission of this poisoning carries with it the admission that arsenic exists in the ore smelted at Anaconda, and that it escapes in large quantities with the smoke.

The modification of the smelter by the construction of settling chambers and dust flues to cause the deposition of the arsenic before it enters the chimney; the building of an enormous stack on the mountain side, far above the level of the furnaces, with the alleged object of discharging the smoke into the atmosphere at as high an elevation as possible, so that it would be-

come widely disseminated and diluted before coming in contact with the soil of the valley; and, finally, the construction of an arsenic plant with a capacity of thirty tons, constitute undeniable evidence of the poisonous nature of the smoke and of the fact that this was known to and admitted by the company.

The questions which are to be asked, therefore, in this connection, are not whether the ores smelted at Anaconda and the smoke escaping from the smelter contain arsenic in large quantities, for this much is admitted; but they are whether the settling chambers, dust flues and arsenic plant materially decreased the quantity of arsenic discharged into the atmosphere, and whether the high stack caused the smoke to be so disseminated that the discharged arsenic was no longer deposited in injurious quantities upon the fields of the valley.

THE INFLUENCE OF THE BIG STACK.

A few weeks' observation of the course of the smoke after it leaves the top of the big stack is sufficient to demonstrate that the object of discharging it at so great a height that it would be widely disseminated and diluted before coming into contact with the vegetation of the valley was not accomplished, or, at the best, only partially accomplished. On certain days when the atmosphere is in a favorable condition the smoke rises and is quite thoroughly dissipated high in the atmosphere; but on other days the currents of air bring it down to the ground so that it strikes the nearest farms and spreads over the valley like a fog for fifteen or twenty miles. Undoubtedly, there is greater dissemination with the high stack than there was with the short stacks, but just as surely the smoke still frequently strikes the nearest parts of the valley in great concentration and drifts along the surface of the ground for many miles.

Judge Hunt, although only two days in the valley, did not fail to observe these conditions. He says: "Upon the first day, which was bright, the smoke from the big stack rose high into the air, and seemed to be carried far away, so high that its diffusion would seem to have been too general to do injury to any

land; but on the second day, the weather was rainy, and the clouds were lower. The smoke then was more dense, and its stream was carried down toward the Bliss ranch, and southerly and northerly for a few miles toward the centre of the floor of the valley, and was there dissipated."¹

The writer has frequently seen the smoke for days at a time strike the floor of the valley near the smelter and spread over the farms, carried by the currents of air sometimes across the southern end of the valley towards Butte, sometimes down the valley near its centre, and sometimes along the eastern or western range of mountains and covering a strip of the valley one or two miles wide. In the summer of 1906, he saw it for weeks at a time drop into the Mill Creek Valley or take a southerly direction across the mountains, and only at rare and short intervals go northwards over the Deer Lodge Valley.

The obvious conclusion from these observations is that the air-currents and the conditions of the atmosphere about the smelter are variable; that even when the short stacks were used the smoke did not constantly spread over the Deer Lodge Valley, but much of the time must have drifted in other directions and sometimes ascended to a great height; that notwithstanding the height of the new stack the smoke still frequently drops abruptly into the valley and spreads out in such a manner as to deposit its contents as completely as it could have done when the short stacks were in use. It is, therefore, impossible to conclude from a study of the course of the smoke as it is discharged at present, that there could be such a difference in the time (*i. e.*, the average number of hours per month) it was over the valley when the short stacks were used and the time it is over it since the construction of the big stack, or such a change in the areas over which it was diffused, as to change the effects from general and acute poisoning in 1902 to absolute harmlessness in 1905 and 1906.

Considering for the moment, then, only the influence of this new stack on the smoke conditions, the presumption is that as poisoning occurred before it was constructed, it continued to

occur afterwards, and the claim that it does not occur at present, in order to be accepted, must be based upon some more tangible evidence of the dispersive action of the new stack, or upon some modification other than the change of stacks.

THE INFLUENCE OF THE DUST CHAMBERS AND FLUES.

A large quantity of dust, rich in arsenic and copper, is deposited in the settling chambers and flues. The highest percentage of copper is found nearest to the furnace and the highest of arsenic nearest to the bottom of the stack. The analyses of Harkins and Swain show the composition of the dust to be as follows:²

	Copper Per Cent.	Arsenic Trioxide Per Cent.
Sample from near foot of stack.....	4.64	26.06
Sample from bottom of narrow flue.....	8.00	7.14

Judge Hunt says the portion of dust which is high, about ninety per cent., in arsenic goes to the arsenic plant, and as much as two tons a day is collected and sold for commercial purposes. The portion of the dust not treated for arsenic, approximately 160 tons daily goes directly back to the reverberatory smelting furnaces and is treated for the extraction of copper, silver and gold.³ That is, about $2\frac{1}{4}$ tons, or approximately one and one-half per cent. of the total amount of dust deposited is used for the manufacture of arsenic. The remainder of the dust is sent to the reverberatories and smelted, so that the arsenic which it contains must in the end be discharged with the smoke, excepting only that portion which goes into the reverberatory slag.⁴

As a matter of fact, therefore, with the exception of that portion of the dust used at the arsenic plant, the deposition of this enormous quantity of dust in the settling chambers and flues has practically no effect on the quantity of arsenic which escapes with the smoke: The benefit which is derived from this system of chambers and flues consists in the saving of copper, silver and gold to increase the earnings of the plant.

It is to be noted, however, that according to Harkins and Swain, dust collected from the outside of the glass sampling tube in the stack gave 25.7 per cent., and dust which dropped from the top of the stack 25.6 per cent. of soluble arsenic, calculated as trioxide. They estimate the quantity of flue dust at approximately fifty tons daily.⁵ These discrepancies, however, do not affect the conclusion just reached as to the influence of the flues and dust chambers on the escape of arsenic with the smoke.

THE INFLUENCE OF THE ARSENIC PLANT.

It has already been shown that according to the claim of the smelter company a sufficient quantity of flue dust is treated in the arsenic plant to remove a maximum of two tons of arsenic trioxide per day. To get an idea of the effect of extracting this quantity of arsenic from the smoke, it is necessary to know approximately the total quantity which would go into the smoke if these two tons were not collected. To ascertain this quantity has been one of the most difficult problems connected with the case.

Harkins and Swain calculated the escape of arsenic from data obtained by analyzing samples of the smoke and determining the number of cubic feet discharged per day. To accomplish this they measured the velocity of the smoke in the stack by introducing a Pitot tube through the five-foot wall at a height of fifty-three feet above the base of the stack and withdrew samples of smoke for analysis from the same opening. The average of their determinations gave three and one-half billion cubic feet of smoke per day containing 59,270 pounds of arsenic trioxide.⁶ This is considerably more than a ton of arsenic per hour.

The reliability of these determinations was questioned on the theory that it was impossible to carry out these experiments without introducing some errors, and that the slightest mistake in the chemical analysis in trying to arrive at the amount of arsenic would be multiplied by millions and millions. It seems to the writer that a sufficient answer to this objection is furnished

by a comparison of the many determinations of velocity and of the different determinations of the quantity of arsenic. If errors were made and multiplied by millions and millions, there could not be a close correspondence in the results of the different determinations; and as there was a close correspondence with no greater variation than would probably occur in the actual volume and content of the smoke from hour to hour or from day to day, it is logical to conclude that errors of importance were avoided.

Haywood attempted to estimate the quantity of arsenic by analyzing the ores from the mines which supply the smelter. His results vary from zero in the ore from one mine to 12.95 per cent. in the highest sample from another mine. Rejecting this highest determination as exceptional, his average of all the ores was 0.85 per cent. of arsenic. With an average of 8,000 tons of ore smelted per day, the quantity of arsenic going into the plant per day would be sixty-eight tons, and this has only three channels of escape, viz., (1) the smoke, (2) the arsenic plant, (3) the tailings and slag. Analyses of samples from the dump gave an average of 0.09 per cent. of arsenic. It is evident, he says, that the amount found in the dump can not account for the sixty-six tons of arsenic that go to waste; hence a considerable quantity must be volatilized.⁷

For the writer, these analyses of Haywood are a remarkable confirmation of the work of Harkins and Swain and indicate that if they committed an error it consisted in underestimating, rather than in overestimating, the quantity of arsenic volatilized. Admitted the intake of arsenic to be sixty-eight tons, if two tons are collected in the arsenic plant and thirty tons escape in the smoke, there remain thirty-six tons to go into the tailings and slag; and if this waste contains no more than 0.09 per cent. of arsenic, it would require 40,000 tons to account for the surplus arsenic. As this is five times the quantity of ore which is supposed to go into the smelter, it is difficult to see how so much arsenic escapes by this channel.

Mr. E. P. Mathewson, general manager of the Anaconda Copper Mining Company, is reported to have submitted a state-

ment declaring that the estimates of Harkins and Swain are misleading, and that the measurements made by the company indicate that only about ten tons of arsenic escape in the smoke per day.⁸

From all of these determinations, it seems reasonable to assume that the quantity of arsenic which escapes in the smoke per day certainly reaches ten tons, and it may reach thirty tons. Even if we accept the figures of the smelter company, it does not seem probable that a reduction of the quantity of arsenic escaping in the smoke from twelve tons before the modification of the smelter to ten tons afterwards would be sufficient to insure absolute freedom from intoxication where there had been general and acute poisoning before. To accept such a conclusion would be equivalent to saying that when doses of thirty-six grains kill an animal by acute poisoning, thirty grains may be given daily for an indefinite time without injury.

The discharge of even ten tons of arsenic per day into the atmosphere, from a plant on the margin of an inhabited valley, can hardly be regarded as other than a matter for grave apprehension, and if it were not for the fact that the currents of air frequently change and that much of the time the smoke goes away from the valley, it is difficult to understand how any grass-eating animal could escape acute poisoning.

Let us attempt by a simple calculation to get an idea of what the daily discharge of ten tons of arsenic into the atmosphere really means if it is all deposited within twenty miles. Assuming the smoke zone to be comprised within a circle having a diameter of forty miles, the smelter being at the centre, this zone would contain 1,256.6 square miles or 804,224 acres. The uniform distribution of ten tons of arsenic over this area would give 174 grains to the acre. If a crop of grass is exposed to this rate of deposition for forty days during its growth, there would be deposited upon it in this time 6,960 grains per acre, or supposing it to cut two tons to the acre, 3,480 grains per ton. This would be equivalent to forty-three and one-half grains for every ration of twenty-five pounds.

It is not the writer's intention, in this connection, to claim that all of the arsenic is deposited within a radius of twenty miles, or that all that is deposited would adhere to the hay, but simply to show the relation of the quantity of arsenic which certainly escapes, to the area of the admitted smoke zone.

As a matter of fact, the arsenic is not uniformly distributed daily, but often for days or weeks at a time, the smoke stream follows nearly the same course, and this course is very frequently along the valleys. If we admit that the smoke stream, as it drifts down the Deer Lodge Valley, is two miles wide and twenty miles long, it must deposit its arsenic over forty square miles, or 25,600 acres. The quantity of arsenic which it would carry in twenty-four hours is sufficient to give 5,460 grains to each acre, or, on the basis of our previous calculation, 34.5 grains for each ration of twenty-five pounds of hay.

In this calculation, the quantity of arsenic admitted by the company to escape with the smoke is taken as a basis, and while it is not certain that all of the arsenic would be deposited within twenty miles, even when the smoke drifts very close to the ground, neither is it certain that it would not all be deposited within that distance. The fact that arsenic is found on the vegetation at a greater distance may simply indicate that it is carried further when it follows a course very high in the atmosphere. However, the purpose of the calculation just made is not to show the exact quantity of arsenic deposited upon the hay or grass, but to establish the fact that, notwithstanding the operation of the arsenic plant, the quantity carried by the smoke is still so great, with relation to the area to which it may confine itself for several hours or even days at a time, that it furnishes strong presumptive evidence that live stock feeding upon the hay or grass thus exposed would be injuriously affected.

THE ARSENIC CONTENT OF THE FORAGE AS DETERMINED BY CHEMICAL ANALYSIS.

What has been said above with reference to the deposition of arsenic on grass and hay may be objected to on various grounds

if unconfirmed by direct proofs, since it might be urged with an appearance of reason that much of this poison is carried a great deal farther than twenty miles. While, therefore, the estimates which have been given are regarded by the writer as having great weight as presumptive evidence, and also as confirming and explaining the results of chemical analysis, they must be supplemented by the actual analyses of the contaminated products. Fortunately, we have the results of such analyses made by Swain and Harkins, and, independently, by J. K. Haywood, chief of the Miscellaneous Laboratory of the Bureau of Chemistry of the United States Department of Agriculture.

In order that the results may be more readily compared, the findings in Haywood's table have been changed from milligrams per gram to parts per million, by shifting the decimal point three places to the right, and in the table showing Swain and Harkins' results a column has been added giving the quantity per ration of twenty-five pounds. There still remains the slight and comparatively unimportant difference in the conditions that one table is calculated on an air dry basis and the other as absolutely dry. These results are seen in the following tables:

Table Showing Results of Analyses by Swain and Harkins of Grass, Hay and Other Vegetable Substances from the Deer Lodge Valley and Vicinity, 1905-6-7.⁹

Number of Sample	Description of Sample.	Distance (Miles) and Direction From Smelter.	Arsenic Trioxide.	
			Parts Per Million.	Grains Per 25 Pounds of Air Dry Ration.
1905.				
10	Grass	3.0 N	122	21.3
11	Grass	5.0 E	100	17.5
12	Grass	5.0 ESE	90	15.7
13	Grass	2.0 SSE	79	13.8
14	Grass	4.0 SE	50	8.7
15	Hay	2.0 SSE	23	4.0
16	Grass	2.5 SW	87	15.2
17	Grass	4.0 ESE	68	11.9
18	Hay	3.0 SE	8	1.4
19	Grass	6.0 NE	170	29.7
20	Hay	4.2 NE	85	14.9
21	Hay	3.0 NE	96	16.8

Number of Sample	Description of Sample.	Distance (Miles) and Direction From Smelter.	Arsenic Trioxide	
			Parts Per Million.	Grains per 25 Pounds of Air Dry Ration.
1905.				
22	Grass	3.0 N	77	13.5
23	Grass	2.0 N	220	38.5
24	Grass	4.5 N	217	38.0
25	Hay	4.0 SE	22	3.8
26	Hay	4.0 SE	21	3.7
27	Hay	5.0 ESE	50	8.7
28	Grass	6.0 N	30	5.2
29	Grass	5.0 N	263	46.0
30	Grass	35.0 N	35	6.1
31	Hay	4.5 N	89	15.6
32	Grass	6.0 N	67	11.7
33	Hay	12.0 NNE	35	6.1
34	Hay	2.0 W	15	2.6
35	Hay	14.0 NNE	34	5.9
36	Grass	6.0 N	61	10.6
37	Leaves of trees.....	0.5 W	427	....
1906.				
38	Grass	5.0 SE	140	24.5
39	Grass	5.5 N	180	31.5
40	Hay	3.0 W	14	2.4
41	Grass	4.0 W	99	17.3
42	Hay	3.0 E	107	18.7
43	Hay	4.0 E	18	3.1
44	Grass	4.2 N	12	2.1
45	Grass	8.0 NNE	111	19.4
46	Grass	5.0 W	38	6.6
47	Grass	3.0 SE	21	3.7
48	Grass	1.5 SW	157	27.5
49	Grass	2.0 S	10	1.7
50	Grass	2.0 SW	359	62.8
51	Grass	1.5 SW	460	80.5
52	Grass	1.7 SW	293	51.3
53	Leaves of lily-of-the-valley	1.7 SW	583	....
54	Bark of trees.....	1.5 SW	350	....
55	Bark of trees.....	1.7 SW	376	....
56	Grass	6.0 N	18	3.1
57	Leaves of the cedar.....	2.0 SW	508	....
58	Grass	0.7 SW	431	75.4
59	Hay	6.0 E	31	5.4
60	Bark of Trees.....	1.5 SW	300	....
61	Leaves of lily-of-the-valley	1.7 SW	683	....
62	Grass	1.7 SW	482	84.3
63	Grass	2.5 NW	81	14.2
64	Grass	2.5 SW	100	17.5
65	Grass	6.0 N	33	5.8
66	Grass	4.2 N	34	5.9
67	Grass	1.0 N	101	17.7
68	Grass	1.0 E	236	41.3
69	Grass	10.0 SW	64	11.2
70	Grass	13.0 SW	38	6.6

Number of Sample	Description of Sample.	Distance (Miles) and Direction From Smelter.	Arsenic Trioxide.	
			Parts Per Million.	Grains Per 25 Pounds of Air Dry Ration.
1906.				
71	Grass	35.0 N	29	5.1
72	Grass	34.0 N	21	3.7
73	Grass	4.2 NNE	121	21.2
74	Grass	6.0 NNE	73	12.8
75	Grass	1.5 E	705	123.4
1907.				
76	Grass	1.0 NE	265	46.4
77	Grass	2.0 SE	97	17.0
78	Grass	3.0 SSE	51	9.0
79	Grass	4.0 SE	86	15.0
80	Grass	4.0 SE	76	13.3
81	Grass	6.0 SSE	47	8.2
82	Grass	6.5 SE	98	17.1
83	Grass	8.0 SE	79	13.8
84	Grass	100.0 NW	00	0.0
85	Grass	75.0 W	00	0.0
86	Grass	100.0 NW	00	0.0

Table Showing Results of Analyses by J. K. Haywood of Grass and Hay from the Deer Lodge Valley and Vicinity, 1906 and 1907.¹⁰

Number of Sample	Description of Sample.	Distance (Miles) and Direction From Smelter.	Arsenious Oxide.	
			Parts Per Million of Dry Sample.	Grains Per 25 Pounds of Dry Ration.
4106	Alfalfa	2.5 N	69	12.1
4107	Red top.....	4.0 NE	28	4.9
4108	Red top.....	5.0 NE	55	9.6
4109	Alfalfa	10.0 NE	70	12.3
4110	Field grass.....	6.0 E	55	9.6
4111	Hay	6.0 E	41	7.2
4112	Bunch grass.....	3.0 E	42	7.4
4113	Bunch grass.....	6.5 W	55	9.6
4114	Bunch grass.....	2.0 N	103	18.0
4115	Pasture grass.....	3.0 N	69	12.1
4116	Pasture grass.....	4.0 N	41	7.2
4117	Range grass.....	3.0 N	54	9.5
4118	Clover	4.0 NE	54	9.5
4119	Range grass.....	4.0 NE	90	15.8
4120	Alfalfa and clover.....	4.5 NE	54	9.5
4121	Range grass.....	5.0 NE	90	15.8
4122	Range grass.....	6.0 NE	104	18.2
4123	Range grass.....	8.0 NE	55	9.6
4124	Red top.....	1.0 SE	69	12.1
4125	Range grass.....	4.0 W	55	9.6

All of the samples included in these two tables were taken after January 1, 1905, and, therefore, they confirm the calculations already made by the writer in this article from which it is concluded that, notwithstanding the modifications to the smelter introduced in 1903, there are still large quantities of arsenic deposited upon the grass in what is known as the smoke zone. It is easily seen from the tables that the quantity of arsenic does not bear a constant, or even a general, relation to the distance from the smelter. The factor of distance has some bearing, but it is overshadowed by the influence (1) of the direction of the air currents, and (2) by the length of time the grass has been exposed.

The influence of air currents and time of exposure were clearly demonstrated by the observations of Swain and Harkins. They say:

“Moreover, above everything else the length of time the plant is exposed to the free atmosphere in the smelting district is the determining factor in connection with its arsenic content. A few cases illustrating this have already been cited in connection with some of the earlier results, and many others could be selected. Nos. 53 and 61, samples of wild lily of the valley, were collected by one of us from the same spot, about one and three-quarter miles from the smokestack and in a section over which the smoke blows much of the time in the summer months. The first one was cut July 3 and the other August 14, or six weeks later. During this time the arsenic content of the plants increased from 583 to 682 parts per million. At the same time these were taken a kind of wild grass (*agripirons divergens*) growing at the same place was sampled. These are designated as Nos. 49 and 62. When the first of these was collected the grass was already dead, so the increase in arsenic trioxide from 293 to 482 parts per million cannot be ascribed to processes of absorption from the soil. Nos. 44, 66, 73 are meadow grass samples taken from the same field in the months of July, Sep-

tember and November, respectively. The July sample, covering the period of most rapid growth and most frequent rainfall, carried twelve parts of arsenic trioxide per million. The September sample more than covered the rest of the growing period and carried thirty-four parts, while the November sample carried 121 parts per million, thus collecting an added eighty-seven parts after all growth had ceased.

“A striking proof that the arsenic is deposited from the smoke was found by a study of the wind currents. The Mill Valley district, southwest of the smelter is the one toward which the smoke blows most during the early summer, while late in August the air currents begin to go northward down the Deer Lodge Valley, and from this time until the snow covers the ground the greater part of the smoke blows in this direction. The analyses show that the grass of Mill Valley contains more arsenic than any other district during the early summer. Thus, samples 48, 50, 51, 52, 53 and 58, which were gathered in July, 1906, contained respectively 157, 359, 460, 293, 583 and 431 parts of arsenic trioxide per million. North of the smelter, sample 12, taken in July, 1906, from the Bliss ranch, contained eighteen parts; one taken in September, thirty-three parts, and one taken in November, seventy-three parts of trioxide per million. In 1905 the Bliss grass, in June, contained sixty-seven parts; in September, sixty-one parts, and in February, 1906 (grass of the season of 1905), it contained 180 parts per million. Hay from the same ranch cut in August, 1904, contained only thirty parts to the million, while by the next April the grass in the same field had increased its arsenic content to 263 parts. During 1906 the Para ranch gave twelve parts in July, thirty-four in September, and 121 in November. There is, of course, some objection to a comparison of the grass with the hay, since a certain portion of the arsenic of the latter is shaken off by the cutting and stacking. Even with the grass it is difficult to obtain

the original arsenic content, since the sample must be cut, put in containers, and transported to the laboratory."¹¹

The observations of the writer confirm the statements of Swain and Harkins with reference to the air currents, and the direction in which the smoke is carried. He arrived in Anaconda on his second visit of inspection the last week in June, 1906, and for four weeks thereafter it was rarely and for very short periods that the smoke drifted northward over the Deer Lodge Valley. On July 28 he saw the smoke for the first time after his arrival spread out over the valley and envelop it for several hours; while from August to January the smoke was frequently on the valley, ulcers appeared in the nostrils of horses at pasture and other symptoms of poisoning were activated.

As it is the direction of the smoke stream and the time of exposure which are the principal factors in determining the quantity of arsenic found on the grass, so the maximum percentage of arsenic may be found in one part of the valley at one season of the year and in an entirely different part at another season. Further, as it is only when the grass or hay carries a heavy percentage of arsenic that symptoms of subacute or acute poisoning occur, it is easy to see how animals on the same farm may fail to show well-marked symptoms during the greater part of the year and yet be severely poisoned or succumb during the remaining period when the arsenic content of the grass is at its maximum.

COMPARISON OF THE QUANTITY OF ARSENIC DEPOSITED IN 1902 WITH THAT FOUND IN 1906.

Unfortunately, but few analyses of grass were made by Swain and Harkins in 1902, and these few constitute all the direct evidence in the writer's possession by which he can make a comparison as to the quantity of arsenic deposited upon the grass before and after the modification of the smelter. These analyses are as follows:

Table Showing Analyses by Swain and Harkins of Grass and Hay From the Vicinity of the Washoe Smelter, November, 1902.¹²

Number of Sample	Description of Sample.	Distance (Miles) and Direction From Smelter.	Arsenic Trioxide.	
			Parts Per Million of Air Dry Sample.	Grains Per 25 Pounds of Air Dry Ration.
1	Grass	0.25 E	1551	271.4
2	Grass	3.0 W	166	29.0
3	Grass	4.0 W	88	15.4
4	Hay	1.5 S	283	49.5
5	Hay	3.0 W	36	6.3

These analyses were all made in November, at or about the time when the acknowledged poisoning was at its maximum. The first gives an extraordinary quantity of arsenic, but the grass was taken within a quarter of a mile of the smelter and with the short stacks this probably accounts for the high percentage. The other samples taken from points 1.5 to four miles distant give a less proportion of arsenic than many analyzed in 1906. Indeed, if we exclude the one clearly unusual sample of 1902, the average of the remaining samples gives twenty-five grains of arsenic for each twenty-five-pound ration, while the average for all the analyses of 1906 is 25.2 grains, or almost exactly the same. If we include the extraordinary sample, the average for 1902 would be 74.3 grains of arsenic for each twenty-five-pound ration, while the average of the highest seven samples of 1906 is 74.1 grains. Without endeavoring to draw a more sweeping conclusion from the analyses of 1902 than is warranted by their number, it seems evident that the deposition of 1906 was greater in some places than that of 1902, and that the average was so near in the case of the higher samples as to furnish strong presumptive evidence of poisoning. Moreover, the mere fact of grass being so charged with arsenic in 1906 that each twenty-five-pound air-dry ration contained such quantities as 51.3, 62.8, 75.4, 80.5, 84.3 and 123.4 grains, is of itself, with-

out the confirmation of the previous poisoning of 1902, presumptive evidence of poisoning.

It may be said, therefore, by way of recapitulation, that a consideration of the data obtained by a study of the course of the smoke after it leaves the new stack; by a study of the effect of the flues, dust chambers and arsenic plant; by calculations made from the quantity of arsenic admitted to escape daily with the smoke, and by actual analyses of the grass and hay leads to the conclusion that there was no such difference between the conditions of 1902 and 1905-6 as to permit the admission of acute and general poisoning in the first mentioned year and, at the same time, the denial of any injury whatsoever during the two years last mentioned; and further that the quantity of arsenic found on the grass and hay is of itself indicative of poisoning.

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- (10) Haywood, J. K. Injury to Vegetation and Animal Life by Smelter Wastes. Loc. cit., page 28.
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DR. LEONARD W. GOSS, professor at the Kansas State Agricultural College, Manhattan, Kansas, left the United States May 1st to attend the veterinary colleges of Germany for the next three semesters. We wish the doctor much pleasure in his visits to Dresden, Munich, Hanover and Berlin.

SERO DIAGNOSIS OF GLANDERS.*

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(Continued from May issue.)

In a publication on the sero diagnosis I expressed my great faith in the complement deviation test, but admitted that in tropical countries the agglutination test should always be made at the same time, because certain blood diseases, as well as other unknown factors, may slightly modify the complement deviation test.

The technique of the complement deviation test is briefly as follows:

It is advisable to undertake the test in two ways, especially when many sera have to be tested.

The first test is made in the following manner: In each of two test tubes is put 1.0 or 2.0 c.cm. saline solution, of a strength of 0.85 per cent.; then 0.2 or 0.1 c.cm. inactivated serum of the horse to be tested is added. In the first test tube 1.0 c.cm. antigen (1.100) is placed; the second tube which serves as a control for the serum is left free from antigen. The complement is added in a dilution of 0.03 (or 0.02 as was found in a previous test). The content of the tube is slightly shaken and incubated at 37 degrees for an hour. Then in each tube the inactivated hæmolytic serum of a rabbit is added in quantities which have been previously ascertained. The red blood corpuscles are put in last, the tube is shaken, then incubated for two hours, then

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kept in a room temperature for twelve hours, when the result is noted.

Animal.	Immune Serum.	Complement (geno. 03).	Antigen Extract, 1:100.	Hæmolytic Amboceptor, 1:1200.	Sheep Blood, 5%.	Result.
Horse 3781	0.2	1.0	1.0	1.0	1.0	Hæmolysis.
	0.2	1.0	...	1.0	1.0	"
4447	0.2	1.0	1.0	1.0	1.0	Very slight.
	0.2	1.0	...	1.0	1.0	Hæmolysis.
Mule 4774	0.1	1.0	1.0	1.0	1.0	"
4776	0.1	1.0	...	1.0	1.0	"
	0.1	1.0	1.0	1.0	1.0	Slight Hæmolysis.
	0.1	1.0	...	1.0	1.0	"
Horse 3253	0.2	1.0	1.0	1.0	1.0	No Hæmolysis.
	0.2	1.0	...	1.0	1.0	Hæmolysis.
Mule 4138	0.1	1.0	1.0	1.0	1.0	No Hæmolysis.
4809	0.1	1.0	1.0	1.0	1.0	Hæmolysis.
	0.1	1.0	...	1.0	1.0	No Hæmolysis.
4537	0.2	1.0	1.0	1.0	1.0	Hæmolysis.
	0.2	1.0	...	1.0	1.0	"
	0.2	1.0	1.0	1.0	1.0	"
Horse 4604	0.2	1.0	...	1.0	1.0	"
Mule 4625	0.2	1.0	1.0	1.0	1.0	"
	0.2	1.0	...	1.0	1.0	"
Horse 4806	0.2	1.0	1.0	1.0	1.0	"
	0.2	1.0	...	1.0	1.0	"

Naturally, for each test the necessary controls have to be made, namely:

I. The serum of the horse has to be tested in its double quantity, 0.4 c.cm., and is not allowed to deviate the complement. In this test we must have complete hæmolysis, otherwise the test will have to be repeated.

II. The serum must be tested as to its normal hæmolysis in the quantity used, that is, 0.2 c.cm. serum without hæmolytic amboceptor will give no hæmolysis.

III. Serum of the horse has to be free from complement, properly inactivated and has to give in this quantity of 0.2 no hæmolysis.

IV. The antigen in the quantity used is not allowed to fix the complement. There must be in the dilution 0.01 complete hæmolysis, when no serum is added.

V. The double quantity must not deviate the complement, and is, therefore, without serum in the quantity of 0.02 c.cm. used; hæmolysis is then present.

VI. The hæmolytic system alone has to be perfect in giving, without horse serum and antigen, a complete hæmolysis.

VII. The hæmolytic serum has to be properly inactivated and the system must give, without complement, no hæmolysis.

VIII. The complement serum must be free from hæmolysins and must give, with the blood corpuscles alone, no hæmolysis.

IX. The physiological water, or saline solution, has to be tonic, which means the red blood corpuscles in a solution of 4 c.cm. of the saline solution must give no hæmolysis at all, otherwise the entire test is unreliable.

CONTROLS.

Test Tube No.	Horse No.	Immune Serum.	Antigen.	Comple- ment.	Hæmolytic. Ambo- ceptor.	Blood, 5%.	Result.
1	Gen. Serum of Horse 4481	....	1.0(0.001)	1.0	1.0	1.0	Hæmolysis.
2		....	2.0(0.002)	1.0	1.0	1.0	"
3		0.02	.....	1.0	1.0	1.0	"
4		0.4	.....	1.0	1.0	1.0	"
5		0.2	.....	1.0	...	1.0	No hæmolysis.
6		0.2	.....	...	1.0	1.0	" "
7		....	.....	1.0	1.0	1.0	Hæmolysis.
8		....	.....	1.0	...	1.0	No hæmolysis.
9		....	.....	...	1.0	1.0	" "
10		....	.....	...	...	1.0	" "

In the second step of the test each horse which gave with 0.2 serum hæmolysis or partial deviation is tested in descending doses, 0.1, 0.05, 0.02, 0.01 in the same way with the necessary controls, as shown in the able below :

TEST OF ONE HORSE.

	Immune Serum.	Complement (0.03).	Antigen, 1.100.	Hæmolytic Ambo- ceptor.	Sheep's Blood, 5%.	Result After Two Hours.
1	0.01	1.0 (0.03)	1.0	1.0	1.0	Hæmolysis.
2	0.01	1.0	...	1.0	1.0	"
3	0.02	1.0	1.0	1.0	1.0	Slight hæmolysis.
4	0.02	1.0	...	1.0	1.0	Hæmolysis.
5	0.1	1.0	1.0	1.0	1.0	No hæmolysis.
6	0.1	1.0	...	1.0	1.0	Hæmolysis.
7	0.2	1.0	1.0	1.0	1.0	No hæmolysis.
8	0.2	1.0	...	1.0	1.0	Hæmolysis.
Control.						
9	0.4	1.0	...	1.0	1.0	Hæmolysis.
10	0.2	1.0	...	...	1.0	No hæmolysis.
11	0.2	...	...	1.0	1.0	" "

From explanations just given the following substances are necessary to carry out this test:

First—The serum of the animal to be examined.

Second—Glanders bacilli in the form of an emulsion or in the form of an extract.

Third—Complement obtained from a guinea pig.

Fourth—A hæmolytic immune serum from a rabbit, and

Fifth—An emulsion of red blood corpuscles of a sheep.

First—The immune serum. This serum is generally obtained in the way indicated, namely, withdraw the blood from the jugular vein and collect the serum from the coagulum. This serum contains the specific amboceptor and will retain it for a long time if kept preserved and protected from light at low temperature. After two months, especially when carbolic acid has been added, a slight diminution of the specific antibodies will be detected (Pfeiler). I had sera where the amboceptors were constantly present over eight and one-half months. The serum can only be used with success when heated before use to a temperature of 50 to 60 degrees C. to destroy the complement and to inactivate the serum. Schutz and Schubert, Miessner and Trapp, and the writer pointed out that this inactivation is absolutely necessary to obtain specific reactions, especially when mule serum has to be tested. We showed that serum which has not been inactivated, generally deviates the complement continuously and gives non-specific reactions. This spontaneous deviation is due to certain substances which are present in the serum, but which can be destroyed when the serum is heated to a temperature of 60 to 62 degrees. I, personally, favor very much, heating the serum to 62 degrees, because from my experience in examining over two hundred samples of serum of mules, I became convinced that this is the only suitable temperature by which to destroy the non-specific bodies.

From experiments carried out by Schutz and Schubert as well as by myself we know that the serum in a large quantity (over 1 cubic centimeter) gives a spontaneous deviation, which means that certain non-specific substances are present in small quantities which deviate the complement. It is therefore best to follow the method given by Schutz and Schubert, and use descending doses from 0.2 c.cm. to 0.01. If specific antibodies are present, complete deviation will take place with the serum of 0.2, 0.1 until 0.01 c.c. If, instead, as it happens occasionally in chronic glanders, the specific bacteriolytic amboceptor is present only in minute quantity, a specific deviation may take place only in a dilution of 0.2.

It was shown by Miessner and Trapp and corroborated by myself in unpublished experiments on mules, that the specific bacteriolytic amboceptors appear from the eighth to the tenth day after the infection and increase gradually to a maximum, so that about the eleventh or twelfth day a complete deviation is present in a dilution of 0.01 serum. After a certain time, which in horses varies widely, the specific amboceptor gradually disappears, which means that we obtain in a horse, which has been infected with glanders for perhaps eight or ten months, only a deviation with 0.2 or 0.1 c.c. of serum. To study these changes we have naturally to examine a large number of animals under differing conditions.

Pfeiler, Miessner and Trapp and I found that the mallein injection in healthy horses produces, after an incubation time of five to ten days, specific antibodies in the serum. If, therefore, a serum has to be tested by this method, we should collect the serum before the mallein has been injected; or, if mallein has been injected, we should wait at least a fortnight to three weeks before collecting serum for the sero diagnosis of glanders. We know from experiments of all the investigators mentioned, that these antibodies produced by inoculation of mallein disappear after a short time.

The serum of healthy horses gives, under normal conditions, a deviation only with higher quantities of serum, Miessner and

Trapp, Schutz and Schubert found a very small number of animals (about seven out of 3,000) which deviated in a dilution of 0.1 down to 0.01. These facts must be kept in mind, and it is stated by all investigators that an additional agglutination test must, therefore, be made, because only by this combination of agglutination and complement deviation can mistakes be avoided. I confirm the statement made by Miessner and Trapp, that no case is known where an animal has been declared to be free from glanders and proved later on to be affected with this disease.

The serum of sick animals which are not suffering from glanders deviates the complement in no way; for instance, strangles, epizootic lymphangitis, purulent cellulitis. On the other hand, in tropical countries the conditions, as I have explained them in my publications on this subject, have to be kept in mind. For example, in piroplasmosis in horses, under certain conditions a deviation may be found which has absolutely nothing to do whatever with glanders. The serum of cats and guinea pigs suffering from glanders gives also a specific reaction.

Second—Antigen. By the experiments of Schutz and Schubert, Miessner and Trapp *et al.*, it was shown that the most suitable antigens are obtained by using an extract of glanders bacilli. This extract is obtained by growing highly virulent glanders bacilli on glycerin-potato-agar. This bacillary growth is washed off after twenty-four hours with saline solution, the bacteria killed by 60 degrees C., the entire material thoroughly ground in a special mortar, shaken for from two to five days, then centrifuged and the clear fluid used. All the preparations with antiformin emulsions of the bacteria give very good results, but they have to be protected from light and kept at a low temperature. We generally use the extract in the quantity of 1 c.c. in a dilution of 1 to 100.

Keyser suggested that the extract of glandered organs in saline solution might give satisfactory results, but a few investigators could not confirm his opinion. It frequently happens that the glanders bacilli are not numerous enough in glandular ab-

scesses, and in nodules of the lungs or of lymphatic glands, to produce a sufficiently active antigen.

Several investigators have suggested that mallein be used instead of extracts of glanders bacilli, as antigen, but they all agree that the results obtained are so varying that it cannot be recommended for general laboratory technic.

Third—The complement. For the test, the complement found in the serum of guinea pigs is the most suitable, because the complement is present in more or less constant quantity and the serum can easily be obtained fresh. The animal is bled to death and the blood is centrifuged. Generally five or six cubic centimeters of serum suitable for the test may be obtained in this way. The question now is in what quantity to use the complement for glanders. It was Schutz and Schubert who pointed out that one should take the smallest quantity of complement which will, with the standard solution of hæmolytic serum, dissolve a five-per cent. solution of red blood corpuscles. Under such conditions it was found that no complement is left over to connect itself with the hæmolytic amboceptor and produce hæmolytic. All investigators considered this point, and I myself recommend that the complement be used only in the smallest efficient quantity. For laboratory routine it is advisable to test the serum early in the morning, and to keep the guinea pig serum in an ice chest for the entire day. Only fresh guinea pig serum should be used.

Fourth—The hæmolytic amboceptor. This is obtained by inoculating rabbits with increasing doses of clean sheep blood corpuscles. This inoculation must be intra-peritoneal, because only by this means do we obtain a serum of high standard. This serum can be preserved with a small amount of carbolic acid and will then remain active for six months.

Fifth—Sheep blood corpuscles. Sheep blood corpuscles are obtained by drawing blood from the jugular vein of the sheep. It is then defibrinated, diluted with saline solution and centrifuged. When the red blood corpuscles have settled to the bottom of the tube washed again with saline solution. This

process is repeated seven times, and afterwards a five-per cent. solution in physiological water is obtained for the test. The red blood corpuscles must be tested before applied for a general test. This can be done when testing the hæmolytic amboceptor and the complement with the fresh collected corpuscles every day before used in the test. Several investigators found that the blood corpuscles of each sheep may show quite different disposition to be dissolved, therefore a test is absolutely necessary. When all these ingredients are prepared and ready at hand the test is carried out in the way explained before.

I wish to state that the technic of the complement deviation test in the majority of cases which I explained, was carried out according to the method devised by Schutz and Schubert. I consider this very important for the correct judging of results in new serologic methods. If every investigator were to use his own way of testing the serum, he would never be able to compare his results with those of others; this part of scientific collaboration is important particularly with respect to any method which has still to find its true place in practical application. Many details can be altered and adapted to the special conditions of a country, but the principal outlines should be followed as given by Schutz and Schubert. I am able to deduce from my test of more than 600 animals, and from more than 3,000 serum tests, that in full accord with Schubert's results, the deviation of complement in connection with the agglutination test can be applied for the eradication of glanders in stables in the following way:

1. Any horse giving a complete deviation of the complement with its serum in the quantity of 0.2 or lower (0.01) should be destroyed, because it is surely affected with glanders.
2. Horses and mules recently infected with glanders give generally, during the first twelve to fourteen days, no or only an incomplete deviation with 0.2 or 0.1 serum, but have a high agglutination standard over 1/1000. A retest after eight to fourteen days shows whether the animal is really suffering from

acute glanders, or whether it has only a abnormal amount of normal agglutinins.

3. The injection of mallein gives rise to bacteriolytic amboceptors in the serum, which fact has to be considered when testing animals from a stable where mallein has been applied. The binding properties of the complement in this case increases rapidly after four to eight days, but disappears gradually after four to six weeks. In diseased horses the decrease takes place very slowly and remains often very high for over a month. (In two of my cases over a year.) Therefore, a second test has to be applied after a fortnight to all horses in the stable; the decrease of the bacteriolytic amboceptor will indicate that mallein and not a real glanders affection has produced the deviation.

4. All horses giving incomplete deviation with 0.2, and a high or low agglutination titer have to be retested after three weeks. If now the deviation in the serum becomes negative and the agglutination remains at the same height, the animal should be discharged, because it is not suffering from glanders. If, instead, the complement deviation becomes positive and the agglutination standard increases, it is suffering from acute glanders. On the other hand, if the complement deviation test becomes negative and the agglutination standard becomes lower, it is suffering from chronic glanders, and it is advisable to dispose of the animal without waiting for another test.

The test has been introduced in the laboratory of the Pennsylvania State Livestock Sanitary Board. I express herewith the hope that this test in connection with the agglutination test will be employed in all the laboratories on this continent, and that results may be published at an early date, in order that we may be able to discuss further conclusions and to control this destructive disease, so inimical to agriculture and public health.

A VALUABLE paper, by Prof. L. A. Merillat, entitled "Surgery In General—Treatment of Wounds," presented at the Minnesota State Association meeting, will appear in the July issue of the REVIEW.

THE USE OF SLINGS IN VETERINARY PRACTICE.

BY S. R. HOWARD, V.S., HILLSBORO, OHIO.

Upon this subject, I can only speak from my own use as a country practitioner.

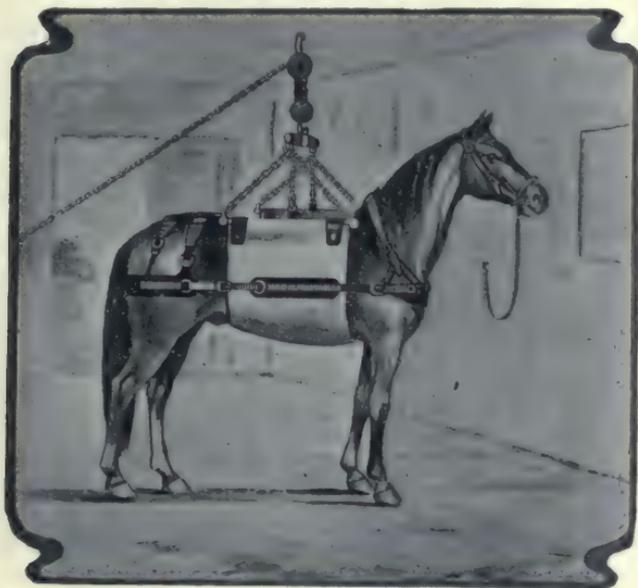
To my mind, a very important aid in many medical and surgical cases is the apparatus known as a "sling." A veterinarian may be thoroughly equipped with theories and ideals, but if he has not at the proper time a handy, strong, clean sling and knows how to use it, he will fail with his case and lose out in the estimation of his clients.

There are many patterns of sling, some of which are rather expensive and complicated machines.

I have always made my own slings and here is the way to water-proof duck before making it up: First lay it out on a large bench. Then take a block of paraffine about six inches square and rub it over both faces of the duck, bearing down hard. This will leave thin films of paraffine on the faces of the duck. Melt these films of paraffine into the goods, using a flat iron that is just warm; too hot an iron will set the paraffine on fire and burn the duck. It is well to experiment with a small sample first and learn how to do the water-proofing before starting. To determine when the sample is well water-proofed, hold it in a kind of bag, with the face in and pour in some water. If the water-proofing has been properly done, the water will not wet the duck, but it will stay in globules and act as if it were on a greased board or hot stove. The duck will then stay soft, last many years, be easily cleaned and remain pliable.

A sling is usually made of leather or coarse duck, folded several times, twenty-one to twenty-four inches wide and about six feet long; at the ends of which I securely fasten 1½-inch piping,

the ends worked into solid eyes for fastening shore pieces of 5-16 log chain. The shorter the chains, the better, because that economizes height in a low hitch. This broad belly-band may be re-enforced by broad straps stitched on the outside of the whole length of the edges. The buckles for breast and hip



Pattern of Slings used by Author.

straps should be solid, $1\frac{3}{4}$ inches wide or wider; the other buckles should be at least $1\frac{1}{2}$ inches wide. A leather sling can long be preserved when not in use, by being occasionally dressed, kept covered, hanging unrolled, dry and away from dust.

Smallness of bulk and lightness combined with great strength, are the important requisites in the making of a sling. It is always good practice to inquire the approximate weight of your patient before visiting him if he is down. You then know what to take along. I use trees of two sizes—great strength, thin, exceedingly light and made from sheet steel double-trees manufactured by B. F. Avery & Sons, Louisville, Ky. I rasp the corners off close and swell the hooks. For a

horse weighing 1,500 pounds, or less, the smaller tree is used and weighs $7\frac{1}{2}$ pounds, making that collection to weigh about 65 pounds. In addition to a good swiveled self-locking hoist (price with rope about \$3.50), I also carry a single wooden pulley. Before raising the horse, I fasten this block low, string the end of rope through it and to it hitch a horse and when ready he is lead straight away, thus doing without a number of men and a lot of hard pulling. A little "high life" (bi-sulphide of carbon) judiciously applied to the small of the back, has a wonderfully refreshing effect in some languid cases.

In a widely scattered country practice, sometimes in isolated and almost inaccessible places where proper help is often not to be had, one's ingenuity is taxed to the utmost. It is no pink tea or butterfly work to raise a horse in a sling; and even the raising of a small horse may be made the labor of a Hercules; yet it is often comparatively easy, if properly done, even though the weather may be below zero and the snow a foot deep.

With a good self-locking pulley, a single block, a steady pulling "Dobbin" and a child or woman to lead him, as a young darky once said, "Dat ole Doc. Howard can raise any hoss in America all by his sef."

A discussion of this subject may properly be confined to equine practice, for it is seldom that the veterinarian is called to use his slings for animals of other species. The writer has found it necessarily expedient sometimes to put a cow or steer in a sling. Ordinarily, however, it is not satisfactory in cattle practice, and if applied, should only be for a few days at a time and with a view to lessen the animal's disposition to lie down, rather than to prevent it. When it is used continually, the pressure of the abdomen is likely to interfere with digestion and general health of cattle. The ox takes naturally to the recumbent posture. When down, the chest expands and, excepting in rare cases, there is no inclination to lie upon the side. The horse, on the other hand, does not take kindly to being down very long. If down any length of time and unable from any cause to rise, he

will become nervous and discouraged, lie upon his side, struggle, bruise his head, limbs and body and if not well nursed, will soon develop bed-sores. His grip will soon be gone, he has the hippo and he may lie in stony calmness until he dies, even though entirely able to stand when properly raised.

It might be well for us to consider our subject from a commercial standpoint, for undoubtedly in veterinary practice, the commercial element cannot be eliminated. Unlike man, a money value is placed upon the head of an animal and so the question will frequently rise: "Will it pay?" An old man, a city practitioner of long experience once contended with me that in city practice it did not pay the veterinarian to accept a case for a new client and raise a horse in slings. His argument was that in a city there is an immense clientage to draw upon, whereas in country practice every client must be conserved. This it seems to me, is a violence of professional pride. The practitioner, I believe, should be honest to himself and straightforward with his client. He should either decline or accept the case or immediately get down to business. Some veterinarians will not have a sling, but depend upon extemporizing one each time it is needed. I have been told that one way to shirk is to walk about the patient, not failing to appear the embodiment of wisdom, diagnose the case "spinal meningitis" or something else, leave some harmless medicine and depart. One disadvantage to such a course would be that the owner might call a live man following your visit, who, raising the animal, would find that he had simply become cast in the stall or been down owing to some minor disability. Please do not understand me as reflecting upon the members of my profession as to their energy. Taken in the aggregate, we are hard-working and painstaking men and with us it is not so much a case of work as it is of time. It is often a hardship for the busy practitioner to neglect other duties for that of slinging a horse. I have put in many a day and the greater part of many a night at such work.

Now a few words as to the more professional considerations. The slings are to be utilized for two general purposes, viz.:

First—To raise a horse from the recumbent position.

Second—To prevent him from assuming such position; but before discussing these phases of our subject, let us first consider some of the conditions and diseases in which the use of slings are contra-indicated. First, we may safely say that slings are useless where more than one limb is entirely disabled for weight carrying. That is if the injury or paralysis is such that the animal assumes a "dead weight" after being raised to a natural height. Cases in point would be azoturia, complete breakdown in two limbs, extreme heat prostration, complete paralysis from any cause, etc. And again. The use of a sling is sometimes contra-indicated in cases of disability where the animal can readily and without apparent injury lie down and rise at will. However, I have not the least doubt that many of us can recall a number of such cases and that if each case had been put in a sling right in the start, the result would not have been so embarrassingly disastrous as it was. Hence, it is a safe procedure at frequent times to use a sling, for we do not always know the extent of injury.

Now under the first heading, or the use of slings to raise a horse from the recumbent position; slings should be resorted to in those cases where the horse is found down, unable to rise and the practitioner is unable for this reason to make a diagnosis. The following case in point is one you will all recognize.

You are called out early in the morning. You find a horse not young and somewhat reduced from hard work, down in the stall. You are told that he was found in that condition when the stable was opened at 3, 4 or 5 o'clock, as the case may be. A casual examination leads you to banish the possibility of a diagnosis of azoturia. You have the horse pulled out on the floor, free from the walls of his narrow stall, roll him upon his sternum, properly arrange his limbs, and he may, with proper assistance, outside the use of a sling, very readily rise; but if

not, how is the diagnosis to be made? It is possible that this horse, sore and stiffened, perhaps of that diathesis prone to osseous deposits, simply stood up for several nights in a single stall, fearing to lie down and at last, tired out, did lie down and through disability and lack of courage gave up after several ineffectual attempts to rise. I say that this may be the case, yet who can positively say that it is the case before he has examined the animal when in natural position upon his feet? He will indeed be a keen man, who can, with the horse recumbent, eliminate all possibility of a fracture of a rib, vertebra or limb, the displacement in a joint or rupture of a muscle, tendon or ligament. So it might be said that slings are always indicated when their use is essential to a correct diagnosis of the case and if there is any question in the mind of the practitioner either as to diagnosis or prognosis, he will do well to raise the animal before expressing his opinion. I very seldom express a definite opinion when a horse is down.

Under the second heading we will consider the application of slings to retain the horse in a standing position.

First. Their use may be indicated in certain cases, where, while the animal can readily lie down and rise, the act would cause injury to certain parts that are injured or under treatment, as in the case of fractures. I am informed that some practitioners invariably place a horse in a sling immediately following the use of the cautery or spavin. I have had no experience using slings in cases of cerebro-spinal meningitis.

Second. Their use may be indicated in case of injury to one limb where the animal is disinclined to lie down and stands upon the sound limb to the extent of causing swelling and injury.

Third. In those cases where it seems certain that if the animal goes down, he will be unable to regain his feet. Among such cases may be those in which we have just raised a horse. It may be best to retain such a case in slings for a few hours and on the other hand, it may be good practice to discard the slings after raising the horse, allowing him a good box stall with plenty

of good bedding, avoiding, however, the use of long straw. All such cases will depend upon conditions and must be decided according to the judgment of the practitioner.

One disease common to the horse in which slings are frequently used, is that dear old tetanus. When a horse with this disease lies down and rises at will, he is almost certain to recover (provided he does not receive too much medicine and attention). Some make a practice of placing nearly every case of tetanus in slings. I will not discuss the advisability of such a course, but will make one plea for the use of sling in tetanus. Frequently a case progresses to the second and third week, the animal appears to be improving, when suddenly he is found down in the stall and in great distress. There is manifest dyspnoea, the legs are rigid, and to all appearances, the case is one of fatal spasm. This, however, is frequently not the case. The animal has gone down to rest, which is a favorable indication; but once down, fear takes hold of him and what he needs is to be quietly approached, reassured and assisted upon his sternum, from which position he may later rise to his feet, even without help of slings.

Charges for services and sling will depend upon the nature of the case, as well as various other circumstances. I never fail to state that I also charge for the length of time that the sling is kept. This usually brings it home promptly and that is important. Several times I have successfully used a sling in assisting blacksmiths in fitting shoes to the hind feet of heavy, awkward horses. As a rule, I have found it very unsatisfactory to myself, the owner, and a positive calamity to the down horse to loan the proprietor a sling, unless I also went to superintend the raising. No matter how much instruction is given, the job is seldom done properly. The horse is killed, a damaged sling is returned when I am out, I get little or no money, no credit and the owner is disgusted. However, I have loaned slings to strangers, but they must first deposit with me the full value of the sling and my terms are fully made known at the time, so there will be no repudiation. Never fail to pointedly instruct

the user of your sling not to return it until he knows the patient has lain down and risen several times without assistance. The reasons are plain. In foals and unbroken horses, the sling, as a rule, must be dispensed with. However, in a few such cases, I have been successful in using a sling. In a green, unbroken horse, or a very fresh feeling one should be placed in a sling, he would either injure himself, or break through all restraint. However, by tying up his head for several nights, his spirit is destroyed. The sling may then be applied without fear of resistance. Do not adjust the sling tight, for that causes restlessness, but fit it snug; and in this fashion a horse may remain for months. With alternations of moderate exercise and rest in a sling, the effect of time and plenty of good feed will accomplish many cures. If the ground is covered with ice, you ask, "How can exercise be given?" Make a large circular path of sawdust, chaff, sand or such like and exercise on that as conditions are indicated. I have attended several mares that foaled live foals while in a sling, sucked their colts and afterwards did well. I once had a draft mare in a sling for five months. She would stand about five days in sling, then be turned loose in a large, comfortable shed where she would walk about sometimes for several days before lying down. After a good rest, there would be another raising and a five days stand to be repeated. She came out fat, sleek and sound, displaying none of the wear and tear so feelingly described by some authors. I have never seen a case of laminitis caused by a sling's use, yet I do not deny that grave evils have been wrought by the improper use of a sling. Bear in mind that continued, complete suspension is an absurdity. When your patient is down and in hoisting or rolling him on to a stoneboat, wagon or sled (I know nothing about city practice or the use of an ambulance) to be taken to a more convenient place, the head should be haltered and fastened down and by all means the feet should be hobbled and kept hobbled until you are ready for the final raising. No matter how much work it takes, invariably make the overhead hitch higher than is just necessary and make it doubly strong. This will pay. Wire is

plentiful, very strong and easily used. I have never had a case to fall for want of a proper support. I live seventy-five miles from a celebrated veterinarian, yet I have often heard him roundly cursed because a patient of his, a very valuable horse, fell with sling for lack of proper support, thereby injuring himself to the extent that he had to be killed. A never-ending reproach! Hence, I repeat, make your hitch doubly strong. The treatment of many cases where a sling is used, as for instance, fracture of the hip bones, the best measure, as I see it, is to place him in a stall of just sufficient width to admit him, either end first and apply the sling snugly, but comfortably. Then about the next best thing is a due practice of much patience. Patience is a powerful and miraculous salve.

Salve of Patience.

Understanding	I quart.
Resolution	I pound.
Common Sense.....	II grains.
Practical Experience.....	5 pounds.
Large Sprig of Time.....	
Expectation.....	"A right smart."

Mix and add 3 quarts of the cooling water of consideration. These things may be had of the apothecary next door to reason, in whose house a successful veterinarian has his office.

Personally, I have had no experience with slings on board ship. Capt. Fred Smith says: "Slings are quite unnecessary; in bad weather they are a positive evil, for a horse, if lying in one, simply swings about and is bruised all over. In fine weather, particularly with delicate horses, they may afford a means of rest which the animal will not take any other way. Slings, moreover, heat the body, become dirty and hard and the animal trusting to them, takes the weight off his feet and so disturbs the circulation in these parts, which we know is so much assisted by the body movements; thus we have a predisposing cause of laminitis. Dr. Duck says that a strong argu-

ment in their favor is that they prevent horses falling in their stalls and getting under the rear bar, a position from which they are extricated with great difficulty; but he believes and has, moreover, practical experience to bear him out, that cinders or coirmatting put down, will prevent this falling about and when it does occur, as it will do in bad weather, it is probably generally due to prostration from sea-sickness. A proportion of slings should be found on board for use in suitable cases."

DR. W. C. HOLDEN, of Delphos, Ohio, writes: "Please find enclosed a check for \$3, for another year's subscription to the AMERICAN VETERINARY REVIEW; as I have been a reader for more than 20 years and never missed a single copy."

THE program of the semi-annual meeting of the Colorado Veterinary Medical Association, Fort Collins, June 2 and 3, is certainly suggestive of a splendid meeting; filled with valuable subjects for discussion and elucidation by its members and attendants.

ARMY REMOUNT STALLIONS. Henry of Navarre and Octagon, the thoroughbred stallions presented by Mr. August Belmont to the United States Government for the purpose of breeding horses for use in the army, arrived last week, on board the steamship "Minneapolis" from France. They were officially received by Capt. C. H. Conrad, U.S.A., sent here by Major General Wood, especially to take charge of them.

Henry of Navarre and Octagon were shipped over the Pennsylvania Railroad to Front Royal, Va., the cavalry remount station of the army. They will be bred to mares owned by farmers in the neighborhood.

Captain Conrad said he had great hopes of the successful forming of a breeding bureau, which would be of great service in giving better mounts to the army. After examining Henry of Navarre and Octagon he said they were in fine condition.—*Rider and Driver*, April 8, 1911.

CAUSES FOR TUBERCLE BACILLI IN MARKET MILK AND METHODS FOR THE CONTROL OF BOVINE TUBERCULOSIS.*

BY V. A. MOORE, ITHACA, N. Y.

It is with considerable hesitancy that I attempt, in a few minutes, to discuss this many-sided subject involving, as it does, the health and financial well-being of both country and city people. Of the diseases which affect man and beast, there is no other in which so many people are so intensely interested as they are in tuberculosis. The reason for this is not hard to find. Because of its insidious nature and its slow development it has evaded the watchfulness of man and found its way into almost every circle and taken from us those who seemed to be the brightest and who promised to be the best. More than this, it has grown into the herds upon a thousand hills. As a destroyer of man, tuberculosis has no equal; as a scourge of cattle there is no other with which to compare it.

In order to appreciate the significance of bovine tuberculosis fully, it must be understood in connection with all of its relations and conditions. In recent days, our people have awakened to its destructiveness, the suffering it occasions, and the hardships it has brought to humanity. It would seem, from the great activity of the present concerning it, that tuberculosis was a new disease of cattle. This is not the case, but quite the contrary, it is one of the oldest affections of the bovine species of which we have identified records. Long centuries before the Christian era, there were ecclesiastical enactments against the consumption of the flesh of tuberculous cattle. All down the centuries the enactments of the people of one generation concerning it have been modified or rescinded by those of the succeeding ones.

* Presented before the New York Farmers, Feb. 21st, 1911.

The real problem with tuberculosis began to unfold itself with the discovery of the tubercle bacillus in 1882. This proved that tuberculosis was a specific infectious disease. It was believed by Koch, and those following his methods, that the bacilli of tuberculosis of man and other mammals were identical. The next important discovery was tuberculin. Koch found, in 1890, that the fluid on which tubercle bacilli had grown possessed certain properties, among which was that of causing a rise of temperature in animals suffering from active tuberculosis. In testing this it was found that large numbers of apparently healthy cattle were infected. This gave rise to the great movement in this country of testing dairy cattle with tuberculin and killing the reactors. To do this the states were called upon to make large appropriations to partially compensate the owners for the animals destroyed. The sanitarians and others who advocated this procedure were working on three hypotheses: (1) That the human species was being extensively infected with the bovine germ; (2) that tuberculin was an infallible diagnostic agent, and (3) that all infected cattle were spreading the bacilli.

In 1898, Dr. Theobald Smith reported his very significant findings that there were three distinguishable differences between the human and bovine tubercle bacilli. These were differences in the appearance of their growth on blood serum, their morphology and their virulence. He pointed out that the bovine germ was virulent not only for guinea pigs, but also for rabbits, cattle and other species, while the human species possessed little, if any, disease producing power for these animals other than the guinea pig. This was followed in 1901 by Koch's famous paper at the International Congress on Tuberculosis in London, at which he gave the impression that human and bovine tubercle bacilli were entirely different. This caused considerable consternation in the ranks of the sanitarians. It stimulated a large number of investigations, many of which have been continued until the present time. The German and English governments appointed commissions to investigate the subject. The result is that two very well-defined varieties of mammalian tubercle

bacilli have been determined, one in man, the other in cattle. The further fact has been made very clear, that young children are frequently infected with the bovine type of the germ.

The many examinations for tubercle bacilli in the market milk of our large cities have shown that from five to sixteen per cent. of the samples contain tubercle bacilli. This is a fearful indictment against our milk supply. It discloses a menace to public health resulting, according to statistics, in the death of from 100 to 200 children annually in this city alone. Economically it threatens the milk industry by creating a legitimate fear of this most natural of all foods.

The questions I was assigned to answer are, Why are there so many tubercle bacilli in the market milk of our large cities, and what methods are there for the control of tuberculosis in cattle?

The explanation for the bacilli in the milk is found in two facts: First, the ordinary inspection of dairies by Boards of Health is made largely by laymen, who are not qualified to judge of the physical condition of the cows which are producing the milk. The second is that the severity of the American method of testing with tuberculin and killing the reacting animals has discouraged dairymen from making the test privately, and the state appropriations have been too small to have them made officially. The result is that an efficient, systematic method to prevent the entrance and to check the spread of tuberculosis in cattle is being followed in a very small percentage of our dairies. Again, other factors have contributed to the present conditions. Among these was the former habit of selling at auction badly infected herds, often pure-breds, where owners of sound animals bought one or two individuals to improve their stock, but in so doing they unfortunately, and perhaps innocently, bought centres of infection. Another cause is to be found in the constantly increasing demand of the growing cities for more milk, and the demand is continuous throughout the year. This has revolutionized the former methods of handling milch cows. To supply the demand dairymen must keep their herds milking throughout the

year, hence they buy fresh cows and sell the dry ones. By reason of this a mighty stream of living cattle is constantly flowing through our dairy districts. Many of these animals are infected, but they continue in the stream until they become well advanced cases and spreaders of the virus before they are sold as "band boxes" to certain dealers who dispose of them for certain forms of cheap meat. It is the presence in the dairies of advanced cases of pulmonary and intestinal tuberculosis and cows with tuberculous udders that causes a large number of tubercle bacilli to be found in our market milk.

The control of bovine tuberculosis has been a subject of much thought. Many of the channels nature provided for the dissemination of tubercle bacteria have not been closed with the promptness that might be expected. The control of a disease like tuberculosis in which the infected animals still retain their productiveness for a very long time, presents difficulties of both sanitary and financial significance that are hard to adjust.

The American system of tuberculin testing dairy cattle and slaughtering the reactors has been, and still is being, carried out as extensively as the state appropriations permit. It was found, however, that there were too many animals infected to apply the method generally, as sufficient funds were not forthcoming. As a result, the official use of tuberculin is greatly restricted. In 1910, only about one per cent. of the cattle of this state were officially tested. The milk consumers and often the health authorities in this country have demanded the tuberculin testing of cattle and the slaughter of the reactors—no matter how slightly they were affected—or they have been content to do nothing. Our people have not been willing to abide by conservative, progressive methods that would steadily increase the purity of the milk and eventually eliminate the disease. Bovine tuberculosis has, under the changed conditions in milk production, had an opportunity to spread rapidly owing to the great increase in cattle traffic.

In the American plan of control two theories have been accepted as working hypotheses, namely, that a single tuberculin

test is sufficient to detect all infected animals, and, secondly, that all animals that react are immediately dangerous, that is, they are active in spreading the disease.

A long and careful study of tuberculin has shown that with a reaction there is present an active tubercular infection, but failure to react does not prove the absence of infection, for the disease may exist in the so-called period of incubation or its progress may have been arrested. In either instance it may develop later and perhaps rapidly destroy the animal. The criticisms against tuberculin are often based on a lack of knowledge of when it can cause a reaction and when it can not. Because of a neglect of these important facts herds have been tested once, the reactors destroyed, but no subsequent tests made to detect the possible recently infected or latent cases. These have developed later, the disease spread, and the last stage of the herd has become more serious than the first. For this tuberculin has been unjustly blamed, for, when properly used, it is the most effective diagnostic agent known to the medical profession. To use tuberculin effectively it must be repeated again and again. In buying cows it is the sound herd from which to purchase rather than the non-reacting individual from the diseased dairies.

The other supposition that all reacting animals are immediately dangerous has also been a topic of much investigation. For several years I have been working on this subject. We have made single examinations of the milk and feces of a large number of reacting cattle and again we have made repeated examinations of the milk and excreta from a few cows extending over a period of eighteen months at least. Our results thus far have been that the milk of cows with udder tuberculosis contains tubercle bacilli usually in enormous numbers. It is stated that from one to three per cent. of tuberculous cows have the disease localized in the udder. In advanced pulmonary tuberculosis the bacilli appear in the feces and may occur in the milk through fecal contamination. In reacting cows in which no evidence of tuberculosis can be found on a physical examination, tubercle bacilli have not been discovered in either the milk or the excreta.

There are reports of investigations along this line that largely confirm these findings. If these results represent the facts generally, it will be possible to greatly reduce the number of tubercle bacilli in market milk by having the cows furnishing it given careful physical examinations at short intervals and all suspicious animals removed.

In Europe there are in operation at least three methods for the control of tuberculosis. The Bang method, named after its distinguished author, Professor B. Bang, of Copenhagen, consists in eliminating all of the clinical cases, in testing the remaining cows with tuberculin, separating the reactors from the well and keeping them for breeding purposes. By this method the farmer is enabled to eventually build up a sound herd from the infected stock. In Denmark, however, the farmer is allowed to sell the milk from the reacting, but clinically sound cows. This method has been applied in fully ten per cent. of the dairies of Denmark. It requires rigid separation and frequent testing of the non-reactors in order to detect latent cases. Its great advantages are that it recognizes the rights of the cattle owners, educates them in the nature of the disease, enables them to build up sound herds, and further it affords protection to the consumer in that it eliminates the bacilli spreaders.

The Ostertag method, generally recognized in Germany, consists in a thorough physical examination of the cows and the removal of all suspicious cases. Tuberculin may or may not be applied. If it is used the reactors are not separated from the others. The calves are raised tuberculous free by feeding them milk from nurse cows. The animals are thoroughly examined at short intervals. The theoretical basis for this method is that the disease can be detected by a thorough physical examination before it has advanced sufficiently for the infecting bacteria to escape. Professor Ostertag states that the method, if rigidly carried out, will protect the milk from infection and eventually eradicate the disease from the herd. While it affords little or no protection for the inter-herd control, it seems to be effective for intra-herd

eradication. At our Veterinary Experiment Station we are now testing this method on a small number of experimental cattle.

The third European procedure is known as the Manchester method. It is used perhaps more than any other in Great Britain. It consists in making regular examinations of the market milk for tubercle bacilli. If they are found the herds from which the milk came are carefully examined and the cow or cows eliminating the bacilli are found and excluded. This method seems to deal with the immediately dangerous animals only. However, Delapine, of Manchester, and Boyce, of Liverpool, report a far better condition relative to tubercle bacteria in the market milk of their cities than the health authorities of our large cities have recorded.

After carefully studying these various methods, discussing them pro and con with their authors and examining the herds in which they are being applied, one cannot help but feel that in the eagerness to obtain absolute safety at once and to eliminate a great scourge from our cattle, the radical position taken by our people has tended to make real progress slowly. Dairymen have objected to the slaughter of their best cows which appeared to be well, while they would not object to the removal of all clinical cases of suspicious animals. The experience with the Ostertag method in Germany cannot be set aside without some reflection. The Bang method would, perhaps, be open to less objection in this country if dairymen could sell the milk from cows that have reacted to tuberculin, but which exhibit no physical evidence of the disease. At present our dairymen object to the Bang method because the milk cannot be advantageously used.

To summarize these somewhat brief and fragmentary statements, there seems to be justification for the following conclusions, namely:

1. The frequency of tubercle bacilli in our market milk is due to the fact that there is no efficient method for the control of tuberculosis in operation in a large majority of herds furnishing milk to the cities.

2. The American method of control acceptable to our sanitarians and milk consumers is so severe in its operations upon the dairymen that as a rule they are not willing to apply it. The established methods in Denmark and Germany, which could be applied and which would give constantly increasing safety to milk consumers, are objected to because the cows under such control might respond to the tuberculin test.

The remedy seems to be in a more rational view of the situation and in utilizing the valuable features in each of the methods. Dairy herds producing milk should be carefully and frequently examined by competent veterinarians and the suspicious cases promptly removed. Sound herds should be grown up to take the place of the infected ones. Tuberculin should be used, when possible, and the reactors eliminated in as economical a manner as possible. The crux of the whole situation, so far as the protection of the milk consumers and the spread of the disease are concerned, rests in the detection and removal of the cows that are about to become spreaders of the specific organisms. For this we are absolutely dependent upon an accurate knowledge of the natural channels through which the specific bacteria are eliminated from the diseased animal, and our ability and power to close the channels through which they gain entrance to the healthy individuals.

Tuberculosis is a parasitism that has come to be a great destroyer of man and of cattle, but like other injurious agencies it will disappear when people learn to avoid it.

PROF. J. J. FERGUSON, secretary of the United States Live Stock Sanitary Association, writes under date of May 20th: "As indicating the great interest taken by Management of Railroads in Live Stock territory in Sanitary Live Stock Transportation, I am pleased to report that the Santa Fe Railway has ordered and paid for 200 copies of the Fourteenth Annual Report of this association for general distribution to interested parties over their system."

MECHANICAL LAMENESS.*

By W. J. MCKINNEY, V.S., Brooklyn, N. Y.

The title, "Mechanical Lameness" requires very little explanation to an assembly of veterinarians. I purpose, however, to attempt a definition, because once or twice lately I have heard magistrates dispute its existence. A certain magistrate of Brooklyn distinctly told a veterinary surgeon one day: "If a horse is lame he is suffering pain; the very fact of his being lame shows he is suffering pain." Another magistrate recently expressed the opinion that contracted tendons must be painful, and he said that if the whole Royal College of Veterinary Surgeons attended before him and said they were not he would not believe them.

In the human body we know that lameness may exist without pain; a man may have a stiff knee or ankle and he is lame simply because he cannot move his joints, and I do not think there is much imagination required to assume that the same thing happens with the horse, and that if there is mechanical interference with the movement of a joint—an essential joint in locomotion—there must be lameness. This is no new thing. I find in Percival, who wrote in 1849, a distinct recognition of mechanical lameness, although he does not use that word. He says: "It is pain that commonly produces lameness; inability in one form or another in the absence of pain will, however, be found as a proximate cause of lameness. The dislocation of the patella occasions no pain, and yet the horse is too lame even to move; the partial or complete ankylosis of a joint may cease to be attended with pain, and yet there may be permanent or irremov-

* Presented at the April meeting of the Veterinary Medical Association of New York City.

able lameness." Those illustrations are almost enough to show even an unprofessional man what is meant by "mechanical lameness." Of course it is extremely difficult if you enter into a metaphysical argument to prove that a horse does or does not suffer pain; you can only argue by analogy, but I think, considering that the structure of the nervous system of the horse is so identical with that of man, we have a perfect right to conclude that what holds in the human subject holds in the animal. Although it is very easy in a book or on paper to divide lameness into painful and non-painful or mechanical and non-mechanical, practically each case presents difficulties, because the mechanical lameness that exists may be the effect of a previous painful lameness which has passed off. Take, for instance, any long-continued painful condition of the foot. The result is that the horse from pain rests that foot, and in resting it he flexes the joints, and if you keep joints flexed for any length of time the tendons and white fibrous tissues contract and suit themselves to the fresh angles of the bones. If, for instance, you have a horse suffering from slight corns for many months, from navicular disease long continued, or from fever in the feet long continued, the certain effect of it is that he will go forward in the knees, and you may try all you can to extend those knees, either under chloroform or after death, and you will find it impossible. Why? If the knees were simply bent from pain in the feet you would be able, when the pain passed away, by physical force, to straighten the knee; but you find you cannot do so, either after death or during insensibility when under chloroform, because the white fibrous structures, the tendons have shortened themselves to suit this new angle of the bone. The tendons must be a perfectly definite length in relation to the angles of the bones upon which they act. It is the same with the string of a bow; if you wish to have a bow act perfectly, your string must be taut—it is no use trying to use a bow if the string is slack. If a bow were bent more than usual and retained that extra bend, the string which previously fitted exactly would be slack, and you have a mechanical condition rendering the action of the

bow imperfect. It is precisely the same with the bones, ligaments and tendons of animals. Immediately you alter the proper normal angle, the tendons passively contract so that they may meet the new condition of things and be taut, because unless the tendon is taut the muscle cannot act with proper effect. Not only, then, may a painful lameness cause a mechanical alteration in the bones, but the painful lameness may pass away and leave a mechanical deformity, and that mechanical deformity may cause lameness. If, for instance, both knees of a horse be shot forward, and the angles of the bones altered in that way, he will hardly go lame. When both legs are affected he will go "groggy" and shuffling, but not what the majority of people would call lame; but if one leg is affected and not the other he inevitably goes lame; there must be a halt in the action because the two legs practically are of different length from the body to the ground. A greater practical difficulty arises in these cases when you have a mechanical lameness and a painful lameness at the same time. We will take as an illustration of that the ordinary ringbone. When a ringbone has advanced so far as to unite the two bones together—the small and large pastern—as soon as that joint becomes ankylosed you have a mechanical impediment to motion. It does not follow that ringbones are painless; on the contrary nearly all ringbones are painful up to a certain stage, and it is only when the inflammatory process settles down and leaves the painless ring of bone that you have a purely mechanical lameness. But this is not an easy point to determine in practice; it is very difficult to say always whether the lameness of a ringbone is simply due to the mechanical ankylosis of the point or to ankylosis accompanied by pain. Again, you have this complex lameness in some cases of navicular disease. A horse suffering from navicular disease for any length of time gets his knees forward and the pasterns straightened, it may be to such an extent that the pasterns are what is called shot. When you have a bent knee and a shot pastern in connection with navicular disease, you have a painful lameness accompanied by a mechanical lameness. Another

condition not uncommon is where you have had sprains of the metatarsal ligaments at the back of the leg, just below the seat of the curb. Of course while that sprain is recent there is pain, and lameness due to pain; but I find that those cases hardly ever resume their normal condition, the leg seldom gets right entirely. The usual thing is that when the horse goes sound and the acute symptoms subside you have some shortening of the tendons at the back of the leg, the result being that the heel is raised from the ground and the horse goes on the toe. I have also noticed that when a horse once goes on the toe there is a tendency for the deformity to increase, and accordingly, as that horse remains at work the heel becomes raised more and more from the ground until the horse is utterly unable to get the heel down, even when you raise the other foot. The very fact of a horse going entirely upon the toe of one foot and on the heel and toe combined of the other renders him lame, and I hold that unless some distinct symptoms of pain can be recognized, this condition is simply and solely mechanical lameness. Again, in case of chronic lymphangitis, or any other condition which causes a very great amount of swelling of the leg implicating one or more joints, and thus interfering with flexion or extension of the joint, you have a mechanical lameness. Of course in the early chronic stages of lymphangitis there is great pain, but in the chronic state I think that the lameness which is left is merely the result of mechanical interference due to organized lymph—to use an old pathological expression—filling the subcutaneous tissues and causing adhesion of the skin to other parts. Spavin is another condition of that I should like to refer to. A horse suffers from spavin, by which I mean disease of the bones of the hock—we will put it widely—and in the early stages where you have exostosis upon the bones or in all stages where there is articular ulceration you have pain. Even in simple cases of exostosis such as splints, pressure upon the periosteum during growth causes a great amount of pain, and during the growth of spavin you may have distinct pain from a similar cause and a painful lameness. If spavin lameness continues for

any length of time—I mean by that some months—you nearly always have contraction of the tendons at the back of the leg, with the result that the heel is raised from the ground and the toe takes all the pressure. Even in a mild case, before any noticeable contraction of tendons, you will find the wear of the shoe at the toe indicating an extra amount of pressure, due to the fact that the tendons behind are commencing to contract and that the horse does not rest the heel firmly on the ground. Now, in a case where you have a spavined hock, a shot fetlock, and the heel raised from the ground it is not easy to say whether that horse is suffering from a mechanical lameness or a painful one. If I hold it is a painful one no better sign can be had than a variation of the degree of lameness. If you have a mechanical lameness there can be very little variation in the amount of it, the horse comes out of the stable in the morning lame, he does his work lame and he gets home to the stable lame. Next morning, after a night's rest, he goes out of the stable lame, and the lameness on each occasion should be about the same if it is merely mechanical. If you have in connection with work, or as the result of work, a decided alteration in the amount and degree of lameness, then that lameness must be due to some other cause than a mechanical one, and the only other cause I can suggest is pain. Percival refers to this subject, and I take Percival simply because he is about our oldest writer. He says. "It is, we would repeat, truly astonishing what good effect work or forced use of the diseased joints have upon them, in proof of which we might instance the ringbones and spavined horses every day's observation brings to our notice, working in the streets of London, and it is incredible what labor such stiff-jointed, or partially stiff-jointed, horses are able to perform so long as the cavities of their joints remained uninvaded by disease." What I have said about ringbone and spavin applies equally to diseases of other joints. You may have stiff knees, stiff fetlocks as well as stiff hocks and coronets, and if the disease causes lameness which does not vary much, then I say you have a right to conclude that it is mechanical.

But if the lameness varies very much in relation to the working and resting of the horse then we can say that the disease is painful.

There is a practical importance attached to the settlement of this question. Every year veterinary surgeons are more and more employed in courts of law to give evidence, and these cases very often result in a considerable amount of conflicting testimony. I hold, in contradiction to what I often see stated, that there is no disgrace whatever to the veterinary profession because of this conflicting evidence. Every man has a perfect right to his honest opinion, and each man may differ from others as to the cause of lameness, as to the degree of lameness and as to the amount of pain, providing there is any present.

With regard to the contracted tendons, I do not believe they ever occur, except as the result of some other condition. Contracted tendons are simply passive conditions; there is no pain, but they may either accompany or be the result of a painful lameness, and the difficulty is to determine when the painful lameness has ceased, and left nothing but the mechanical. You see, therefore, although it is very easy on paper to divide lameness into two classes, painful and non-painful, when you get into practice, there is a very wide latitude, and a very great difficulty in determining exactly what the condition is. Such difficulties I believe allow, in fact necessitate, differences of opinion by veterinary surgeons when examining the case.

Instead of believing, then, that the differences of opinion expressed by four or five veterinary surgeons on one side, and four or five on the other are disgraceful to us, I believe, on the contrary, that they are honorable to us, and that they are absolutely unavoidable. So long as a man thinks for himself, so long as a man knows what may be and what may not be, he is bound to give the best opinion he can, and in a case where it is solely a matter of opinion, and where the symptoms are very vague and do not give one a clear opportunity of distinguishing between pain and mechanical conditions, I hold it is the duty of every member of the profession to give his opinion honestly

and boldly, perfectly irrespective of whether he is opposed by one or twenty men. The divergence of opinion is not a question of morality, it may be one of intelligence, and it is only egotism which enables one man to think all his brethren must be wrong.

This paper is read for a purpose, and that is, to call attention to the conflicting evidence, very often given before magistrates, when gentlemen of our profession are employed by the Society for the Prevention of Cruelty to Animals.

I will agree, we have honorable and conscientious men give their evidence in support of their opinions; but I believe there are men in our profession, and I say it without fear of contradiction, who will give evidence in courts of law in support of cases brought by the Society of Prevention of Cruelty to Animals, simply because they are paid to do so.

They go to the court on purpose to win the case, and obtain a conviction. I have felt, on many occasions, disgusted with the society, at the vindictive manner in which they have acted.

They will raise heaven and earth to gain a conviction, not with the sole object of preventing cruelty, but to get sentimental old ladies to support them. I do not believe there is a member of our profession, who would knowingly support a deliberate case of cruelty. I now leave the discussion in your hands, gentlemen, and I have no doubt, you will help elucidate the difficulties and enable some of us, perhaps, to take a clearer view of these questions in future.

PRESIDENT ACKERMAN requests, through the medium of the REVIEW, the members of the New York State Veterinary Medical Society, to send the titles of the papers they will present at the coming meeting, to Secretary Milks, 113 College avenue, Ithaca, N. Y., with as little delay as possible, so that the program of the meeting, which will be held in Brooklyn, September 12, 13 and 14, may be published in the July issue of the REVIEW.

ADDRESS OF DR. W. HORACE HOSKINS

AT THE CLOSING EXERCISES OF THE ONTARIO VETERINARY COLLEGE IN CONVO-
CATION HALL, TORONTO, APRIL 25, 1911.

Mr. President, ladies and gentlemen and graduates of the Class of 1911:

I deem it a great privilege on this occasion to have been called from the states to speak to this body representative of the interest that Canada has shown in the field of veterinary medicine. I come not as a stranger to your country, but one familiar with the history of your veterinary institutions for the past fifty years and I am somewhat intimately acquainted with those who have directed this institution for the past thirty years. I would be indeed forgetful if I failed to acknowledge here the great services rendered by the late principal of this institution, Prof. Andrew Smith, a pioneer in veterinary education and the practice of veterinary medicine and surgery in your own country, with which his life work was indissolubly bound, and with the development of your country in the broad field of agriculture and the domain of animal industry. He was a loyal man to his country; a devoted teacher and instructor deeply interested in his student body, ever rendering to them the highest scope of instruction within his power. Filled with true civic pride and deeply interested in the welfare of the people of his country, he rendered great services, indeed, in helping to solve many of the economic problems of his land and contributed in many ways to the development and prosperity of her people.

In the choice of Prof. E. A. A. Grange as Principal, I equally rejoice with you that as the successor of Prof. Smith, so distinguished an alumnus of the school and so worthy a member of the profession, imbued as he is with the highest ideals and

purposes for our calling, which assures the maintenance of the highest standard of education and the deepest and broadest interest for the protection of the live stock interests of all the Canadas.

I rejoice that I come at this time, the most auspicious within the history of veterinary education in Canada. It has long been recognized by those deeply concerned in veterinary education that it could not reach its full development unless supported by state or the national government.

The scope of veterinary medicine is so far-reaching and important from an economical point of view, that unless supported by national or state government it must ever remain limited in its sphere of progress and true development. I congratulate the Province of Ontario and the other loyal provinces of Canada in granting to this institution government support that its long history of work well done, justly entitles it thereto, the rich return it has given in the past to the people of your country makes it indeed justly merited. No field of learning has contributed so much to the wiping out of the imaginary or other boundary lines, whether they be of the narrow space determined by latitude and longitude or the vast waters of the oceans and seas, than the field of comparative medicine as one of the sciences. The freest exchange between all nations of the earth has ever existed in the development of scientific medicine and no nation has withheld from sister nations her discoveries, advancement or progress in the relief of suffering or in the saving of nations from great economic losses by the ravages of contagious and infectious diseases. Quick to respond, eager to extend, ever desirous to be helpful, comparative medicine has made the whole world akin, and in this way has contributed indeed untold aid and helpfulness in the preservation of peace and good will throughout the earth. I am not unmindful, and take this opportunity with the keenest personal pleasure in paying tribute to the splendid work done under the government of Canada in solving for her people, as well as the people of the earth, many of the obscure problems that sometimes cause enormous pecuniary losses to your people

as well as being destructive to the happiness and comfort of those engaged in the field of animal industry from frequently having swept away their monetary resources; the result of years of labor, sacrifices and self-denial. The generous support given by your government to the system inaugurated by your chief veterinary director general, Dr. J. G. Rutherford, a distinguished graduate of this school and a worthy public servant, has been the means of opening up thousands of acres of your untilled land and furnishing to a vast number of your own people and many of my own country, a field of employment and industry that has added millions to the wealth of your great country and aided the proper development of your nation. More far-reaching indeed than one can conjecture is the added strength and power of your people in solving for the older nations and for nations yet to come the problem of wise and just government that equal rights to all men and special privileges to none shall make for the well being, happiness and comfort of the people of every nation and clime.

No field of industry of all scientific research has been a greater factor in contributing to the betterment of the world and the common brotherhood of man than the free exchange of knowledge and the progress of solving these great problems as well as those that conserve the strength and health of all the people of the earth. And I rejoice that I am privileged to come at this time in the history of our sister countries when a feeling pervades the great majority of the people of your country and my own, that no false boundary lines should separate us in the common enjoyment of all things that would contribute to our comfort, our health and to our common commercial prosperity.

The field of comparative medical science is perhaps the broadest field that young men may enter and with a deep sense of appreciation I speak of my distinguished late fellow-member, Leonard Pearson of Pennsylvania, who coined the name "Animal Engineer," and for the field of comparative medical science that of "animal engineering."

The field of veterinary science is no longer a limited one of mending the broken parts of the animals that come within our domain but the richer, broader work of controlling animal diseases throughout the earth; the saving of nations from the great economic losses by animal plagues—the records of which precede the story of the earth as told by the Bible. The field of animal food inspection that must determine the physical strength; the freedom from diseases; the happiness and prosperity in great measure of the people of every land on the face of the globe. The study of animal food problems and their best methods of uses, means, indeed, the determination of commercial wealth and prosperity of those engaged in agriculture and animal husbandry.

To you, members of the graduating class, I congratulate you on your entrance to the veterinary profession at this, the initial period of its true growth and development. I congratulate you for the spirit of unselfishness that has controlled your minds in selecting this field of service for your life work. The field of veterinary medicine is not an avenue to great wealth. It does not even assure a competence in old age or in the evening of your lives. It does afford beyond all, an opportunity to contribute to the well being of your fellow man and an ever changing field of scientific advancement that will afford an outlet to all your energy, all your desires of investigation and bring to you the rich reward and realization that you have added something for the betterment of mankind and much to the true growth of commercial prosperity of the people among whom you will spend your future lives. While trying at times, and severely taxing your vital powers, there will come a rich return in the feeling that your work has much beyond its pecuniary value to the well being of your fellow-men. In the swift changes of the commerce of the earth and the restrictions along many lines for employment of one's education, training and ability that will afford an outlet for the same, without subordinating oneself entirely to the control of others. The field of your work will at all times enable you to be a good citizen and devoted

worker in determining all the great and complex problems that confront the true solution of national, state and municipal government and make you a factor in the world's progress along these lines as you may elect to be. Your own country, as well as mine, never in their history needed stronger men than they do this hour, and the independence afforded you by your adopted profession should make you greater and greater factors in the true development of our sister nations.

Your school, under the fostering care and support of your provincial government has better equipped you than any of your predecessors and has equally laid upon your shoulders greater responsibilities than upon those who have preceded you. The world is a justly exacting world, and when you have finished your work, it will not be measured merely by the standard that you have attained, but whether you have rendered in return all that was within the scope of your ability. You owe them the deepest interest in everything that tends to the advancement of your own calling, all that will contribute to its greatest worth to the individual, the community, state or nation and with the rich endowment which it has been your good fortune to receive, I have no doubt that you will render a just and adequate return.

For the second time in the history of the American Veterinary Association, now almost at the end of fifty years of continuous service, it will, in August next, make its second bow within the domain of your provinces. It comes in its greatest strength and power and at a time when its support, usefulness and worth has made itself felt as a strong power for great good to all the people within the boundaries of America. It comes to this city with a membership of more than a thousand interested and devoted men, and I am sure that if one part of the great good achieved by its first meeting in Ottawa is attained at this convention, it will more than repay every devoted attendant at the meeting, whether he comes from the shores of California or the Gulf of Mexico, or the Atlantic Slope. The splendid results attending our first meeting within your territory added a strength to our organization that has brought the rich-

est return. And if I may but refer to one achievement—the report of the International Committee on Animal Tuberculosis—rendered at San Francisco in September, 1910, whose work was a product of the directing force of your distinguished veterinary Director General, J. G. Rutherford. The association by this one attainment warranted all its previous years of effort and service to the profession and our common country.

This association as well as kindred organizations should at once attract you and win your support and interest. They are the channels through which our most effective influences may be exerted. They represent the altar upon which our contributions may be placed and from whence their benign influences may be spread throughout the veterinary world. It is the place and forum where every advancement and achievement may be thoughtfully weighed and considered and where the richest and most imperishable monuments may be reared to mark your worth and value to the profession and among the progressive people of the earth. Among its records may be written every triumph of your skill and services, that make the priceless history of the progress of every occupation and field of labor of man. The names of Michener, Liautard, Law, Huidekoper, Smith, McEachran, Pearson, Salmon, Rutherford, Harger, Dalrymple, Dinwiddie and many others are ineffaceably written upon the progress of veterinary medicine, in America, and make up an important part of the records of our Veterinary Associations.

In your own country the Veterinary Association of Manitoba has been foremost in the best work done for united action of the profession. In that province the best laws for her people have been enacted. No province in your own country and no state in mine has done more to encourage the best growth of the profession and given greater security and protection to her people and the live stock interests.

In conclusion, permit me to say that I know of no keener pleasure or delight, than to say to your institution and of your goverment that we in the states owe, indeed, a great debt for

the many young men educated under your fostering care. My native State of Pennsylvania, the keystone of the arch, has received more than one hundred and fifty of your graduates.

Our country as a whole has welcomed to its forty-seven states more than 1,700 men educated from the institutions from which you are about to emerge. Many of this number have rendered distinguished services in every aspect of our work, and the broader field for your employment welcomes you equally to as distinguished services and assures all of you a just and generous recognition for every help and aid you may give to the progress of the "world's" work. I therefore bid you a hearty welcome to the ranks of the profession whose work I have personally enjoyed for more than thirty years. I thank most cordially your principal, instructors and teachers for the equipment they have guaranteed to you and to the nurturing care and deep interest which the provinces of Canada have ever shown in the development of veterinary medicine and the recognition of the members of the veterinary profession in places of honor and trust for which I am profoundly grateful, and bid your country on to greater service and achievements.

IN a recent communication from Dr. D. D. Keeler, Salem, Oregon, he writes: "I felt like throwing up my hat when I read the article in the REVIEW from the learned Dr. Arthur Hughes; especially where he defends at least in a little degree, and I think in a very large degree, the progressive non-graduate; not that there are any excuses nowadays for anyone not to have a good and sufficient diploma, and I do not have any sympathy for a young man that starts out in life to make the veterinary profession his lifework that does not credibly obtain such a paper or diploma from a regular accredited veterinary college; but the point I am after is this: to have such a good defense and so ably championed for us poor fellows that could not fifty years ago obtain such credentials, but have and are still trying as best we can to keep abreast of the times, if to do so does cause us to burn sometimes a good deal of midnight oil. Here is one old fellow, Dr. Hughes, wants to say thank you."

REPORTS OF CASES.

A FEW SELECTED CASES OF COLIC.*

By J. H. McLEOD, Charles City, Ia.

I present to you a few selected cases; they do not, as presented, form a general plan of treatment for intestinal colic, but are rather exceptions to my general line of treatment, if it may be so called; and in each instance were rather desperate cases, and in each instance, except Case 3, terminated favorably, considering the symptoms and the drugs exhibited in treatment of same. It might be said here that in notes that were taken in about thirty cases of intestinal colic, in which the sulphate of morphia was given subcutaneously in treatment of such; that in probably 85 per cent. of the cases thus treated, the results obtained were not in favor of the drug, and this drug was exhibited only when other means were deemed unnecessary or had failed to bring about an abatement of the distressing symptoms.

Case 1. Aged gray workhorse, semi-draft type, brought to hospital afternoon November 10, presenting symptoms of subacute intestinal colic; pulse good, somewhat fast but strong, bowel murmur absent, the external appearance of abdomen normal, rectal examination revealed nothing unusual. Gave Mulford's colic drench in linseed oil, and warm injections; one hour later horse appeared in about the same condition; gave 1 gr. arecoline; from this drug got copious salivation and increased intestinal murmur; a small quantity of feces and flatus were passed, gave warm injection, and later 2 grs. eserine, 3 grs. pilocarpine; 3 hours later no improvement; horse appeared in much pain. At 11 p. m. gave hypodermic sulph. morph. 3 grs. atropine $\frac{1}{2}$ gr.; in twenty minutes he was eating hay, passed urine and cleaned up two quarts of wet bran; on the morning of the 11th he had apparently passed a quiet night, but still showed symptoms of colic; gave quart of raw oil, two drams fld. ext.

*Presented at Iowa State Vet. Med. Assn. Meeting, January, 1911.

of nux vomica. No change at noon, on account of the weaker condition of the pulse, gave pulverized nux vomica, four drams ammon. carb., 1 dram in two capsules; also about 8 gallons of warm rectal injections, most of which was expelled. His condition remained about the same all day. At 11 p. m. no improvement; two more capsules as above, pv. nux vomica and ammon. carb. and warm injections; and later, before leaving him for the night, gave 6 drams chloral hydrate; next morning, the 12th inst., horse apparently much worse; had had a bad night and was throwing himself violently. I gave hypodermically, sulph. morphia, 5 grs.; when quiet, he was fed two quarts of wet bran and a fair ration of hay, which, being free from pain, he ate greedily. No action of bowels, no bowel murmurs, pulse much steadier and stronger since giving the morphine. Rectal examination revealed nothing; horse appeared very drawn in flanks and badly bruised; during the 12th, gaining apparently; gave no medicine, only injections. Towards night getting worse, sitting up on his haunches often, and in this position seemed to get relief; later on, same night, the animal looks bad all over; looks like a hopeless case; gave sulph. morph., 4 grains, and again he commenced eating a ration of wet bran and hay; left him for the night eating as if apparently well; 13th, a. m., still in pain, pulse weak, anxious expression, hurried breathing, no bowel murmurs, gave per jugular 15 grs. barium salt, but later was compelled to give hypodermic of morphia to modify action of the salt, so severe was the violent effort at defecation and consequent straining produced by the drug. Gave raw oil, spts. ammon. aromat. and fld. ext. nux vom. in a drench. Again he drank some water and cleaned up his ration of wet bran and hay. On the night of the 13th he passed a small quantity of foul smelling fæces, and from now on all medicine was withheld and he gained slowly. On the 15th he was sent to a small pasture adjoining the city. Two days later the owner called at the office, stating that he was again sitting up like a dog in the pasture and was rolling around in pain. Those symptoms were abated with morphia, 3 grs.; raw linseed oil, 1 quart; fld. ext. nux, 2 dr. The animal recovered and is working every day.

Case 2. A sorrel driving horse, 12 years old, just off a 40-mile drive, with a history that during the day he had shown signs of colic and that the stable man at a neighboring town had given him some aconite; had refused his noon feed, had been

scouring some on the drive, and evidences of such were visible on his tail and hocks. Gave him promptly morphia, 3 grs. atropine $\frac{1}{2}$ gr.; one hour later no improvement, the horse was ordered out of the livery barn to the hospital. Examination revealed temp. 103, pulse weak and fast, respiration hurried; he did not attempt to lie down, walked the stall continually except when tied up; covered with cold sweat, ears and legs cold. Rectum empty and ballooned. Gave a drench of raw oil, ol. terebinth, \mathfrak{ss} , eserine, 1 gr., pilocarpine, 1 gr.; I stayed with the horse for the next five hours, and during this time there was not a moment of ease, walking continually. Used turpentine stupes and warm injections, and put him on Reeks' stimulative treatment, and left him in pain. Next morning the animal was not in quite so much pain, but still desperately sick; the pulse, however, was good enough to still stand active treatment, so gave arecoline, 1 gr., and later kept up the stimulative treatment. No evacuations from the effect of the arecoline and but slight salivation. I decided to give no more active purgatives. About six hours later the animal had a small passage and recovered slowly. Three days later discharged from hospital.

Case 3. A bay draft gelding, working daily on new railroad grade; called late one evening in October, presented the usual symptoms of intestinal colic; did not appear to be a bad case, there was slight tympanitis; neither owner nor the driver present, so that no information could be obtained. Gave at once drench of ol. lini and terebinth, morphia, 5 grs., atropine, $\frac{1}{2}$ gr., with instructions to watch him carefully, and call me again if necessary. Was notified by 'phone one hour later that the horse was eating and apparently all over the colic. At 6 a. m. called to see him again, he is now in much pain, abdomen somewhat distended, no peristalsis, rectal examination found rectum empty, the intestines, especially to the right of rectum, packed to their full capacity, with the peculiar tinkling sound on auscultation. Temp. 102, pulse 110, respiration 28 to 30. You will have no difficulty in arriving at an accurate diagnosis now, and you will agree with me that the prognosis is very grave and doubtful; however, I immediately tapped the bowel, the accumulated gas rapidly escaped, burnt with a blue flame; the animal was given a drench of oil and turpentine and hypodermically $\frac{1}{4}$ gr. eserine, 1 $\frac{1}{2}$ grs. pilocarpine. I was called in the country shortly after this, but was informed that he was dead on returning; died at 3 p. m. second day.

Case 4. Asst. (Hughes) case. Black driving mare, called at 6 p. m., presenting the usual symptoms of colic with gaseous distention. Gave with syringe ol. lini, 1 ounce, Mulford's colic drench and terrelruta. One hour later above treatment of no benefit, about same amount of tympanitis, gave arecoline, 1 gr.; in 30 minutes no better, abdominal distention more pronounced, tapped the bowel, got immediate relief and one hour later was eating hay and apparently well.

Next morning was again consulted in regard to this mare; on backing her out of the stall it could be seen that on the right side of head, appeared a large swelling extending from the nostrils and angle of the mouth to the base of the ear, and extending back lower down to and involving the pharynx and larynx on the right side; left side normal; mastication difficult. The owner was informed that the mare would be dead in about two days, that the case was one of malignant œdema, with everything against recovery; no treatment was attempted; the mare died at almost the time above stated.

Comments and conclusions: Case No. 1. Would certainly have died had it not been for the sedative administered.

Case No. 2. The chestnut horse got well in spite of the sedative but I believe you will agree with me that sedatives administered to cases of like history and symptoms, are not contra-indicated.

Case No. 3. Black mare had the germ of malignant œdema for some time before the colic, and this probably was the predisposing cause of the attack.

Case No. 4. Might have made a recovery if the sedative had been withheld and active purgation and injection persevered with during the night.

EXPERIENCES WITH THE STOMACH TUBE IN COLIC.*

By H. B. TREMAN, Rockwell City, Ia.

At nine P. M. Thanksgiving Day, I was called eight miles in the country to a case of colic, with the request to hurry, as the owner was afraid the horse would die within a short time if he

* Presented at the Iowa State Vet. Med. Assn., January, 1911.

had no relief. When I arrived I found there was sure enough need for haste, as the poor brute was about all in, was terribly bloated, as wet as sweat ever makes a horse, with that expression of agony so familiar to all of us. He was regurgitating every few seconds, and considerable of the contents of the stomach was being discharged through the nostrils, as near a vomit as a horse usually gets.

I left my team to the care of others and passed the stomach tube as quickly as possible and a description of what I got out through that tube is hard to give. It was quite thick, very bloody and foamy, containing a small amount of ingesta; it was so bloody that I believe there was anywhere between one and two pints of blood in the stomach and it gave the appearance of having been energetically churned for some time; while we did not take time to measure the amount taken out, yet I believe we got considerable over a common bucket full, and the *odor!* well, it drove one man out of the barn and another had to take a chew before he could stay longer and help. Before removing the tube I pumped in nux, turpentine and eucamphine. While this gave considerable relief, both from pain and symptoms, yet it was by no means complete. I gave heart stimulants, hypodermically, also a small dose of arecoline, hoping to hurry things on and get relief through the natural passage; but in this case I believe that was a mistake because of the pain and the depression of the heart, also the abundant secretions which the tired and distended stomach could not handle so soon after its engorgement, and there being no particular bowel trouble, I do not now think arecoline was indicated.

The patient continued in pain with frequent retchings, as though choked until 3 A. M., when I again passed the tube and got something more than a bucket full of liquid; though bloody, it was much better in appearance than at first; after this the horse was very quiet and depressed, after which recovery was very rapid.

While this case is neither new or startling to most of you and I could recite the history of many cases somewhat similar, I selected this case in order to emphasize the use of the stomach tube, which I believe is one of the greatest mechanical means of treating disease we have. I am convinced that no amount or kind of medicine that could have been emptied into that stomach or injected into the system of that particular horse would have effected a cure. Nevertheless in conversing with different vet-

erinarians at recent association meetings, I have been surprised to find so many who seldom if ever use a stomach tube. The fact that so little has been written and said about the use of the tube (aside from commercial agents) I think accounts largely for so many being timid or slow about beginning its use.

It is now five years since I began using one and I have had quite a varied experience since that time. The first one I used was the hose to my injection pump, about six feet long, but did some very effectual work on a few cases. Other tubes have varied from soft rubber tubing to small garden hose. One of them of course was a \$15.00 one. Right here I will say just a word about the Kinsely tube. I cannot agree with the doctor about the great superiority of his tube over the single tube, all things considered, but I do think the doctor deserves great credit for bringing the use of the stomach tube in general, so prominently before the profession.

The first few times I used the Kinsely tube, I was disgusted to say the least, it being so unhandy to carry the cumbersome speculum along for a case of colic; besides, the patient would breathe much harder and resist the procedure much more vigorously than passing one through the nose. Later I used a method (which I have reported before) of buckling the jaws together and passing the tube through the interdental space. This method I used altogether as long as I used the Kinsely tube. It is too large to make a practice of passing it through the nostril in all kinds of horses, it also being large, the œsophagus often holds quite a firm grip upon it, making it necessary to have a stilet in order to pass it at all. So many appliances, all for one operation of the kind is rather unhandy, if you count the convenience of carrying, handling, passing, etc. I very much prefer the single tube; many times while using the double tube I have discarded the secondary tube and used only the large one as a syphon, believing it worked better that way. A short time ago the small tube on mine sprung a leak and I peeled it off and now I have the best working tube I ever saw; it will allow a whole grain of corn to pass out and yet it can be passed through the nostril without the use of a stilet, except in a few cases, and is not at all cumbersome to carry in the buggy all the time.

As to the technique of passing the tube, I will say a few words for the benefit of those who have had little or no experience. The first step is to make the tube slippery; as oil is very

hard on rubber it is advisable to use an infusion of slippery elm bark, or in most cases one can by inserting the hand into the mouth get enough saliva to answer the purpose very nicely. Next have an assistant hold the head firmly, pass the tube up along the floor of the nostril, it is very important to keep down on the floor well into the groove below the superior maxillary bone, thus avoiding the tuberculated bones and the consequent hemorrhage; when the tube reaches the pharynx the patient will involuntarily swallow, then, if you are "Johnny on the spot" and quickly shove in about 4 inches of tube you will seldom fail to enter the oesophagus, but if too slow you will usually enter the trachea; but remember the old adage, "if at first you don't succeed, try again." Then by proceeding slowly the patient will usually swallow it from now on without much trouble, though occasionally it has to be pushed clear down.

Another difficulty sometimes experienced here in cases of engorgement of the stomach with grass, oats, or such food, is just before the tube reaches the stomach, it will stop, owing to the pressure on the oesophagus by the stomach itself, and you will be unable, any way you choose, to pass the ordinary tube on without a stilet or something to answer that purpose. A small wire used double, the doubled end first, makes a very satisfactory stilet and is very convenient to carry. In such cases this is very important because if the tube does not fully enter the stomach and water is pumped in, the water readily finds its way on into the stomach and you will be unable to get any return and consequently you have only aggravated the trouble already there.

There is another condition which is often baffling, when one pumps in considerable water and fails to get returns, the water disappears and I have been led to believe in several cases that the stomach was ruptured, but learned it was not, for the patient sometimes recovered. I believe the tube enters the stomach in such a way that the water passes direct into the intestines much the same as when a horse drinks several times the amount a stomach will hold.

There is another use to which a tube can be put; while I have never done it myself, my brother has in several cases, with very gratifying results; that is, in impaction of the bowels; simply pump 3 to 6 gallons of water into the stomach and follow with a full dose of eserine or arecoline, thereby more fully liquifying the bowel contents and wash the offending obstruction on out.

AN INJURED FOOT IN A MULE—SURGERY AND BACTERINS.

By Dr. W. WARREN, Sedalia, Mo.

The first case to which I call your attention will demonstrate the uselessness of using bacterins until you have given the case what surgical attention it needs in order for nature to effect a cure. I believe bacterins will assist nature to more quickly overcome a suppurative condition, but it will not remove causes that arise from traumatism.

On May 16, 1910, a gentleman called in, from 16 miles in the country, stating he had a mule that had hurt his foot in a run-away about five weeks prior to this time, and wanted something done for it. I was away at the time, so Dr. Woods Morgan, who was assisting me, went out to see the mule, and when I returned he reported that he found a pretty badly injured foot, with pus discharging from the sole of the foot where it was injured, and also discharging at the coronet. He pared it out as best he could, and left some antiseptic dressing, and asked the owner to report in a few days if the mule was no better.

On May 23d the owner 'phoned the mule was no better, and the discharge was growing more profuse all the time. I told him to bring the mule to town if possible, that I could not do much with it in one or two visits and it would be much cheaper for him to bring it in, and more satisfactory, as I could then give it my personal attention all the time. He did not think the mule could possibly walk to town, and knew he could not load him in a wagon and haul him, as it was an unbroken three-year-old mule. I told him I thought it would walk in if he gave it plenty of time, so on May 24th he brought him in.

It being dark when he arrived, I did not examine the foot until the next morning, when I found a very profuse suppuration from a wound in the sole of the foot at the point of the frog, also from two openings above the foot at the border of the lateral cartilage, and at the margin of the heel, in the right hind foot. On probing the foot I could feel that the bone was injured, it seemed to be split up through the os pedis just anterior to the attachment of the perforans tendon. The sensitive lamina was sloughing from quite an area about the injury. Foot seemed to pain the mule very severely, as it would not touch it to the ground unless compelled to move. The general condition

of the mule was good considering what it had suffered. Temperature about 101, pulse not disturbed very much, and general appearance not bad, but did not have much appetite.

The hoof being very hard and dry, I decided to poultice it a day or so before trying to operate on it. Being very busy at that time, I did not get around to operating on it until June 2d, when I cast the mule, removed all the sole and frog that was dissected loose by the pus, and removed a piece of the os pedis about the size of the end of my thumb, of irregular form about one-half inch through each way. Probed for fistulus tracts leading from this up through the foot but could find none, curetted the wound thoroughly, applied iodoform and compho-phenique dressing and let the mule up.

This did not seem to cause any let up in the pus discharge, so on June 17th began using poly-bactarins (Abbotts).

On June 22d I recast the mule and probed for fistulas up through the foot, found one leading up the inside of the external lateral cartilage, with two external openings. I removed the cartilage and curetted all the necrotic tissue I could find, dressed the foot and let her up, and gave the second injection of bacterin. In June 24th the owner came in and found all appearances about as when he brought the mule in, so he ordered me to kill the mule and stop his expense. I told him he could settle up to that day, and his obligations ceased, but I was not ready to kill the mule, and if at any time in the future he felt that the mule was worth redeeming at 50 cents a day from that time he would be at liberty to do so. I wanted to see what I could do to help nature repair the injury, and would risk getting out on the mule. So he settled up and wished me good luck and left it with me.

On July 4th, gave third injection of bacterin; July 10th gave fourth injection, and July 16th the fifth injection. Mule still would not touch foot to the ground. Appetite was better, discharge not quite so profuse but still plenty of it. Seemed to be burrowing just under the skin and breaking out at places along the margin of the hoof, but was not under the deeper structures at all; would dry up in a week or so, and break out a little further around toward the inside.

About this time I prepared some autogenic bacterin from a fistula of the withers, and thought I would try it on my mule; so on July 21st gave first injection, July 27th second injection.

and August 8th third injection. But still did not have any perceptible improvement.

On August 9th cast the mule and examined the foot carefully, found the wound from which I had removed the cartilage was doing fine, no fistulas in that region, but bottom of foot about as it had been; removed all the new, spongy sole, and curetted the injury in the bone but could not find any indications of more bone loosening up.

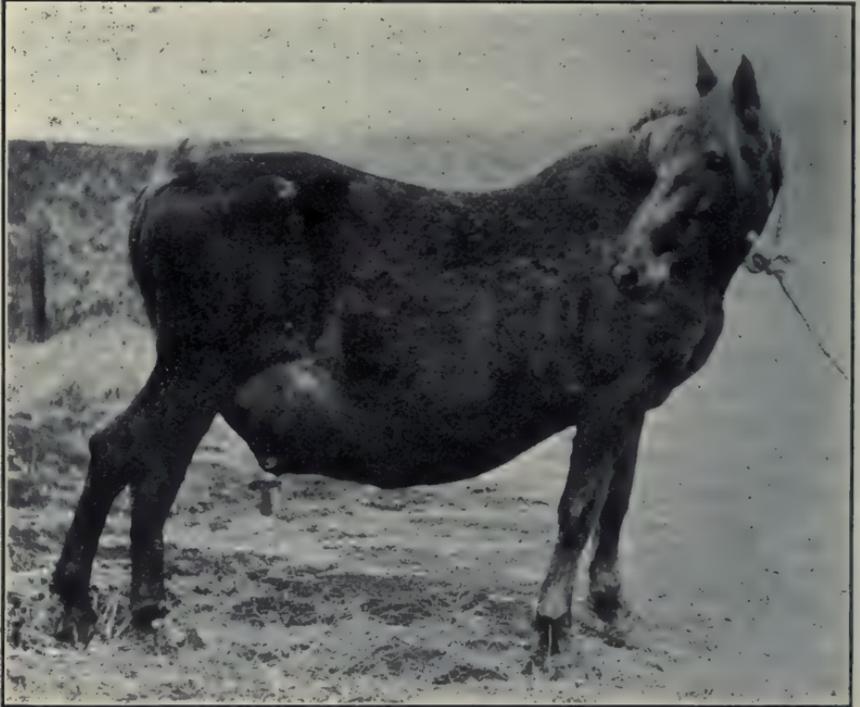
On August 16th gave the fourth injection of the fistula bacterin and decided to just let it alone for awhile, only to keep it clean.

By September 20th the lameness had subsided quite a good deal, the appetite was fine and the mule was putting on some flesh, but still would not place any weight on the foot. At this time I prepared some autogenic bacterin from the foot, gave injections of this September 20th and 29th, October 9th and 18th. Lameness and discharge seemed to make pretty good headway for a time but still hung fire and would not cease discharging. About the 1st of November the lameness seemed to get worse, discharge about as for some time. I decided that the bone must be the cause of my trouble, as the swelling about the top of the foot was about all gone, and no discharge excepting at the point of the frog. So I decided to take a look at that bone if it killed the mule. So on November 2d I cocained the foot, cast the mule, put a tourniquet on the leg, removed a pretty good space from about the opening through the sole, removed the tissue from the bottom of the foot until I could see the bone; I found there was quite a piece of dead bone that had not become loosened from the healthy bone. I took a gouge and worked it loose and removed it. It was about the size of a quarter of a dollar, and about a fourth of an inch thick; I then curetted the space thoroughly, and let the mule up. After about a week the lameness began to subside again, but still some discharge. On November 22d I began using Mulford's Bacterin, giving injections November 22d and 27th, December 6th and 16th. When the discharge had ceased. On January 14th the owner came in and redeemed the mule and took it home. It still showed a little lameness when trotted, but the foot looked nearly as good as any of the others, just a very slight thickening about the coronet, and I believe it will make a complete recovery and sell for sound within six months.

RUPTURE OF THE PREPUBIAN TENDON IN PREGNANT MARE.

By A. T. EVERETT, V.S., South Omaha, Neb.

REVIEW readers are indebted to Dr. Everett, of South Omaha, for the splendid illustration below, made from a photograph of a patient, which the doctor states was in the tenth month of



T denotes altered position of teats.

gestation. He says that "between the teats it had broken open and was bleeding some from the wound." He gave a grave prognosis, and the mare died two days later.

DYSENTERY IN CALVES.

By Dr. W. WARREN, Sedalia, Mo.

About a year ago I was called into different neighborhoods to see bunches of calves, 8 to 10 months old, suffering with a form

of dysentery. One man had 6 calves, had lost two of them and had one sick. Calf had the appearance of having been in good living order when the disease made its appearance; was considerably gaunted, eyes rather sunken appearance, hair did not look bad. Temperature about 102, respirations not disturbed, pulse about 70, no appetite. Stood with its back arched some, and had frequent evacuation from the bowels, without any particular expulsive effort, of a thin dark colored discharge, mixed with some mucous, and considerable blood with every evacuation. Had been running on timothy stubble pasture through the day, and was fed a small ration of grain with some corn fodder at night and mornings. Another bunch of about 30 calves, the same age, 10 miles from this locality, was attacked in about a week later. When I was called, there were 7 or 8 affected, with the loss of one. Presented about the same appearance as described above, excepting that two or three of them had temperatures ranging up in the neighborhood of 103 and 104 degrees, and showed slight pain when the bowels moved, and at times pretty profuse hemorrhages. They were running about a straw stack of wheat straw. Fed a pretty strong corn ration with some fodder to pick at. Watered from a well with windmill, had good protection from the changes in the weather.

In a few days I was called to another neighborhood, in an opposite direction from town, about 20 miles from either of the other bunches. The man had about fifty head; think he had bought most of them on the Kansas City market some two months before this trouble showed up. They were running on a blue-grass pasture, fed timothy hay and a good strong ration of corn, had good protection and were in good flesh. He had three affected and had lost one. They presented about the same symptoms as the above described, only one of these seemed to want to lie down most of the time, and all the others that I had seen seemed to want to stay on their feet.

All these bunches had been affected four or five days when I saw them; in the ones that had died the symptoms appeared first, and had run their course in about a week, and the others began to show up in four or five days after the first one, and all at about the same time. Then the owners would become frightened and call in help. I could not find any satisfactory cause for it in any of the bunches; it had the appearance of an infection. I did not have an opportunity to hold an autopsy to determine the ex-

tent of the lesions in the bowel. As the calves that had died had been destroyed by hogs, before I was called to see the ones that remained. They all had good clean feed and range so far as I could determine, and good water supply. And there had been no calves brought into any of the bunches near the time of the attack. I confessed to the owners that I felt unable to say just what was causing this trouble. I advised them to separate the sick ones from the others at the first appearance of the disease and if possible to change the well ones onto a clean range and feeding grounds for a time. To cut off all grain rations from the ones affected, to give a raw egg in a little cold water three times per day and give a cup of flour once per day in a bottle of cold water. Gave about a half dram each of powdered nuxvomica, dried sulphate of iron, and naphthaline, with a dram of sod. bicarb, 3 or 4 doses per day 4 hours apart. Gave rectal irrigation to be administered as far up into the bowel as possible, of a tablespoonful of sod. salicylate in a half gallon of hot water, twice per day. The flour to be discontinued as soon as the bowel seemed to be responding to treatment. The rest of the treatment to be continued so long as necessary, and to use great care in getting them back onto feed after recovery. Lost one in the second bunch mentioned, otherwise had a good recovery in all the cases treated. The strange part of the matter to me was that the outbreak would show up in several at near the same time, and be no further development of the disease. And there was no complaint from any one in the neighborhood of the bunches which I have mentioned.

PULMONARY DISTOMIASIS.

(*An abstract.*)

Dr. Henry Hanson of Milwaukee, Wis., has recently reported the finding of the lung fluke (*Paragonimus Westermanii*) in the lungs of several family cats (a mother and her offspring).

The symptoms of the cats were those of a choking cough which gradually grew worse; loss of weight was a prominent feature.

At autopsy the lungs appear normal color, except at their bases where colored nodular areas are noted. As many as eight

cysts were found in one case and in each cyst usually two parasites.

The *Paragonimus Westermanii* were found in hogs slaughtered at an abattoir in Cincinnati by Dr. Claude McFarland, who was on the killing floors inspecting at that time. Later this report was published in an annual report of the Bureau of Animal Industry.

This fluke has been reported twice before in the United States, once from Ann Arbor in casts, and once in Columbus, Ohio, in dogs.

DR. H. D. MOORE, Rapid City, S. D., has gone to Frankfort, Kentucky. His genial countenance will be recalled by all who were fortunate enough to be one of the party on the American Veterinary Special to 'Frisco last September. The doctor assures us he will be with us again at Toronto in August.

HORSES ONLY FOR THE CORONATION. A special cable from London says the Master of the King's Horse is having all the animals to be used in the coronation procession specially trained. The course includes making the animals accustomed to all sorts of sights and sound, and they are not considered fit until flags can be waved in their faces, guns fired at close quarters and shouting crowds paraded in front of them without making them restive. The Royal Riding School is a noisy place during practice. Loud-voiced youths rush about yelling and waving brightly colored flags, rifles are fired and a miscellaneous band makes all sorts of hideous noises. When the horses can stand all this without flinching they are reported as fit. The idea is to avoid the spoiling of effect by some unlooked-for and unrehearsed incident. In the past, training of this kind has been proved to be absolutely necessary. It is also reported that the edict calling for horses only in the procession and other royal functions has put some comparatively impecunious personages to great distress because, having discarded horses for motors, they are now obliged to pay exorbitant prices for horses to replenish their stables.—*Rider and Driver.*

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

ANTHRAX AMONG WILD ANIMALS IN CAPTIVITY [*F. Sommers*].—While traveling, the Bostock and Wombroelles show had a sad experience. Two raccoons, one coypu, and one English badger were found one morning dead. The next day two pumas and one leopard were also found dead. Anthrax was pronounced the cause of it by Prof. McCall. It was feared that more trouble would follow and indeed soon three polar bears were showing symptoms of gloss anthrax: tongue swollen, and protruding from the mouth, dark pink or black bluish in color. Hyenas, polar and brown bears were also diseased. One lioness died. Some of the birds were sick, principally one large vulture. Other animals showed symptoms also, but recovered. The general symptoms besides the condition of the tongue were congested, blood-shot eyes, swelling on the dew lap, the throats were swollen. The birds had a most pitiful appearance, their feathers sticking out, head drooping, muscular twitchings all over the body. Some kind of general treatment with cod liver oil, chlorate of potash was carried out as best as could be. Antiseptic measures, however, formed the principal indications. It seemed that the menagerie had fed the stock on raw meat, undoubtedly anthracoid; but as the meat had come from various sources the origin of the outbreak could not be traced.—(*Veter. Record.*)

AN UNUSUAL ABSCESS [*Arthur New, M.R.C.V.S.*].—Under that name the author relates the case of an abscess which he had occasion to treat in a cow. She had a swelling on the left side of the chest, between the shoulder and the elbow. The animal was very lame. After the application of liniment for several days, the swelling became soft and fluctuating, it was lanced. On

feeling the inside of the cavity of the abscess a piece of umbrella frame, five and half inches long, was extracted. Good recovery followed.—(*Ibidem.*)

INTESTINAL FISTULA IN A HORSE [*Wm. Hunting*].—This animal had an œdematous swelling under the abdomen. It increased and extended forward between the fore legs. Later it became defined to near the prepuce, then more circumscribed and finally softened, broke and allowed a large quantity of pus to escape. With the pus were mixed ingesta and some of those were found in the cavity of the abscess. With care this healed but after a while other abscesses formed again, but this time instead of one, there were two. It was quite clear that the trouble was due to an intestinal fistula. The two abscesses communicated and the finger introduced in them could feel an opening going into the abdomen. After a few days the general condition of the animal seemed to feel the effects of this state of affairs. The appetite was lost, the temperature rose to 104, the breathing became quick, in fact all the indications of peritonitis were present. Some water being given to the poor beast, after a few minutes, a fair sized stream of dirty fluid gushed out of the fistulous opening. At the post mortem, with the opening into the cavities of the abscesses and connected with them, there was found a firm adhesion of the ileum about 18 inches before it reached the cœcum. The portion of the gut in front of the adhesion, where the intestinal opening was, showed slight inflammation and the portion posterior to it was quite healthy.—(*Veter. Record.*)

PARALYSIS OF THE PHARYNX IN A HORSE [*Henry Taylor, F.R.C.V.S.*].—Aged animal which had all the symptoms of paralysis, nasal discharge mixed with food and saliva quite frothy, with impossible deglutition of either solid or liquid. Apparently in good health, looking bright, with normal temperature and pulse. After about ten days of sickness he showed gangrene of the lungs and died. Post mortem revealed that the mucous membranes of the pharynx, larynx, right guttural pouch, and trachea had a black appearance. Unfortunately the lungs were not examined and the autopsy remained incomplete.—(*Ibidem.*)

CONSTRICTION OF THE LARGE COLON [*Lieut. H. C. Stewart, A.V.C.*].—Interesting lesion found at the autopsy of a horse

which died quite suddenly after a severe but short attack of colic. His temperature taken when he became comatose was 110.4° F. The thermometer was tested and found reliable. The constriction of the colon was found at the point where the large runs into the floating colon. It measured two feet in length, was 1/3rd its normal size, with thick walls and mucous membrane inflamed and corrugated. It was about the diameter of a piece of small intestine. When the end towards the large colon was slit and the fœces beyond pushed back, gas was heard to escape, the fœcal matter was hard and normal. On slitting the other end, very little fœcal matter was found although the floating colon was normal. The horse had had previously several attacks of intestinal troubles for which he was laid up more or less.—(*Veter. Record.*)

A CASE OF BLACK QUARTER [*H. Blouet Nixon*].—Called to see a heifer, aged twenty months, for a swelling which she had in the right axilla, and which was diagnosed as the first stage of a case of black quarter, the author prescribed a stimulant drench and started to go and get blackleg pellets. He dissolved ten of these in warm water and injected them in the painful swelling in three places. He also inserted one blacklegine cord in the tail. After a few days the condition of the animal seemed to improve and nine days after the animal was turned out to graze. She soon was pushed in food, received fattening ration and a few weeks after was killed, weighing “26½ scores which, said the writer, is a fair weight for a two-year-old heifer of small frame.”—(*Ibidem.*)

ANAEMIA OF COLTS [*W. F. Richardson, M.R.C.V.S.*].—Called to treat a two-year old colt in which anaemia by scleros tomata had been diagnosed, the writer put the animal under the following treatment: Liberal amount of corn and hay, one ounce of liq. arsenicalis night and morning, powder of 2 drachms of chlorate of potash and two of nitras at midday. After a fortnight worms began to be passed in considerable quantities with the fœces. About a week later, the arsenic was dropped to one ounce a day and powder given in place with arsenic and sulphate of iron. Anaemia disappeared, appetite returned, general condition rapidly improved.—(*Ibidem.*)

CLINICAL NOTES [*W. Graham Gillian, M.R.C.V.S.*] *Gastric Impaction*.—Mare, six years old, had great colicky pains, is put

under treatment and got temporary relief. After a few hours she is bad again and rather than to destroy her, as the owner asks so as to relieve her great agony, she is given two grains of eserine salicylate intra-tracheally. She had severe vomiting from it, passing a great quantity of food, and then she became easier. The next morning she was convalescent. This is the third case of vomiting seen by the author, where recovery has taken place. Vomiting is not always associated with rupture of the stomach and death.

EVERSION OF THE BLADDER.—In slipping her foal, this mare had eversion of the bladder. It was difficult to reduce it although the urethra was much dilated. Morphia and bromide of potassium had to be administered and the writer had to keep his hand over the meatus for some time. The temperature of the animal was 103° . Straining continued during the night only and in the morning the mare was in her normal condition. "In text books it is said that in such condition the urine is seen squirting in two jets from the ureters; in this case the urine came merely trickling over the everted bladder."

ULCERATIVE GASTRITIS—VOMITION—RUPTURE OF THE SMALL INTESTINE.—Gelding, seven years old, pronounced cribber, had what seemed to be an ordinary attack of colic. He has purged freely. Treated with colic draught and porphia, he gets worse and suddenly dies. Autopsy: Large quantity of blood in the abdomen. Stomach full of food with mucous membrane having a mass of crater-like ulcers. About 12 inches from the pylorus, there was a stricture of the bowels and between this and the stomach a very irregular tear three inches long. In the portion where the stricture was the lumen of the bowels was hardly large enough to pass an ordinary pencil. The mucous membrane was spotted with small ulcers similar to those of the stomach.—(*Veter. Record.*)

A CASE OF INTUSSUSCEPTION [*Lieut. R. F. Bett, A.V.C.*].—Bay mare, 13 years old, has had severe colic, and was treated with chloral hydrate. Twenty hours after this attack, the temperature rose to 105° , the pulse became weak, the animal dies. Post mortem: On opening the abdomen no cæcum could be discovered, but at its usual site there was an inflamed and enlarged mass of bowel. The cæcum had completely telescoped within the large colon and a great amount of traction was necessary to draw

it out. A small loop of the ileum had been carried in along with the cœcum. There was a rupture $\frac{1}{2}$ a foot long at the great curvature of the stomach, probably of post mortem nature.—(*Veter. News.*)

HEMATURIA DUE TO SARCOMA OF OVARY AND KIDNEY [*E. H. Stent, M.R.C.V.S.*].—Aged brown mare is subject to attacks of hematuria. By rectal examination a very large tumor was revealed in the sublumbar region. The mare is destroyed. At post mortem is found a large sarcomatous ovarian tumor weighing 71 pounds and invading the pelvis of the left kidney.—(*Veter. Journal.*)

CYSTIC CONDITION OF THE SCROTUM [*Capt. E. S. Gillett, M.R.C.V.S.*].—Five-year old horse had a swelling in the scrotum, which was visible at times only and not constant. Cast for operation several cysts were found containing transparent fluid. The end of the spermatic cord was normal. The walls of the cysts were dissected out and astringent treatment applied. Uneventful recovery.—(*Veter. Journal.*)

RACEHORSE BREAKS ODONTOID PROCESS [*Norman Meyers, L. V.Sc.*].—This horse fell in a flat race. Death was instantaneous. There was a swelling in the region of the axis, which, on being cut down, showed a comminuted fracture of the odontoid process with splinters of bone in the spinal canal and surrounding muscular tissue. There was also hemorrhage and laceration of the spinal cord.—(*Ibidem.*)

ACETYL-SALICYLIC ACID IN CANINES [*Arthur Payne, F.R. C.V.S.*].—The author recommends the administration of this drug in 5-10 grains doses two or three times a day, particularly in cases of paresis following distemper, and also in ordinary paralysis of the hind quarters unusually observed in middle aged and old dogs. He records four cases illustrating the results he has obtained.—(*Veter. Jour.*)

CHYLOUS ASCITIS IN THE CAT [*Mess. Smythe and Smythe, M.R.C.V.S.*].—Six-year-old cat, whose diet had been the flesh of wild rabbits which he poached himself. He did not relish any other food. In six days, his abdomen has enlarged to such an extent that it is hard for the animal to move. It is a case of

ascitis. Paracentesis abdominals is performed and four pints of milk looking fluid are taken away. Microscopic examination shows it was a case of chylous ascitis. The animal had to be tapped again but finally was destroyed.—(*Ibidem.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

CANCER OF THE KIDNEY [*Mr. Morel, Sanitary Veterinarian*].—In the many inspections that the writer has made at the abattoir of Hippophagy, he has had the opportunity of meeting several cases of cancer, among which this reserves special attention. Weighing 13 kilogramms, it was found in a mare forming an enormous tumor, involving the left kidney. The neoplastic mass was irregularly round, bosselated and of yellow coloration. Rather hard, it had contracted adhesions forward with the stomach and the duodenum, behind with the rectum and uterus, on the right side with the liver and on the left with the spleen. Some remains of the renal pelvis permitted recognition of the kidney, but its form and shape were not normal, as it had been so much degenerated by the invasion of the tumor. The lymphatic glands of the renal region and specially the lumbo-aortic were much infiltrated and hypertrophied. The psoas muscles were much infiltrated. There was a thick œdema of the abdominal and inguinal crural regions and also thrombosis of the left iliac blood-vessels. The right kidney was hypertrophied and weighed one kilogram and 270 grammes. The mare in which this cancer was found was white and free from melanosis. She was in good condition of flesh and fat.—(*Bullet. Societ. Cent.*)

CANCER OF THE RUMEN [*Prof. G. Petit*].—This was found in a cow which had been slaughtered in the abattoirs of Luxembourg. It came from the rumen of a cow and was the only one in the whole carcass. It is an epithelial cancer, malpighian epithelioma, similar to those that are found in the œsophagus, pharynx, etc.; in fact, on all membranes with pavementous epithelium. There was nothing particular about the histology of the growth. But notwithstanding its large size it was singular that there has not been any metastasis in some other organs.

However there was one lymphatic gland rather hypertrophied in the neighborhood of the tumor, but it was not of cancerous nature.—(*Ibidem.*)

RHEUMATISMAL MANIFESTATIONS IN A DOG [*Mr. A. Vidal*].—This is only the simple history of an attack of acute rheumatism, which is interesting by its rather uncommon manifestations. Ten years old, this slut is suspected of rabies by her owner, as she laid down since 48 hours, refusing all food and is howling continually. Yet she is quiet, has an affectionate glance. If called she picks up her ears, moves the tail and tries to get up. When she is taken then with pains, howls, moans for a minute or so and then becomes quiet. She does not try to bite. There is no salivation, and she is not aggressive. She certainly has no rabies. Attempts are made to put her on her four legs, when she again has an attack of pains, howls, etc. Acute lumbar rheumatism is diagnosed. Syrup of morphia, revulsion on the loins and castor oil are prescribed. Improvement sets in the next day. Examination per vagina reveals an enormous, hard, full bladder from which 400 C.C. of normal urine are extracted. The animal seems to enter into convalescence and an antirheumatismal treatment is prescribed for ten days. Two days later, relapse; neck and jaws are very sore. There is a large swelling on the neck and the jugular veins show venous pulse. At the femoral artery the pulse is filiform and the dog has great dyspnea. The rheumatism is localized in the cervical region and the condition of the heart shows that it is also involved. Mustard poultice on the chest, and caffeine improves the condition, and finally salol and bicarbonate of soda complete the treatment, which is at last followed by complete recovery.—(*Rev. Veter.*)

STRONGYLUS VASORUM CAUSE CEREBRAL EMBOLIES.— [*Capdebille and Hussenet; Students*].—Fox terrier slut, since a week, has a capricious appetite; drinks only a little milk which she vomits. She has had epileptic fits. She is very weak; has a foetid breath and her eyes are congested. Palpation of the abdomen gives rise to contraction of the muscles of the legs, twisting of the neck and eyes. Then she salivates much, passes urine and moans. The treatment consisted in disinfection of the mouth, and gastro-intestinal canal. Ten cubic centimeters of antistreptococcic serum were also injected. The slut died the following day. *Post mortem*: Acute inflammation in the

stomach and intestines. In the thorax, there are tubercular nodules in the thickness of the lungs in which there were found *Strongyli Vasorum*. In the brain there had been an hemorrhage indicated by a little clot of blood in which by microscopic examination, a living twisting and untwisting stronglyus was observed.—(Rev. Veter.)

INTESTINAL INVAGINATION [Mr. A. Picard, Army Veterinarian].—Record of a post mortem made on a horse that died with colic after an illness of 24 hours. On opening the abdomen, the intestinal mass appeared very congested and distended with gases. A dirty looking peritoneal fluid escaped. The large intestine was full of fœces, very hard. The cœcum showed dark patches and a portion of the small intestine seemed to be pushed in the cœcal cavity. This being opened, there was found in it a large red sausage-like mass, about 40 centimeters long, which proved to be a part of the ileum. This invaginated intestine was inside œdematous and contained hemorrhagic inflammatory fluid.—(Rev. Gen. de Medec. Veter.)

THE USE OF CRYOGENINE IN HORSES [C. Lesbre and Bell, Army Veterinarians].—Having recorded many failures in the use of acetanilid, phenacetine, antypirene, etc., and other antithermic agents, the authors decided to resort to the use of a new compound, the *Cryogenine*, extensively used in humane medicine and with advantage. Cryogenine is a metabenzamide-semicarbazide, which among its principal properties is but soluble in a small quantity in water, 2½%, is very soluble in alcohol, and at 5% in glycerine. It is perfectly innocuous and acts as an antithermic and analgesic by direct action upon the nervous centres.

After various trials, the writers found that the dose to which cryogenine could be administered was between 25 and 30 grammes at one dose and preferably given in electuary (why not in a bolus? The effects are manifested two hours after. The temperature of the animal gradually going down until it has reached two or three degrees below the one it had when it was given. Cryogenine ought to be administered at the very onset of the febrile movement and can be renewed if by exception the hypothermy would resist or if after a lowering down the temperature would have a tendency to rise again.

In some pneumonias, when the drug was given at the onset of the disease, this had been cut short. In resuming, the authors say: It acts on horses as a powerful antipyretic, has none of the inconvenience of other drugs, can be repeated several days in succession, and in pyrexia without localization well established will lower the temperature two or three degrees. In febrile manifestations of infectious origin its action is less complete or durable, is always beneficial by its analgesic action. Pyrexias which are not acted upon by Cryogenine are always almost justifiable of a serious prognosis. Unfortunately it is expensive.—(*Bullet. Soc. Veter. Scient. de Lyon.*)

ANAL ATRESIA IN A CALF [*Ch. Escofier, Army Veterinarian*].—A calf three days old, makes very violent expulsive efforts to defecate. He has no anus. The abdomen is very much distended. There is no indication of anal opening in the perineum but in its site a thickening of the skin. During the strains of the animal, the perineal region is bulging backwards and a slight fluctuation is felt due to the rectal diverticulum pushing under the skin. The calf is put on a table, in dorsal position with the front part of the body elevated. An incision is made on the skin, previously disinfected with tincture of iodine, the cutaneous thickening is removed, the connective tissue is divided and the cul de sac of the rectum is exposed. It is secured with a ligature, drawn to the margin of the perineum and sutured to the skin with six catgut stitches. Then the rectal diverticulum is exercised and the meconium allowed to escape. Enemas of glycerine are prescribed and a suppository of vaseline gauze introduced in the rectum to dilate the anus. Cicatrization was rapid and without complications.—(*Rev. Gene. de Medec. Veter.*)

THE Epsilon Chapter (University of Pennsylvania) of the Alpha Psi fraternity celebrated the third anniversary of the installation of the chapter at Essington, Pa., Saturday afternoon, May 13, 1911. The program included a base-ball game between the graduate and undergraduate members, a boat-ride on the Delaware River, in Dr. Glass' naphtha launch, and a planked shad dinner at the Rosedale Inn. Among the honorary members present were: Drs. Alexander Glass, C. J. Marshall, Louis A. Klein, W. Horace Hoskins and K. F. Meyer. Among the invited guests were Dr. Lee H. P. Maynard, of the Alpha Chapter, and Dr. Victor G. Kimball of the Beta Chapter.

ARMY VETERINARY DEPARTMENT.

DRAFT OF THE NEW ARMY VETERINARY BILL.

Below is given the draft of the new Army Veterinary Bill, which found its birth at the Division Maneuver Camp at San Antonio, Texas. It has been subjected to a most thorough discussion at several meetings held by the six veterinarians present at the camp (Drs. LeMay, Schwarzkopf, Glasson, Gage, Gould, Mitchell) and stood the test of scrutiny by military and judicial officers also present at the camp. An advance copy was forwarded to Fort Riley, Kansas, for concurrence in by the five veterinarians at that Post (Drs. Plummer, Jewell, Fraser, Donovan, Mason), who agreed to it with some minor changes suggested by voting section for section.

The bill is now being circulated among the other army veterinarians present in the states to secure unanimous consent. As soon as this is reached, the bill will be introduced directly into Congress. A brief, showing the organization of the British, German and French army veterinary corps and that of our own army under existing law is under preparation and will be forwarded together with this bill.

By military-judicial advice, rank, pay and allowances was substituted for "grade." No clause favoring the older veterinarians by exemption from examination was incorporated, to avoid opposition from the younger veterinarians. The consolidation of the veterinary service was strongly advised.

O. S.

A BILL

"To consolidate the Veterinary service, United States Army, and to increase its efficiency."

Be it enacted, etc., that the President is hereby authorized by and with the advice and consent of the Senate, to appoint veterinarians and assistant veterinarians in the army, not to exceed two for each regiment of cavalry and field artillery, three for the remount depots, one as purchasing officer of veterinary supplies, five as meat inspectors, three as veterinary examiners and in-

structors, and one to act as chief veterinarian, not to exceed fifty-five (55) in all.

Sec. 2. That a candidate for appointment as assistant veterinarian must be a citizen of the United States, between the ages of twenty-one and twenty-seven years, a graduate of a recognized veterinary college or university, and that he shall not be appointed until he shall have passed a satisfactory examination as to character, physical condition, general education and professional qualifications.

Sec. 3. That an assistant veterinarian appointed under Sec. 2 of this act shall have the rank, pay and allowances of second lieutenant, mounted; that after three years of service an assistant veterinarian shall be promoted to veterinarian with the rank, pay and allowances of first lieutenant, mounted, provided he passes a satisfactory examination under such rules as the president may prescribe as to professional qualifications and adaptability for the mounted service; or if found deficient he shall be discharged from the army with six months pay and have no further claim on the government; that after fifteen years of service a veterinarian shall be promoted to the rank, pay and allowances of captain, mounted, after having passed such physical and professional examination as the President may prescribe; and that from the eligible veterinarians with the rank of captain one shall be selected to act as chief veterinarian for the period of four years, and while so serving, he shall have the rank, pay and allowances of major.

Sec. 4. That the veterinarians now in the regular army, who at the date of the approval of this act, shall have had three years service, be examined for the rank of first lieutenant; and that the veterinarians who at the approval of this act shall have fifteen years service, shall be examined for the rank of captain, and that those who satisfactorily pass the examinations be appointed and commissioned to the respective higher ranks according to seniority of length of service, as provided for in Section 3 of this act; and that they shall be entitled to credit for all honorable and faithful prior service in the army as veterinarians or veterinary surgeons in determining their status; or if found deficient for promotion they shall remain in the status of assistant veterinarians until such time as they pass the prescribed examination.

Sec. 5. That the Secretary of War, upon the recommendation of the chief veterinarian, may appoint such number of re-

serve veterinarians as may be necessary to attend public animals pertaining to the quartermasters or other departments and corps, who shall have the pay and allowances of second lieutenant, mounted, provided that such reserve veterinarians be graduates of a recognized veterinary college or university, and have previously passed such moral, professional and physical examination as may be deemed necessary by the Secretary of War for the proper performance of their duties in mounted field service.

Sec. 6. That all laws or parts of laws in conflict with the provisions of this act be, and are hereby repealed.

Army Veterinary Personals.

Dr. Robert W. McKibbin, 4th Cavalry, has resigned from the army service. He was appointed to the army on July 2, 1903. Inasmuch as he was generally regarded as one of our ablest younger veterinarians, sincere regret is felt by all others particularly as his resignation came as a surprise. We have no intimation of the future plans of the doctor, but wish him happiness and prosperity in civil life.

The six veterinarians assembled in the Division Maneuver Camp, signed and forwarded letters to Representatives Hay and Slayden at Washington, expressing their sincere thanks for the assistance these gentlemen rendered in the passage of amendment 26 to the Army Appropriation Bill, allowing retirement to army veterinarians.

Attention is invited to the publication of the Bureau of Animal Industry: "The Diagnosis of Glanders by Compliment Fixation," by Drs. Mohler and Eichhorn. This is a most important report for army veterinarians and is written so concise and lucid as to be of the highest practical value and most interesting reading.

A NEW PLAN FOR THE PROCUREMENT OF REMOUNTS.

Under date of April 19, 1911, appeared from the Government press a pamphlet setting forth a new plan for the procurement of remounts for the United States Army.* Though horses certainly are commanding high prices, there is evidently a short-

* United States Department of Agriculture, Bureau of Animal Industry Circular 178, "Breeding Horses for the United States Army," 13 pp. Part of the Report of the Bureau of Animal Industry for 1910.

age in the production of them; at least those of a sort suitable for army use. For a number of years it has been nearly impossible to supply the army with satisfactory remounts in sufficient quantities, even though, for about ten years, the army has been on a peace footing. The exigencies of the case have been of a nature to force forward the question—how to meet the growing but unfulfilled need for suitable remounts; still more, how preparation shall be made to provide for the supply of army horses for the troops in time of war. It is the duty of the army in peace to prepare for war. If the supply is difficult in time of peace, in war time the difficulty would be enormously aggravated and intensified.

During the past year, says the government document, the Secretary of War requested the co-operation of the Secretary of Agriculture in evolving some plan for enabling the army to obtain suitable remounts. The Secretary of War pointed out that the supply of horses for remounts is getting more and more limited; that the country can hardly supply the army in time of peace with remounts, and that the conditions are rapidly reaching a point when it will be impossible to supply the annual need of the army at the present peace strength; that the army cannot possibly be mounted in time of war from the supply to be had as things are now.

The result of this statement of the Secretary of War to the Secretary of Agriculture was the designation by each of a representative to study the problem and form a plan for its solution. Chief Rommel, of the Animal Husbandry Division of the Bureau of Animal Industry, was made the representative of the Department of Agriculture, and Captain Caspar H. Conrad, Jr., Third Cavalry, United States Army, that of the War Department, detailed for duty in the Quartermaster's Department in connection with the purchase of remounts. Capt. Conrad prepared a statement setting forth the reasons why it is imperative for the government to undertake the task of encouraging the breeding of horses for the army. Chief Rommel prepared the plan for breeding the horse with the assistance of Capt. Conrad and other army officers in Washington. The publication of these reports is approved by the War Department and the Department of Agriculture.

From the pamphlet, in which these reports are printed, I have made excerpts for republication in the "Army Veterinary Department" of the REVIEW, believing that they will be of

uncommon interest to all army veterinarians. Besides, the material is of general interest to a profession which must take cognizance of any plan for the improvement of the breeding of high class horses for army use; or, for that matter, should be interested in the upbuild of breeds of saddlers.

THE NECESSITY FOR GOVERNMENT ENCOURAGEMENT OF BREEDING ARMY HORSES.

“The difficulty experienced by the Quartermaster’s Department in procuring remounts seems perfectly natural. The early settlement of the United States, particularly the eastern part, went on some time before the advent of steam and electric transportation, and the settlement of the western part even now in the most remote points takes place without the assistance of modern transportation. In all new countries the horse has played an important part in the advancement of civilization and the general scheme of settlement. Even in the first part of the nineteenth century the horse was a very much more important animal in Europe and the British Isles than at present.

“During the opening of a country the settler must, owing to the absence of roads and other forms of transportation, put his principal reliance upon the horse; he is forced to travel trails and long distances, and for this purpose finds that he needs a horse suitable to carry him quickly and comfortably to his destination. To accompany him and carry the articles necessary for his daily life, he needs a pack animal. So long as conditions remain unchanged, a desirable type of saddle and pack animal will exist in good numbers; but so soon as the country becomes more permanent, the mountain trail gives place to the country road to the worked and settled highway, and the type of horses rapidly changes. The necessity for the saddle animal lessens; the light-draft animal becomes more important; the people ride less and discard the expensive pack transportation; the horse is attached to a light vehicle with which he is able to transport more than one person or a heavier load.

“As the roads become better and the country more extensively cultivated, the lighter horse is used more for pleasure or solely as a means of drawing the carriage; another type of horse becomes more useful and economical, and the light-draft type appears to be succeeded by the heavy draft. Next come the railroad, the trolley line, and the automobile. The people ride

and drive less, and fewer horses of the riding types are bred. Riding is indulged in almost solely for pleasure. A new country is a country on horseback; an up-to-date one, a country in an easy chair.

“In the United States the type of horse suitable for army purposes is now proportionately less numerous because it is not found necessary to the civilians of the country, and the Quartermaster's Department is finding it each year more difficult to supply the yearly demands of the mounted branch of a small army.

“The horses of our mounted branches are severely criticised by representatives of foreign armies, while from our own officers come reports of poor animals, poor performance, many quickly developed unsoundness, and short life.

“As an illustration—in the West it is found that a marked change has taken place in recent years in the so-called ‘cow-pony.’ Twenty years ago cattle ranches of the West were practically without fences and unlimited, and the cow man found it necessary to breed and use a type of quick, active pony. As the West became settled and as agriculture was taken up the large free ranges changed to the large fenced pastures of a few years ago. These large pastures are now being broken up into even smaller ones. The yearly round-up requiring riding over immense distances and active work has about disappeared. Today cattle are not chased and roped, but are driven into the small pastures and pens and quietly handled. The quick cow-pony of the past has given place to a larger animal, frequently having a cross of draft blood. It may be said that the cow-pony of the West has practically disappeared.

“Virginia has long been famous for the horse known as the Virginia hunter. Even the breeding of this type of horse has been sadly affected by the high price of heavy draft horses, and further influenced by the fact that only those hunter-bred horses that attained full size brought high prices. Under the haphazard methods of breeding in vogue in these sections not more than 1 in 6 colts could be depended upon to attain the size necessary to bring a high price, and the farmer found himself the possessor of four or five small horses for which there was no steady market. When he found that all draft colts, in spite of minor blemishes, brought good prices as 3-year-olds, he at once ceased to breed the hunter type, with its many misfits, and commenced on heavy draft horses. The disappointment in the hunter bred

horse would not have been so great had the breeding of this type been done scientifically and rationally. The hunter bred horse as now raised in Virginia is sired almost entirely by stallions either sent to the country gratis or sold at small prices to individuals by wealthy people in the North who desire hunters and are looking to the future supply. A farmer living in the neighborhood of a thoroughbred stallion, and feeling that he would like to breed a hunter, will take advantage of the nearest and cheapest stallion in his neighborhood, regardless of what the result may be. All that he considers necessary is that the horse should be, first, a thoroughbred; and, second, that he should be a pleasing individual; never taking into consideration the fact that the mare might not be suited to the horse nor the horse to the mare. Hence the misfits, the discouragement, and the decrease in number of the hunter type. It is said that not one-tenth as many hunters are bred in Virginia to-day as formerly.

“Even more appalling than the present scarcity of horses suitable for military purposes in this country is the large number of unsound horses that are constantly being examined by purchasing officers. Horses of this class can be the result of but one thing, and that is an absolutely irrational system of breeding, or the lack of any system whatsoever. When it is remembered that a sound and serviceable horse of a particular type costs no more to raise than an unsound horse, the immense waste caused by our present lack of system is only made more apparent.

“The enactment in a number of states of laws whose effect is to prohibit the standing of unsound stallions for public service will, no doubt, in time, tend to correct the evil; but not until the horse-raising states generally prohibit absolutely the public stud service of unsound stallions will unsound horses be less common on the market. Such legislation in one state is an excellent thing for that particular state, but it is very likely to drive all the unsound stallions across the borders into adjoining states where laws against the unsound stallion does not exist.

“The next census will probably show that there are in the neighborhood of 23,000,000 horses in the United States. It would seem that in this immense number there must be many thousands of horses suitable as remounts for the army, and there probably are; but the fact that the type desired is comparatively scarce, and that the horses that would do are scattered over an immense area and are in demand for other purposes than the

military, makes it not only expensive and impracticable to obtain them, but next to impossible to do so.

“The purchase of young horses for the army during the last fiscal year has been more or less successful, but all officers connected with the Quartermaster’s Department have reported that while they were obtaining a fair number of horses, they could see no prospect of obtaining them in any number in future years, and all report the apparent necessity for the Government’s assistance in the rational breeding of army horses in the country.

“As no system of supply, so far as the army is concerned, which deals with peace conditions alone, is complete, the War Department must constantly keep in mind the possibilities of war, and it is not surprising that finding difficulty in purchasing a supply of remounts for the peace army, there should be more or less uneasiness when war requirements are considered.

“The waste of horseflesh in war times is enormous, and in a war of any magnitude in which this country might be engaged the number of horses required will not be confined to the thousands per year, but will extend into the hundreds of thousands.”

Here follows figures taken from the records of the Quartermaster’s Department, United States Army, during the Civil War, showing the enormous increase of purchases of horses as the war proceeded, and the great loss in horseflesh occasioned by shot and disease.

“Until recently acts of Congress appropriating money for the purchase of horses for the army required that they should be purchased by contract from the lowest responsible bidder after advertisement. The specifications of the horse to be delivered under contract are those of a perfect animal, which, of course, is seldom seen. The inspectors and purchasing officers are required to reconcile these specifications with existing conditions, keeping in mind fairness both to the contractor and to the government. This system led to the building up of the class of middlemen who purchased animals from the breeders, presented them for the action of the government inspectors, and sold them at the contract price. Until recently this price ranged from \$100 to \$150. Considering the large expense to which the contractor would be put, it could not be expected that all of the government’s money would be invested in horseflesh. The result was, considering the profit by the contractor, his expense, etc., that the price paid by the government secured for the cavalry a horse worth from \$70 to \$100. Nothing is known of

the breeding of these animals further than that they were 'probably of such and such breeding.' Often the question of breeding was not raised, the principal requisite being that they should give promise of performing the duties expected of them. The contract system has tended to discourage the horse breeder of the country, as the money paid him by the contractor, after much haggling, was often very little more than the cost of raising the horse. There has been no incentive for breeders, even in the best naturally endowed sections, to breed the type of horse that the army needs.

"Again, in recent years the demands for heavy draft animals for farming purposes, the high prices that these animals are bringing, the fact that they cost no more to raise, and bring even a higher price although blemished, has had a further bad effect upon the breeding of the desired saddle type. Even before the present high prices of all horses and the higher price of the draft horse existed, the breeding of the type considered best for army purposes received another severe set back by the adoption of electric and cable street railways and the best extension of the trolleys. While not generally appreciated, the best 'rail-rovers,' as the horses used for street cars were called in the market, were the very kind that made the best cavalry mount. This horse was desirable for street-car purposes because of his endurance and his willingness to work.

"The contract system received its first serious setback, from the contractor's standpoint, when the army, due to the clamor for better mounts, insisted upon a closer compliance with the contract specifications and rejected more of the horses presented by the contractor. The sudden rise in the price of horses further embarrassed the contractor, and the added difficulty of obtaining horses to present for inspection, caused many of the contractors to fail in their deliveries, made others reluctant to bid, later led to the impossibility of obtaining horses under this system in certain sections, and finally led to authority being given by Congress for open-market purchases. This method, while apparently a little more expensive to the government, had the advantage of eliminating the middleman, giving the breeder all the money which the government was willing to pay for horses, and giving the government value received in horseflesh.

"The establishment in 1908 of the remount depots has further improved the type of horse for the army, as the system of purchasing young horses 3 and 4 years old, often unbroken, has

enabled the government to get the best type of horse before he has cost the breeder much money and when he could be sold for a reasonable amount. These horses sent to the depots for maturing and handling, and finally issued to troops as 4½ and five-year-olds, while costing the government more per head than the horses 5 and 6 years old formerly purchased and issued directly to troops, are very much better horses from the beginning, are properly developed at a critical period in their existence, rationally handled, and, when issued to troops, have been received with enthusiasm as a great improvement over the matured horses formerly issued under the old system. Even considering the high market value of horses at present, it is believed that, under the remount system, horses can be issued to troops at not to exceed a total average cost of \$225. The latest contract price of cavalry horses is \$183.75; for artillery horses, \$213.75. Many of the late contract horses are young and require some handling at depots before suitable for service; others are mature.

“Horses purchased as mature under the old system have had a useful life in the army of 6.4 years on an average. The better grade of horses, such as are now being purchased, rationally developed and handled, should and will have a useful average life of 10 years. It is easy to see that the better horse issued from the depot at a cost of \$225, that last 10 years, is cheaper than the horse costing from \$183 to \$213, lasting only 6.4 years. In addition, the army will have had a better horse throughout the entire period of usefulness. The horses being issued from the depot could undoubtedly be sold at time of issue at a handsome profit. Many individuals would bring fancy prices. It is needless to say that if it were possible to purchase them in issue form, it would be necessary to pay much more than they have cost under the depot system.

“European countries long ago found it not only advisable but necessary to supervise the breeding of horses in order to supply the demands of their armies, and every European country of importance, with the exception of England, has for years been encouraging the breeding of the proper type of army remount. England, one of the most important horse countries of the world, has for many reasons only recently been forced to this step. It is interesting to note that practically the same conditions confront England that confront this country at the present time, and that almost identical steps are contemplated in the two Anglo-

Saxon countries to accomplish the same result—suitable army horses in sufficient number.”

Then appears the plan for the breeding of horses for the United States Army—the purchase of stallions by the government; their distribution in breeding sections of the country, and the get expected from them. The plan, indeed, is similar to that adopted for the encouragement of the breeding of suitable remounts for armies on the European continent.

“Those localities should be selected for breeding districts where conditions are especially suited to horse raising, where the type of mares is most likely to approach the type of horses desired for the army, where a light type of horse will always in the long run be the most profitable to the farmer and draft horses least likely to gain a firm foothold, and where mares are sufficiently numerous to give the stallions maximum service. A careful survey of the horse-raising districts of the country will be necessary before this question is settled, and the returns of the Thirteenth Census can probably be used. The Bureau of Statistics of the Department of Agriculture states that it is impossible to use its returns for this purpose. Perhaps, however, that bureau could assist in making the survey.

“The government reservations where stallions would be kept between the breeding seasons would be the points around which the work would centre. In some cases it might be possible to stand some stallions at the central station itself. Stallions should be distributed in lots of five around the central stations, and such further distribution could be made as necessity required. At the close of the season they would be returned to the central station and kept there until the next season or sent to another locality.

THE EXPERIMENTAL FEATURE.

“The plan has experimental possibilities of the highest order, which should be utilized. The leading features are the test of the value of different breeds to produce remounts and the value of different soils and climates for the purpose, which could soon be determined by the army by keeping records of performance. Certain troops, squadrons and batteries, and entire regiments, could be supplied with remounts bred in a certain way in certain localities, and the possibilities of the plan from an experimental

standpoint would thus become very great. By the time a second large appropriation to purchase stallions would, if ever, be necessary, the government would be in possession of facts which would enable it to show definitely whether the plan had been successful, and whether any crosses or localities should be eliminated from further consideration. It might be well, also, to consider the feasibility of arranging with the breeders to reserve a small number of high-class fillies each year for breeding purposes; otherwise mare owners would be compelled to replace their mares by purchase, which would bring the problem little nearer solution at the end of 20 or 50 years than it was at the beginning. That it is possible in time to fix the type desired for remounts is by no means questionable, and this may indeed be very desirable.

TERMS OF SERVICE.

"No mare should be bred to a government stallion until she has been approved by the proper officers as of the type suitable to produce remounts. The common unsoundnesses, the tendency to which may be transmitted from one generation to another, should naturally disqualify a mare, but even more important would be the necessity to refuse a mare on account of manifest faults of conformation, action or quality.

"The terms of service should be free, the owner of the mare entering into a contract to give the War Department an option on the resulting foal during the year it is 3 years old (estimating a horse to be 1 year old on the 1st of January after it is foaled) at a price to be fixed before the mare is bred. A provision should be included in the contract that the mare must remain in the owner's possession until the foal is weaned, and that, in case the foal is sold before the War Department has exercised its option, a service fee shall be exacted from the breeder of the foal. Provision should be made, however, to cover such emergencies as the death of the breeder, etc.

"The price contracted to be paid for remounts should be fixed annually for each state by a board of arbitration before the breeding season opens, subject to the approval of the Secretary of War. For example, in January or February, 1912, this board would meet in each state mentioned above and agree upon the price to be paid for remounts bred in that state to be purchased in 1916; in 1913 prices to be paid in 1917 would be fixed, and so on. The arbitration board should be composed

of an officer of the army, an officer of the Department of Agriculture, and a citizen residing in the state, preferably a competent horseman. In purchasing remounts, no discrimination should be made against mares; colts should have been castrated at the breeder's expense, preferably between 1 and 2 years of age.

ORGANIZATION.

"The breeding work would be administered by the Bureau of Animal Industry of the Department of Agriculture through the Chief of the Animal Husbandry Division. This division would direct the work under the supervision of the Chief of the Bureau, and keep the breeding records and the reports on the development of foals.

"Not later than January 1 of each year it should furnish a report for transmission to the War Department on the actual number of 3-year-olds in each breeding district available for purchase during the year and the probable number of these that will make satisfactory remounts. A competent animal husbandman should be employed, with headquarters at Washington, as a traveling inspector of breeding stations, to keep the department in close touch with the work in addition to receiving regular reports from the breeding districts. *The man in charge of the breeding districts should be obtained from the field force of the Bureau of Animal Industry. These men should be good veterinarians, with a thorough knowledge of horse husbandry. Their field experience would make them invaluable for this work, and the loss to the field service of the bureau would be more than compensated by the fact that they could handle the work better than any men who might be obtained from the outside. If the government undertakes this project it must do so under the most favorable auspices, and no risk of failure should be run. As success would largely depend on the ability of the men in charge in the field, the best men available should be obtained.* The expert assistants to men in charge of breeding districts should be animal husbandry graduates of agricultural colleges, and not veterinarians. This would balance the service in a very effective way.

"The duties of these men would be to direct the work at the breeding stations in their districts, to attend to the keeping of the records, to advise mare owners on the care of the horses, and, if possible, to travel through their districts before the breeding

season opens and approve mares, directing how they should be bred, if necessary. Until the work is on a thorough, well-organized basis, the approval of mares should be done by the men in charge of districts or their expert assistants.

“The men in charge of stallions as stud grooms should be employees of the Department of Agriculture, for whose appointment experience in the handling of horses should be the first consideration.

“Preference should be given men who had been honorably discharged from the mounted service of the army and who presented certificates from officers in whose commands they had served showing their proficiency in horsemanship.

“It is hardly necessary to point out the desirability of having the breeding service so organized that it will be carried on from year to year by the same or about the same corps of employees, in order that it may have a definite, stable, and continuous policy.”

What do the cavalry and artillery veterinarians think of this plan for the amelioration of the difficulties of procuring suitable remounts? The articles in the public documents, as a rule, are very chary in their praise of the work of the veterinarian, and writers are loath to accord him his mead of recognition for the work he is capable of doing for the improvement of the mounted service of the army. Seldom is his work appreciated; more seldom is he mentioned in complimentary terms. Yet in this circular on “Breeding Horses for the United States Army,” written by Captain Conrad in collaboration with Chief Rommel, we find compliments paid to the ability of at least the veterinary field force of the Bureau of Animal Industry. “Their field experience (that of the bureau field veterinarians) would make them invaluable for this work and the loss to the field service of the bureau would be more than compensated by the fact that they would handle the work better than any men who might be obtained from the outside.” I have often thought that the high officials of the army appreciate the veterinary force of the Bureau of Animal Industry and place greater confidence in its dictates than they do in the suggestions of their own veterinarians. When the bureau is asked for information by the army, or is asked to do a piece of work for the army, it is given or done in a fashion which forces the reposing of confidence. Reports are made, or letters written, without that excessive regard for overnicety of official language and excessive care not to touch the quick the feelings of superiors in office or grade which is cus-

tomary, and apparently necessary, in other official circles. Whatever be the reasons for it, the findings, as in this plan for the breeding of horses for the United States Army, are accepted as from those having authority to speak. Should the reform proposed be carried out and be successful government veterinarians, at any rate, would rightfully receive the laurels. The army horse would be a better horse. He would be even more esteemed in the mounted service than he is now. Whatever improves the horse in the mounted service improves the veterinarian. The fortunes of both are bound together indissolvably.

D. ARTHUR HUGHES.

OBITUARY.

Dr. Donald C. Sutherland, died at his home in Saginaw, Mich., March 29th, as a result of a runaway accident. He was a charter member of the Michigan State Veterinary Medical Association, and the oldest graduate in point of years in the state. The state association was represented at his funeral, Drs. Brenton, Cumming, Joy, Donald, Hisey, Cronkits and Carter acting as honorary pall bearers. Dr. Sutherland was one of the most faithful members of the association, always on the side of progress, and will be deeply missed by his fellow members. He was a public-spirited man, and always contributed his quota to public enterprises. He is survived by a widow and three sons; also two brothers and three sisters.

DR. GEORGE B. GILMOR, graduate of the American Veterinary College, died at his home in Oakland, Pa., May 1. The doctor was born in Titusville, Pa., 38 years ago, and had been practicing veterinary medicine in the Oakland district for the past 13 years. One son and two sisters survive him.

DR. JAMES MARION SLOAN, graduate of Ontario Veterinary College, died at his home, Jamestown, Pa., of heart failure, on April 12th last. Dr. Sloan was born in Sandwich, Ill., in 1857, and had practiced his profession in Jamestown, Pa., since 1889, in which place he had become a prominent and honored citizen. He is survived by a widow, two daughters, three brothers and three sisters.

BIBLIOGRAPHY.

VETERINARY ANATOMY.

VETERINARY ANATOMY. By Septimus Sisson, S.B., V.S., Professor of Comparative Anatomy, Ohio State University, College of Veterinary Medicine. Octavo of 826 pages, 528 illustrations. Philadelphia and London; W. B. Saunders Company, 1910. Cloth, \$7.00 net; Half Morocco, \$8.50 net.

This most excellent American production deserves the hearty support of the entire veterinary profession; not only of America, but of the world. It has been an accepted truth for a decade, that illustration is the best and surest method of instruction. This fact has undoubtedly been very strongly appreciated by Prof. Sisson, as in his work on anatomy, the relative amount of space devoted to illustrations, is much greater than in other similar works. And, which is of still greater importance, the illustrations are of a superior type; both in the workmanship incident to their production and their relation to the study of the subject in question.

No one, no matter how casually he may glance through *Sisson's Veterinary Anatomy*, can fail to note the clearness and correctness of the illustrations, rendered more striking, more instructive and more useful by the use of colors in many of the figures. Added to the superior illustrative feature of his work, the author has, while treating rather fully the important points, strongly condensed the general text; which makes it possible for the student to gain a great amount of anatomical instruction with a comparatively small amount of reading. The same feature materially increases its value to the practitioner, who desires to refresh his memory on regional anatomy at times, often with a limited amount of time in which to do it. Besides, brevity on any subject makes it doubly interesting, provided the ground is fully covered. The paper is clean and the type clear and easy to read.

In brief, the *special* and *new* features which render the work of this earnest, original and painstaking American author of

exceptional value, are the extensive use of photographs of material, and the first description of the true forms of many of the viscera as determined by in situ fixation (the material being entirely new), the changes in nomenclature, which are designed to reduce the enormous labor imposed on students by having a large number of synonyms, and to produce some conformity with the modern terminology of comparative anatomy; and, finally, the introduction of numerous topographic illustrations with a view of bringing the subject into close relation with the clinical branches, so that the book may be advantageously used, as already stated, by advanced students, and by practitioners for ready reference. The author deserves more than ordinary encouragement at the hands of the American veterinary profession in producing an American text book on so important a subject as veterinary anatomy; the fundamental subject in veterinary science; as, aside from the *individual* benefit derived by students and veterinarians in the *possession* of the work, it may be rightfully considered as a national benefactor in placing the American veterinary profession on a firmer basis and in a more assured position. Already this work has been adopted as a text book in the veterinary schools and departments at Cornell University, University of Pennsylvania, Ohio State University, George Washington University, Washington State, Iowa State, Kansas State, University of the Philippines (Manila), University of Melbourne (Australia), Kansas City Veterinary College, and many other veterinary schools, the names of which have not reached us. So that even at this time, early in the first edition, it has become an international text-book on veterinary anatomy.

FOODS AND BOOKS.

A REVIEW OF SOME RECENT PUBLICATIONS.

BY D. ARTHUR HUGHES, LITT. M., PH.D., D.V.M., INSPECTOR OF FOOD SUPPLIES, IN CHARGE OF OFFICE SUBSISTENCE DEPT., U. S. ARMY, CHICAGO, ILLS.

There are two journals, each a weekly, which enjoy equal place in public esteem because of the reliability of the information which they furnish, and the sway which each has over the minds of men, though in widely different fields of thought.

Both of them are published in the city of New York, and, from that metropolis, furnish electric currents of influence felt the country over. The one is *The Nation*, the other is *Science*. *The Nation* exerts a tremendous influence, through the articles regularly appearing in its columns from every eminent specialist and through its book reviews by the same class of men, upon historical, literary, political, economic and philosophical thought. *Science* has the same general scheme of editorship as *The Nation*; but its columns are regularly filled with editorials, general articles, reviews and notes covering the wide range of pure and applied science, especially the natural sciences—physics, chemistry, geology, botany, horticulture, agriculture and the like.

When, therefore, *Science* speaks, it is not in a hollow voice. When a book review appears in *Science*, it is written by a specialist. We may not hearken to its statements, but at least they can be taken with confidence. Shortly after the appearance, several years ago, of Dr. Harvey W. Wiley's great work, "Foods and Their Adulteration," and after it was favorably noticed in the columns of THE AMERICAN VETERINARY REVIEW, an article appeared in *Science* closely corroborating the judgment of the book given in these columns. The reviewer in *Science* said: "Seldom has a more timely book appeared than this, following so closely, as it does, the beginning of the enforcement of the national pure food law. For some time prior to the passage of this law public interest throughout the country had become vitally awakened to the importance of the pure food issue. Amid a large mass of confusing and often exaggerated newspaper articles upon the subject it is a comfort to find a book covering the field so completely, so sanely, and withal written in so interesting a manner."

The second edition of this masterly work has just appeared from the press. Its title is "Foods and Their Adulteration, Origin, Manufacture and Composition of Food Products, Infants and Invalids Foods, Detection of Common Adulterations and Food Standards." The author is Harvey W. Wiley, M.D., Ph.D., Chief of the Bureau of Chemistry, U. S. Department of Agriculture.* There cannot be any question that Dr.

* Foods and Their Adulteration; Origin, Manufacture and Composition of Food Products, Infants and Invalids Foods, Detection of Common Adulterations and Food Standards, by Harvey W. Wiley, M.D., Ph.D., with eleven colored plates and eighty-seven other illustrations. Second edition; revised and enlarged; cloth; 641 pp., octavo; with chapter synopsis and index. P. Blakiston's Son & Co., Philadelphia (1012 Walnut street); \$4.00.

Wiley is the greatest living American food specialist. His name is a synonym for accuracy in the chemical analyses of foods. The second edition of his "Foods and Their Adulteration" is produced at the zenith of his power and influence, and the reliability of its statements needs no argument; for, not only is Dr. Wiley the Chief of a bureau which he has organized into a system of laboratories, many of them specializing in the chemical analyses of different kinds of foods, and filled with food experts of which he is director; not only has he been, for many years, secretary of the American Association of Agricultural Chemists, through which his directing mind has brought about a national system of co-operation in food analyses, between state, corporation and private laboratories and the national laboratories, whereby national food standards have been formed and published; but he has had access to all recent literature on foods, and his book is really a digest of these stores of knowledge.

To the veterinarian who is an expert, or who hopes to become an expert, on animal foods and animal food products, Wiley's book should prove infatuating. And to the large and growing number of these we direct attention to the work. The first chapter, of 116 pages, is on meats and meat food products, in which he takes up many questions relating to the preparation, inspection and preservation of foods of animal origin. In the second chapter he takes up poultry, eggs and game birds. The time is coming when American veterinary food experts, like those of Continental Europe, will have to know more on these topics. The same may be said of chapter three, of 50 pages, on fish foods. The next chapter is on milk, milk products and oleomargarine—surely of interest to veterinarians. In fact there are about four hundred pages in the volume closely related to the work of the veterinary inspector of food supplies, or to the veterinary sanitary supervisor of the manufacture of human foods of animal origin.

We wish we could speak in the same terms as we have done of Dr. Wiley's book of a book on meat canning which has recently appeared, namely, "The Modern Practice of Canning Meats," by G. T. Hamel; pp. 93; heavy paper, cloth; illustrated with 15 electrotypes of machinery; the Brecht Co., St. Louis. This thin book, of only ninety-three large type pages, selling for so large a sum as five dollars, is divided into eight short chapters. They are—Chapter I. Preservation of food products in air-tight receptacles. Chapter II. The vacuum theory, Exhausting or

Venting. Chapter III. Canned meats containers. Tin cans, glass jars. Chapter IV. Application of the theory to meat canning. Chapter V. Recipes and formulas. Chapter VI. By-products of the beef department, bones, extract of beef. Chapter VII. Miscellaneous, auto-vacuum, centrifugal dryer, canning of raw meat. Chapter VIII. Inspection and legislation.

We do not wish to be unfair to the author of this work, but, perhaps because of our exceeding familiarity with the facts which it brings out, we confess to being disappointed with its contents. The book, in reality, is only a primer, not a manual covering exhaustively the gigantic canning industry of the United States and other countries. Those who are not familiar with the facts which the book brings out—the primary facts in modern canning practice—can learn much from its pages as it speaks in unadorned, and, at times, hackneyed English of canning practices.

We understand the author is reputed to be an authority on meat canning. But at times he blunders into the worst of errors. "But of the rounds (of beef)" he says, "three pieces (of dried beef) are made in the standard cuts, the names of which are 'inside,' 'outside' and 'knuckle.' The knuckle is the best piece, owing to its shape; then comes the outside, then the inside." Every canning man in Chicago, who reads this, will guffaw. In the trade all agree that the "inside" is the best piece; next the "knuckle," last the "outside." As a matter of fact, the "inside" is more bulky and more tender. The "outside" is toughest for the reason of the great amount of work thrown on the adductor muscles of the thigh in locomotion of the animal. The writer of this review has seen, for years, at close range at the "rocker" the making of millions of pounds of corned beef hash in the great Chicago houses, such as Libby, McNeill and Libby's, Armour's, and Morris's, but has never seen "eggs" used in any formula, though Hamel says that eggs are used in the making of corned beef hash. Eggs would undoubtedly make a good addition for a corned beef hash formula; but the change would only be suitable for a recipe for Mrs. Rorer's Cook Book, where the culinary art is bared for use in domestic kitchens. Hamel's tables are at least questionable. For instance, it is not the custom to "process" ox tongues by "open vent for two hours," as he says, because the jelly would run out of the cans. We are told by the author that potted meats containing "small pieces, trimmings, etc.," have the "same nutritive value as other cuts." We wonder what Dr. Harvey

W. Wiley would say to this? Does not Hamel know that the Bureau of Chemistry of the United States, Department of Agriculture, has made analyses of the nutritive value of meat products and has tabulated the results in public documents? The author goes on to say this with regard to potted meats, which every canning man knows consist of comminuted odds and ends of every description. "Before the enactment of the recent pure food laws now in force in all civilized countries a few packers had given a bad reputation to this class of canned meats by using inferior materials in their preparation, but that time has passed and the consumer of government-inspected foods *knows that he is buying what is described on the label.*" Pshaw, if it were possible to describe on the label all that was in potted meats the meagre surface of the label could not contain it all. Hamel must know that the potted meat can offers a means to grind up scraps and oddments of every variety of cured and uncured meats, mix them with spices and sell them at a small sum for each small package. Potted meats are clean and wholesome; but the contents of a potted meat can are not "described on the label."

DR. C. B. FREDERICK, of Canton, Ohio, writes: "Find \$3 interest on the veterinarian's grandest asset. P. S.—Have not received my April REVIEW. Please send it—as I do not want to miss one number."

DR. A. O. KENNEDY, Columbus, Tenn., writes: "The REVIEW always comes as a welcome visitor to my table. I must congratulate you on the success you have made in making the REVIEW the best journal published; it is a boon to the profession."

DR. W. A. WALCOTT, Pymouth, Wis., writes: "Find inclosed check in payment for the REVIEW for the coming year. Our office force looks forward to its arrival each month, and would be somewhat disappointed if it failed to appear. I have ten bound volumes and value them the highest of anything in my library."

CORRESPONDENCE.

NOTICE TO RESIDENT STATE SECRETARIES.

FORT COLLINS, COLO., May 3, 1911.

MY DEAR DOCTORS:

You were selected in each instance, for Resident State Secretary, because you had the reputation for *doing things*. How many applications have you secured for membership? Please do not put this matter off longer, as applications should be in the hands of Secretary Marshall by the middle of July.

Of course you are getting your data together for report on things veterinary in your state.

Everything now points to the fact that the Toronto meeting will probably eclipse, in every way, all previous meetings of the A. V. M. A. Arrangements already perfected warrant me in making this statement. You may safely promise that the A. V. M. A. programme will be of unusual interest, that the meeting of Faculties and Examining Boards will have up for discussion and recommendation some things of vital importance to the profession, that the entertainment committee are going to show us the limit of Canadian hospitality, and you know what that means. The meetings will be held in the beautiful Convocation Hall, Queens Park, Toronto, in connection with the Toronto University.

Urge all eligible veterinarians to make application at once, and to attend the meeting at Toronto, which is held in connection with the pioneer veterinary educational institution in America.

From this time on let us keep busy.

Yours for success,

GEO. H. GLOVER,
President A.V.M.A.

FORT LEAVENWORTH, KANSAS, April 13, 1911.

Editors AMERICAN VETERINARY REVIEW:

I have read with some interest and a little bewilderment, not unmixed with a few grains of amusement the article in the April number of the REVIEW, signed D. Arthur Hughes.

I met the writer at one of the meetings of the A.V.M.A. in recent years and remember him as a cheerful, optimistic gentleman whose knowledge of the military establishment, as I soon discovered, was confined to the subsistence department.

At the time of which I write the Dr. was full of a scheme for the establishment of a veterinary school at Fort Riley. For what? The reinstruction of forty-two veterinarians of the regiments who at the time were engaged in a struggle for the recognition accorded every enlisted man but denied them—that of retirement and some kind of a status. One-third of these men had served 25 years each; one-third had served upwards of twelve years, and the other varied in service from three to eleven years.

After explaining the situation to the Dr. he still remained optimistic, for not knowing or understanding the real situation he could but see as through a glass darkly.

It is right and proper that the young veterinarian just joining should receive some military instruction and I believe that Fort Riley would be the best place for that.

Dr. Hughes has now another scheme for us, who, by the way, are still without a status, and suggests a meat inspection school for veterinarians of the army, not knowing, of course, that many of us have been inspectors in the Bureau of Animal Industry, which is an institution second to none and which deserves all the credit for the advance this country has made in scientific meat inspection.

The optimistic Dr. seems to believe that the veterinarians of the regiments are neglecting their opportunities in not hot-footing it on the trail of meat inspection and the diseases of horned cattle and swine.

The cheerful Dr. forgets, if he really ever knew, that the veterinarians of the regiments and the Quartermaster Department in our army have no more official weight than an inflated toy balloon. That their opinions are seldom asked and that their advice is rarely taken on any subject.

The Commissary General may appreciate the service of the Dr., for he is a wide-awake Commissary General, as we all

know, and is just as sharp as his name. He may send his officers and non-coms to Chicago, or Kansas City, or St. Louis for instruction in regard to beef, bacon and general subsistence supplies, but he could not have one of us detailed for duty in his department without robbing some regiment of its veterinarian.

I would like to say to the Dr. and to your readers that the veterinary service in our army will never be anything but a name until a veterinary corps is established.

An army is composed of privates, non-commissioned officers and officers. The veterinarian of the regiment is none of these, consequently he is a civilian and the voice of a civilian in affairs military is like to the sighing of the wind in the pine tops—air meeting with resistance.

In matters of a military character the civilian, be he ever so brilliant, must of necessity occupy the rearmost seat if one be vacant, otherwise he stands well to the left rear shifting his weight from one foot to the other while his whole mind is occupied in wondering what time it is. Give him rank and he is immediately conducted to a seat—one will be found for him—and he will be listened to with attention. The more rank you give him the better will be his seat and the more attention will be paid to what he may choose to say.

The veterinarians of our regiments have been shifting their weight from foot to foot since time immemorial and about the end of each session of Congress they take a look at the clock just in time to see a hand set it back two or three years.

“Every mickle makes a muckle,” quotes the Dr., but there is little prospect for the veterinary profession in our army unless he and our friends get together and do what the dental surgeons did so easily—persuade Congress to establish a corps.

If we ever do get a veterinary corps I sincerely hope that Dr. Hughes will be a member of it and that his optimism and cheerfulness may be the means of, at least, pointing the way to the betterment of the service.

The veterinary profession in the United States is influential enough to call upon Congress to recognize it through the Army, and I believe it should do so unless it is still lacking in pride and spirit. The work of Dr. Turner in securing the passage of the retirement clause was the herculean work of one man, practically unaided. It was accomplished through a spirit of personal pride, but this retirement was but a personal affair after all. What is needed is recognition of our profession and a

recognition that will place it above the plain of the "horse doctor" if I must say it.

GERALD E. GRIFFIN,
Veterinarian Third Field Artillery.

3621 INDIANA AVENUE, CHICAGO, May 16, 1911.

Editors AMERICAN VETERINARY REVIEW,
509 West 152d street, New York.

In furtherance of the movement of Dr. Glover, President of the A. V. M. A., for a uniformity in veterinary degrees the undersigned introduced a resolution at a meeting of the B. A. I. Veterinary Inspectors Association of Chicago, held on the 12th inst., which stated that "this association favors the movement inaugurated by Dr. George H. Glover, President of the A. V. M. A., for a uniformity in veterinary degrees and the delegate to the next meeting of the A. V. M. A. is hereby instructed to convey this action to that meeting."

The motion was passed unanimously and without discussion.

Would it not be a good plan for other associations to so instruct their delegates to the next meeting of the A. V. M. A.?

Personally I like the degree I now have, abbreviated V.M.D., and think there are several arguments in its favor, but am willing to abide by the action of the association.

Very respectfully,

H. D. PAXSON.

AGAIN we call attention to the observation of "Tuberculosis Sunday" by many of the churches of Lawrence, Mass. Dr. Winchester, the leading veterinarian of that place for the past thirty odd years, delivered a very interesting and instructive address on the nature of the disease and the modern methods used to suppress it, at the Y. M. C. A. A year ago the REVIEW published an abstract from Dr. Winchester's address delivered at that time. It is such men as Winchester that elevate the veterinary profession to the level of our sister profession while educating the people of his community on subjects so vital to their health and well being.

SOCIETY MEETINGS.

MEETING OF THE IOWA VETERINARY ASSOCIATION.

The meeting was called to order January 3, 1911, at the Pilgrim Hotel, by President Neiman, who introduced the Mayor, Mr. Ingerlude, who gave an address of welcome, which was responded to by Dr. H. E. Talbott. Minutes as published in the December, 1910, issue of the AMERICAN VETERINARY REVIEW, approved as published. President Neiman read his address. Report of the Secretary was read. Treasurer's report read, and a committee, composed of S. K. Hazlett, J. Potter and N. W. Repp appointed to audit same. They later reported favorably. Report was accepted and committee discharged.

Owing to error in initials, J. A. Bown was excused from dues to date. Dr. G. A. Blanche read his paper, "A Few Don'ts," which was quite thoroughly discussed, particularly that part dealing with anaesthesia.

Dr. L. L. Diller reported a case which brought out varied opinions on the use of bacterins. The discussion also brought out the use of influenza, anti-toxine and nuclein in a large number of cases.

Dr. D. M. Campbell read a paper, "Our Conception of Immunity," which was very freely discussed.

S. A. Deming reported cases of "Septicaemia from Injuries," and a number of cases were reported in the discussion following. "Strangles," "Purpura," "Ulcerated Tongue," "Split Tooth," "Malignant Oedema," "Air under the skin from an injury." Iodine externally and internally, with whiskey was very highly recommended for treatment.

Committee on Sanitation. Report read by Dr. F. H. P. Edwards. This was quite thoroughly discussed. Report was accepted and committee discharged. "Some Professional Blanks" was reported on by Dr. J. I. Gibson. The advisability of a uniform blank for all purposes was urged and that the secretary be authorized to keep same on hand, to be sold at a reasonable profit.

A committee, composed of L. O. Shipley, J. S. Potter, D. E. Baughman, J. I. Gibson, G. W. Blanche, was appointed to report

on such blanks; after some discussion they requested more time before reporting, which was granted, and committee is to remain intact for the year.

Mr. Geo. M. Judisch, Instructor of Pharmacy at Iowa State College, gave a talk on "Alkaloids and Glucosides," also demonstrating a great many chemical changes which take place.

Drs. W. B. Niles, P. O. Koto and R. Graham discussed "Method of Immunization Against Hog Cholera." This subject was discussed very freely by a large number of those present.

Dr. H. B. Tremain read a report of "A Case of Colic with Treatment." Dr. L. H. McLeod "A Few Cases of Colic." Dr. L. U. Shipley, "Some Cases of Stomach Engorgement." Dr. J. E. Vincent "Colic, Indigestion and Impaction." These four cases were discussed together and the subject was thoroughly gone over. The advisability of giving oil or other large quantities of medicine through a tube was urged. It was suggested that possible failure to pass tube was due to using a ten-dollar tube instead of one dollar. "Torsion of the Uterus," by Dr. E. A. Richardson, the report was read by the secretary and discussed quite freely. Successful cases of opening of abdominal walls in cattle and righting were reported.

The question of breeding cows with partial stenosis of the os at calving was discussed and negative view seemed to have the majority.

A special committee, composed of J. I. Gibson, — — Griffith and J. Dixon, to draft resolutions regarding the death of former President Dr. T. A. Shipley's son was appointed, a copy to be sent Dr. Shipley. Report accepted and committee discharged.

Dr. H. E. Talbott's talk was accepted as the Legislative Committee report. The Legislative Committee was instructed to spend up to one hundred dollars if needed to strengthen the veterinary law.

The secretary was instructed to notify each member of the association to co-operate with the committee and the Board of Examiners, through their legislators, in securing needed legislation. A vote of thanks was extended to the Pilgrim Hotel and the Commercial Club for the accommodations and courtesies extended the association. It was voted that the association hold a three-day session next November instead of the regular winter meeting.

Secretary was instructed to send registered letter to those in arrears that dues must be paid, or the penalty will be enforced.

The following were elected to membership: E. C. Scantlebury, R. E. Hanson, I. C. Brown, J. McKenzie, W. J. Cleveland, W. F. Christopher, W. H. Seright, G. R. Beavers, P. J. Hipschen, J. H. Weibel, D. B. Stewart, N. W. Rosengren, R. E. Larimer, J. M. Wilson, W. J. Embree, C. B. Riedel, H. S. Van Vranken, C. F. Beamer, A. R. Menary, J. M. Lichty, H. J. Sampson, H. D. Bergman, J. M. Newby, V. J. Smith, P. L. Talbot, V. C. Stutson, F. S. Cozzens, F. B. Copeland, R. Becker, C. G. Cole, C. A. Noggle, C. E. Garman, W. A. Moeller.

The rules were suspended and H. S. Murphy and W. W. Dimick were elected to membership.

It was voted to pay for the music rendered at the banquet.

A banquet was held at the Pilgrim Hotel, nearly eighty in attendance, D. M. Campbell acting as toastmaster; a number were called on for short talks, after which a question box passed and all were invited to ask at least one question. This was one of the valuable features of the meeting and a very profitable way to spend an evening.

Dr. D. M. Campbell asked a few questions about azoturia: Was the disease seen under the following conditions: A Pregnant mare, a breeding stallion, a fire horse, any horse after 10 days idleness, in a mule. Cases were reported of horses running in pasture, and one case after castration. Most of the conditions were reported as having been met with.

Election of officers resulted as follows:

President, Hal C. Simpson, Denison.

First Vice-President, C. E. Stewart, Chariton.

Second Vice-President, E. E. Howe, Des Moines.

Secretary and Treasurer, C. H. Stange, Ames.

Member Executive Committee, G. W. Blanche, Belle Plaine.

Report of the Committee on Resolutions:

Resolved, That it is with deep regret that we chronicle the loss of one of our valued and active members, occasioned by the death of O. R. Moyer, of Des Moines.

Resolved, That a copy of this resolution be spread on the records of the association and a copy be sent by the secretary to the family.

Resolved that the Iowa Veterinary Association heartily commend the splendid work of Rev. Kepford and Dr. Kime in their anti-tuberculosis campaign.

Resolved, That it is the wish of this association that the Iowa State Veterinary Examining Board be asked to make an

annual report at our meetings. (Signed) D. E. Baughman, L. U. Shipley, H. B. Treman.

HAL C. SIMPSON, *Secretary-Treasurer.*

THE VETERINARY ASSOCIATION OF MANITOBA.

(Excerpts from revised proof sheets of the annual report.)

The annual meeting of this association was held in the offices of the Dominion Department of Agriculture, Winnipeg, February 15, 1911. The meeting was called to order by President Dunbar, Winnipeg, thirty-two members being present at the opening of session.

After the secretary's report, Dr. J. A. Stevenson, delegate from the Manitoba Veterinary Association to the forty-seventh annual meeting of the A. V. M. A., at San Francisco, September 1910, was requested to report. His report was a most interesting one, including his trip in company with Dr. C. D. McGilvray, from Winnipeg to Seattle, where they met and joined the American Veterinary Special to San Francisco. The doctor then reviewed the entire meeting at San Francisco in a most interesting manner, with the result that he brought forcibly before the association the *importance* of attending the American Veterinary Medical Association's meetings, and did much toward stimulating a larger attendance at Toronto in August next.

Following the opening of the afternoon session was a discussion on "Hereditary Unsoundness of Stallions." Owing to the absence of Dr. Henderson, who was down on the program to open the discussion, the subject was brought before the meeting by the secretary, who read a letter received from the secretary of the Manitoba Horse Breeders' Association, asking the opinion of the Veterinary Association as to what diseases should disqualify a stallion for registration under the Horse Breeders' Act. It is needless to say that a most interesting and profitable discussion followed the introduction of this important subject, and finally seemed to centre around "Bog Spavin," which was finally summed up by Dr. Torrance as follows:

"Regarding this question of bog spavin we have got to bear in mind that it is not the question of absolute soundness which we have to decide upon. It is a question of hereditary unsoundness. Now a horse may not be absolutely sound in the hocks so

that you would not feel that you could give a certificate of absolute soundness for the horse; but this horse might not be affected with anything you would term hereditary. Are we all of the opinion that all bog spavins are hereditary? I must confess that I am not of that opinion. A large number of horses get this condition from overexertion and if we were to throw these horses down for the reason that their hocks were filled in, or heavy, we might do a great deal of injury to the horse breeders' business. I think, myself, that we should leave bog spavin in that list of diseases, but I think every one of us should use his own judgment in examining a horse as to whether he considered a puffiness of the hock was a hereditary condition, which that particular stallion would be likely to transmit to his progeny, and if he considered that it was not, I think that stallion should be passed."

Dr. W. Manchester, of Wawanesa, then presented a paper on "Hernia in the Foal," which was warmly received and very fully discussed.

Following Dr. Manchester, Dr. Dunbar made an address on the all-important subject, "Colic," which appealed strongly to the practitioners, who discussed it from all sides. "The Use of Polybacterins," by Dr. W. E. Martin, appealed equally to the general practitioners and was very thoroughly and exhaustively discussed, the consensus of opinion being that they are a material aid in the treatment of suppurative conditions.

Dr. C. D. McGilvray then presented a paper on "Sub-Parotid Tumors In Cattle," which showed that the doctor had given the subject considerable study. A very general interest was exhibited by the members in the discussion that followed the reading of the paper. Dr. J. D. Ross, of the Federal Meat Inspection Division, next presented a paper entitled "Post Mortem Discoveries," in which he described some interesting conditions. The paper was very interesting and instructive, as also were the specimens exhibited.

The literary program was completed by an address by Dr. Torrance on "Bier's Method of Treatment of Wounds in Horses." Many questions were put to the doctor at the conclusion of his remarks, and an enthusiastic interest in the subject displayed.

The meeting was brought to a close by the annual banquet, which was held in the Manitoba Hall in the evening. In the unavoidable absence of the president, the chair was taken by the vice-president, Dr. W. R. Taylor, of Portage la Prairie, and

there were also present the following members and visitors: Dr. W. A. Dunbar, Dr. W. E. Martin, Dr. M. S. Kennedy, Dr. H. Bradshaw, Dr. F. Torrance, Dr. S. Robinson, Dr. J. A. Stevenson, Dr. C. A. Stevenson, Dr. C. D. McGilvray, Dr. W. H. T. Lee, Dr. J. Mack, Dr. J. H. Part, Dr. A. E. Williamson, Dr. W. Manchester, Dr. McLeish, Dr. B. A. Bescoby, Dr. W. Hilliard, and Drs. J. D. Ross, A. R. Walsh, J. Shonyo, F. H. Jones and R. Harrison of the Federal Meat Inspection Division.

The chairman gave the toast of "The King," which was received with musical honors, and the following toasts were also proposed and responded to:

"The Old Timers," responded to by Drs. W. A. Dunbar, F. Torrance and W. E. Martin.

"The Newer Arrivals," responded to by Drs. H. Bradshaw, M. S. Kennedy, S. Robinson and A. R. Walsh.

"Dominion Government and City Veterinarians," responded to by Dr. C. D. McGilvray, J. A. Stevenson and W. Hilliard.

"Country Practitioners," responded to by Drs. S. Robinson, J. Mack and W. Manchester.

On the motion of Dr. Kennedy, seconded by Dr. S. Robinson, a hearty vote of thanks from the country members was accorded to their city brethren for their entertainment that evening.

The toasts were interspersed with a capital selection of songs and quartettes, which were greatly appreciated, and a most enjoyable evening was spent by all present.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.

The fourteenth annual meeting of the Minnesota State Veterinary Medical Association was called to order by President J. P. Anderson, at the Merchants Hotel, St. Paul, Minn., January 10, 1911.

The first session, Tuesday afternoon, was given over to routine business, registration cards being used, instead of calling the roll, which system is liked best by the members.

The evening session was very interesting, Dr. A. T. Kinsley, of Kansas City, being the principal speaker.

Wednesday's sessions were very interesting, as the subject of Milk and Meat Inspection in the Eradication of Tuberculosis from the State, was thoroughly discussed and a number of

other papers on up-to-date topics by different members of the association.

Thursday's program was carried out at the University with supper there, and a very enthusiastic meeting in the evening.

The clinic conducted at Dr. Cotton's Hospital, in Minneapolis, on Friday morning, with Dr. L. A. Merillat in charge of some very interesting subjects, closed the most profitable and interesting meeting ever held in Minnesota.

At the close of the clinic, a luncheon was served at "Crombies," after which a few after-dinner talks were indulged in by members of the association, with Dr. C. A. Mack acting as toastmaster.

New officers were elected as follows:

President, C. A. Mack, Stillwater.

First Vice-President, Dr. C. J. Sigmond.

Second Vice-President, Dr. H. C. Peters.

Secretary and Treasurer, G. Ed. Leech.

The semi-annual meeting will be held at Austin, Minn., July 12 and 13, 1911.

Respectfully submitted,

DR. G. ED. LEECH, *Secretary.*

THE MASSACHUSETTS VETERINARY ASSOCIATION.

The twenty-seventh annual meeting and banquet of the Massachusetts Veterinary Association was held at Young's Hotel, Boston, Mass., April 26, 1911, forty-four members and guests being present. Dr. Madison Bunker, the president, called the meeting to order at 5.30 P. M. Minutes of last meeting were read and approved. The application for membership to the association of Dr. W. H. Broderick, of North Cambridge, was read. Other routine business being disposed of, the following officers were elected to serve for the ensuing year:

President, Dr. A. S. Cleaves, of Gardner, Mass.

First Vice-President, Dr. W. M. Simpson, Malden, Mass.

Second Vice-President, Dr. Edwd. T. Ryan, Brookline, Mass.

Secretary and Treasurer, Dr. J. H. Seale, Salem, Mass.

The secretary-treasurer's report for the year passed showed the association to be in a very satisfactory condition, both numerically and financially.

The secretary read letters of regret for inability to attend the annual banquet from Dr. W. L. Williams, of Cornell University;

Dr. R. W. Ellis, of the AMERICAN VETERINARY REVIEW; Dr. Adams, of University of Pennsylvania; Dr. E. J. Marshall, State Veterinarian, Philadelphia; Dr. J. E. Ryder, Bureau of Animal Industry, Boston; Dr. J. G. Rutherford, Veterinary Director General, Ottawa, Canada.

Following this meeting members and guests sat down to dinner, Dr. Austin Peters acting as toastmaster for the occasion.

Among the guests present were Dr. Rowley, President of the Society for the Prevention of Cruelty to Animals; Mr. Fred. F. Walker, Chief of Cattle Bureau for Massachusetts; Mr. H. C. Merwin, President Work-Horse Parade Association, Boston, all of whom were called upon by the toastmaster to speak, the speeches proving very instructive and enjoyable. Other members of the association called upon to speak were Drs. Frothingham, Maloney, Babson and President-elect Cleaves.

J. H. SEALE, *Secretary.*

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of this association was held at the Bangor House, Bangor, at 8 P. M., April 12, 1911. The meeting was called to order by President Wescott and the following members answered to roll call: Drs. Dwinal, F. L. Russell, A. Jolly, W. L. West, C. W. Purcell, I. L. Salley, C. L. Blakely, A. L. Murch, G. F. Wescott, F. E. Freeman, H. L. Stevens, E. E. Russell, C. W. Watson, W. H. Lynch.

The minutes of the January meeting were read and approved.

The report of the Legislative Committee was favorable, there being considerable work to be done, it was not all accomplished this year.

The secretary's report for 1910 was read and accepted; there was an average attendance of fourteen members during the year, and a number of interesting papers read, which were followed by long discussions. Dr. F. E. Freeman, of Bangor, read a paper on "Punctured Wounds in the Feet." Dr. Freeman handled his subject intelligently and a long discussion followed. Our other chosen speakers of the evening were absent. It was moved and seconded that Dr. Murch, of Bangor, serve as a member of the Veterinary Examining Board. Voted to hold the next meeting at Rockland, July, 1911; papers to be read by Drs. H. L. Stevens, Jolly, Inglis and Robinson. Meeting adjourned at 10.30 P. M.

C. W. WATSON, *Secretary.*

NEWS AND ITEMS.

THE REVIEW office was honored on May 27th by a visit from Dr. and Mrs. Joseph E. Nance, returning from the Philippines. Dr. and Mrs. Nance left the Philippines, where the doctor had been in the B. A. I. service, last February, and have been traveling ever since, having been to China, through Continental Europe, Great Britain, and finally reaching New York, when they had been around the world. The doctor expects to enter private practice in the West.

THE major portion of the time at the June meeting of the Veterinary Medical Association of New York City will be devoted to the discussion of rabies. It is expected that some expert laboratory men will be present to discuss the question from that viewpoint. The meeting will be held on Wednesday evening, June 7th, at 8.30 P. M., in the lecture room of the New York-American Veterinary College, 141 W. 54th street. All are welcome; none can afford to be absent from this meeting.

The twenty-eighth annual commencement of Chicago Veterinary College took place on the evening of April 14th, in the auditorium of the Central Y. M. C. A., 153 LaSalle street, Chicago, where a splendid audience, consisting of friends, relatives and visitors, came to the exercises. One hundred and thirty-five men received the degree of Doctor of Comparative Medicine. The program consisted of an invocation, by Rev. J. Harmon Dutton, pastor of Weaver Memorial United Brethren Church, Dickens and Vidzie avenues, Chicago; president's address, by Dr. Joseph Hughes; conferring the degrees, by Dr. A. H. Baker; distribution of prizes, by Dr. Maximilian Herzog; presentation of class picture, by Dr. C. S. Renshaw; response in behalf of the faculty to presentation, by Dr. S. Merillat; vale-

dictory address by Dr. R. O. Byerum; doctorate address, by the Rev. J. Harmon Dutton. The program was interspersed with music from the Imperial Quartette of Chicago.

Dr. Hughes in his presidential address pointed out the advantages of the curriculum in the modern veterinary college to the undergraduate and complimented the class on its deportment, its studiousness and spirit while in college. Dr. Herzog presented the prizes and at the same time took occasion to amuse the audience with some humorous sallies at the expense of the recipients.

Dr. Renshaw, the president of the class, gave voice to the loyalty of the class to the college and its traditions. Dr. Merillat pointed out the lessons from college experience to be applied in every-day practical life in practice. Dr. Byerum expressed the emotions of his classmates at the hour of leaving college and bid farewell to faculty and students in behalf of the class. The Rev. J. Harmon Dutton in the doctorate address dwelt with emphasis upon four points: 1. Remember that aspiration, and not contentment, is the first law of success. 2. Remember that the elements which shall determine your success are within yourselves rather than without. 3. Choose goodness rather than greatness. 4. Do not forget to take God into account in the plan for your life:

We print below the prize winners, the honor list and the list of graduates in the class of 1911:

PRIZE WINNERS.

Highest General Average, obtained in all subjects—Gold Medal, A. F. Schrage. Anatomy—Gold Medal, E. Norton Tierney. Equine Practice—Gold Medal, A. F. Schrage; Honorable Mention, J. C. McMichael, E. Norton Tierney. Cattle Practice—Gold Medal, Wm. Madson; Honorable Mention, A. F. Schrage, E. Caldemeier. Surgery—Gold Medal, E. E. Pearson; Honorable Mention, J. T. Jennemann, E. Rosenthal. Lameness, Soundness, Shoeing and Balancing—Prize, J. P. Reynard; Honorable Mention, A. F. Schrage, E. Norton Tierney. Pathology and Bacteriology—Prize, E. Norton Tierney; Honorable Mention, C. F. Harrington, R. S. Hamilton. Meat Inspection—Prize, A. F. Schrage; Honorable Mention, E. Norton Tierney, F. Ludgate. Physiology—Prize, A. F. Schrage; Honorable Mention, E. Norton Tierney, E. E. Pearson. Materia Medica and Therapeutics—Prize, J. P. Reynard; Honorable Mention, E. Norton Tierney, A. F. Schrage. Dairy Inspection, Milk Hygiene and Medical Botany—Prize, A. F. Schrage; Honorable Mention, F. A. Kretsch, R. O. Byerum. Chemistry—Prize, A. F. Schrage; Honorable Mention, C. F. Harrington, C. H. Hart. Histology—Honors, S. L. Pilgrim, J. P. Reynard, A. F. Schrage, E. Norton Tierney. Parasitology—Prize, E. Norton Tierney; Honorable Mention, J. P. Reynard, Wm. Madson. Canine Practice—Prize, R. S. Hamilton; Honorable Mention, E. F. Karstendiek, S. L. Pilgrim. Dentistry—Prize, F. Ludgate;

Honorable Mention, A. F. Schrage, F. E. Hagy. Stock Judging—Prize, R. S. Hamilton; Honorable Mention, A. F. Schrage, B. F. Ward, Jr.

HONOR LIST.

A. F. Schrage, E. Norton Tierney, F. M. Wilson, F. A. Kretsch, R. S. Hamilton, E. H. Bancroft, C. J. Wright, H. M. Kirk, C. F. Harrington, Wm. Madson, H. E. Horel, W. B. Holmes, L. S. Crump, H. L. Brown, E. Callde-meier, C. C. Franks, L. W. Cleland, H. E. Tyner, L. A. Dibert, B. F. Ward, Jr., S. L. Pilgrim, N. C. Wheeler.

GRADUATES, SESSION, 1910-11.

J. F. Abel, Iowa; F. C. Aiken, Wisconsin; C. N. Alkire, Wisconsin; F. E. Allen, Illinois; J. T. Alston, Mississippi; W. S. Asquith, Iowa; R. M. Bacon, Iowa; R. O. Bagley, Iowa; E. E. Bancroft, Vermont; F. J. Barker, Iowa; J. V. Bassett, Wisconsin; T. M. Bayler, New York; O. G. Beck, Illinois; R. W. Bernhardt, Illinois; L. E. Booth, Illinois; H. L. Brown, Indiana; R. O. Byerum, Colorado; E. Callde-meier, Kentucky; J. S. Campbell, Illinois; O. D. Campbell, Illinois; L. W. Cleland, Wisconsin; J. Cohn, Iowa; A. M. Conquist, Iowa; E. M. Coover, Pennsylvania; L. S. Crump, Wisconsin; A. B. Curtice, Michigan; G. R. Dafeo, Michigan; R. D. Daggett, Wisconsin; G. D. Darrah, Rhode Island; John Davies, Wisconsin; L. A. Dibert, Pennsylvania; J. A. Dickie, Michigan; C. A. Dionne, Illinois; R. B. H. Drum, Illinois; I. W. Edwards, Massachusetts; W. C. Eickstaedt, Illinois; A. J. Erickson, Wisconsin; W. J. Ervin, Rhode Island; J. Roy Fauver, Illinois; E. M. Feelyater, Wisconsin; H. J. Fickensher, Illinois; F. J. Field, Illinois; H. T. Fiske, Minnesota; J. H. Forsyth, Michigan; J. H. Fowlie, Illinois; B. E. Frailey, Illinois; C. C. Franks, Minnesota; E. B. Fredine, Minnesota; L. M. Getz, Iowa; J. A. Grosskreutz, Illinois; R. C. Griffith, Ohio; N. E. Gubser, Illinois; C. A. Gurnea, Illinois; R. S. Hamilton, Michigan; C. F. Harrington, Iowa; E. A. Harris, Wisconsin; C. E. Harry, Illinois; F. E. Hagy, Illinois; C. H. Hart, Canada; A. H. Havreberg, Minnesota; L. W. Head, Illinois; N. J. A. Hederen, Illinois; K. F. Hinckley, Minnesota; Geo. Hinkley, Jr., Illinois; Geo. H. Hill, Illinois; W. O. Hilyard, Illinois; C. M. Hoard, Texas; H. E. Horel, Wisconsin; L. W. Horn, Ohio; C. F. Hobbs, Kentucky; H. H. Hobbs, Kentucky; W. B. Holmes, Virginia; Guy Hughes, Iowa; J. M. Jehle, Tennessee; J. T. Jennemann, Missouri; E. E. Johnston, Iowa; A. E. Joseph, Illinois; J. J. Jones, Nebraska; E. F. Karstendiek, Louisiana; F. M. Kearns, Indiana; H. M. Kirk, Wisconsin; F. A. Kretsch, Minnesota; V. H. Knutzen, Illinois; C. O. Kroener, Indiana; W. W. Lawson, Indiana; G. E. Lewis, Wisconsin; M. D. Loy, Kansas; Frank Ludgate, Iowa; R. J. Mackey, Kansas; Wm. Madson, Wisconsin; J. C. McMichael, Illinois; O. A. Meyer, Illinois; J. E. Meixner, Illinois; F. S. Miller, Wisconsin; G. G. Miller, Iowa; C. W. Mooberry, Illinois; John Moran, Illinois; Wm. P. Neuman, Minnesota; A. R. Nielsen, Iowa; F. T. O'Brien, North Dakota; C. B. Palmer, Pennsylvania; E. E. Pearson, Minnesota; W. W. Pease, Pennsylvania; C. D. Phelps, Iowa; S. L. Pilgrim, Wisconsin; C. E. Price, California; C. F. Proper, Iowa; R. B. Raymond, Michigan; C. S. Renshaw, Iowa; Wm. F. Reynolds, New Jersey; J. P. Reynard, Iowa; R. C. Ripple, Iowa; E. Rosenthal, Wisconsin; H. J. Satorius, Illinois; A. F. Schrage, Wisconsin; E. W. Schroeder, Wisconsin; R. N. Scott, California; John Sheridan, New Jersey; E. A. Shikles, Missouri; G. F. Smith, Mississippi; C. W. Sutherland, Kentucky; F. W. Sutcliffe, Wisconsin; M. W. Tedrow, Illinois; E. N. Tierney, Kentucky; H. Tuckwood, Wisconsin; H. E. Tyner, Iowa; Wm. C. Vollstedt, Iowa; B. F. Ward, Jr., Illinois; R. R. Washer, Kansas; O. F. West, Oklahoma; N. C. Wheeler, Illinois; P. E. White, Illinois; F. M. Wilson, Iowa; F. J. Wolma, Illinois; C. J. Wright, Illinois.

AMERICAN VETERINARY REVIEW.

JULY, 1911.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, May 15, 1911.

RADIUM TREATMENT REJUVENATES PLUG—FRENCH VETERINARIAN THINKS HE HAS FOUND ELIXIR OF LIFE.—“Rejuvenating qualities in radium have been discovered by Prof. G. Petit, of the Veterinary School of Alfort. He injected two milligrammes twice in the jugular vein of a very old horse with surprising effects. The animal seemed immediately to gain a new lease of life. It put on flesh, became frisky, considerable traces of sulphate of radium appeared in the blood and the red globules increased in number. The injections, Doctor Petit says, produced lasting radio-activity of the system. He thinks it highly probable that a radio-active serum may be obtained in this manner, which will arrest to a certain extent the advance of physical decay in human beings. In other words, radium may be made the base of a real elixir of life.”

This short article was published a while ago in New York, and it was sent to me by a friend who asked me to find out if there was any basis for the statement, which, highly colored and exaggerated as it was, might cover a small fact upon which the exaggeration was based. I obtained the information that my friend desired, sent it to him, and called his attention to the

fact that I had already alluded to the subject in the REVIEW in July, 1910.

To-day I am pleased to relate concisely the very interview of the learned professor, which has given occasion for the conclusion of the heading of the American article, interview concerning the experiments made by the doctor and also the radio-active serum and the intravenous injections of radium which Petit has experimented with and which he writes me: "It is excessive, alas! to consider as susceptible of giving a new state of youth," or make the base of a real elixir of life.

Prof. Petit says: "What I have done so far in relation to radium, and its salts, with the very distinguished collaboration of Doctors Gaboin and Dominici, has already been published in a note to the Academie des Sciences in March, 1910, and in an article of the *Recueil de Médecine Vétérinaire* in May of the same year.

"We have demonstrated, with our experiments on the horse, the innocuity of the intravenous injections of sulphate of radium used actually in human medicine against some infectious diseases. A horse received in two doses two milligrammes of radium in the jugular vein; it is relatively a very large dose. Radium injected in the blood has given rise to no toxic phenomena; on the contrary, our very old horse has seemed rejuvenated (*Il s'en est trouvé comme rajeuni*). He has gained weight, become more frisky and presented all the signs of a better nutrition. The red corpuscles of his blood have increased in number. A certain portion of the radium is eliminated with the urine, but it is only progressively decreasing and finally becomes infinitesimal. Our horse possesses a noticeable proportion of radium, which is at least retained partially in its organism. Intravenous injections of radium leave in the organism a lasting radio-activity."

Prof. Petit and his collaborators have thought that as a consequence of this presence of particles of radium in the blood, the serum of this blood might acquire specific therapeutic properties, and from this idea came the radio-active serotherapy.

The serum of a horse treated with injections of radium is then a radio-active serum, whose properties are now the object of serious experiments on animals affected with various diseases, cancer or tuberculosis. But, if so far no positive curative results can be spoken of at present, encouraging as some may be, it may not be expecting too much from the radio-active serum to at least modify the organism of a sick individual, man or beast, and to arrest or limit the infectious pullulation, say cancerous, for instance.

Such is concisely the interview that was obtained from Prof. Petit, related in a French paper and reproduced with ornaments in the *New York Journal*.

That very interesting facts can be looked for is certain, and as soon as they are made public the readers of the REVIEW will have the primeur of it. But in the meanwhile our friends must not expect an elixir of life nor one to be able to grant a new lease of youth.

* * *

MALIGNANT DISEASES IN BOVINES.—Notwithstanding all that has been said on the subject of statistics, in general, it cannot be denied that in many circumstances they have a certain value and are almost always interesting. In the *Journal of Comparative Pathology and Therapeutics*, Mr. I. M. Trotter, M.R.C.V.S., a practitioner in Glasgow, has presented one on the prevailing malignant diseases of bovines, which, limited to a very small number of animals as it is, presents, however, facts of great interest.

The inquiry was undertaken to ascertain the age, sex and organ incidence of the disease in bovines affected with malignant neoplasms. The number of individuals which served for the gathering of the observations is small, it is true—only 300—but with all that, the elicited facts are no less valuable.

In relation to the sex, the first point observed, was that out of the 300, the number of animals diseased was 2 steers, no

bull, and 298 cows. These figures have only a relative value. As if the human statistics can be better compiled on the question of the influence of sexes, one must bear in mind that in this inquiry Mr. Trotter had more females than males, and that among these, two had been castrated. Evidently, taking this into consideration, one might be also tempted to say with the writer: "The mere fact that two cases occurred in castrated males and none in non-castrated, raises the interesting question: whether castration renders animals more prone to malignant diseases?" Evidently the small number in this observation does not permit of any conclusion.

On the question of the age, the 300 animals were divided as follows: 1 was affected, being aged 15 months, 1 when 18, 1 when 3 years, and in 297 which were aged.

In relation to the condition, the whole number gave disease in 74 animals in poor condition, in 202 with those that were in fair condition, and of those which were in good condition there were but 24. Although malignant diseases cause emaciation, it would not be inferred that because the largest number of the 300 animals were found among those in poor and fair condition; this was the natural consequence of their being affected. The selection having been made without any special attention being paid to their general condition.

The classification of the tumors comes next. Of the 300 animals under observation, 279 had carcinomas and 26 had sarcomas, forming a total of 305 cases of primary neoplasms. The additional cases being accounted for by the fact that four animals were found affected with more than one primary tumor; 296 animals had one primary tumor, 3 had two and 1 had three.

The general distribution of the organs and tissues which were primarily affected were given in a table as follows: 222 were in the liver, 25 in the rumen, 16 in the thymus, 10 in the intestines, 8 in the lungs, 5 in the ovaries, 4 in the eye, 3 in the vulva, 3 in lymphatic glands, 1 in the kidney, in the gall bladder, in the uterus, in bones, in the skin, in fascia, in salivary glands, and 2 which were undetermined.

After these valuable considerations, Mr. Trotter passes a comparative review of the frequency of malignant tumors in the human and in bovines, which may bring into prominence some of the hypothesis promulgated from time to time in relation to the causation of malignant disease. Some observers attribute the frequency of cancers in man to an increased flesh diet, and, in support of their contention, assert that they have never met with a case of malignant disease in vegetarian. But, unfortunately, a pure vegetarian diet is not a preventive against malignant disease. If it were so, then bovines would not be affected as they are strictly vegetarians.

Again, it has been ascertained that the "period at which cancer is most likely to occur is when the potentiality of all proliferation is declining to its ultimate cessation. Of which the thymus gland is a good example." Trotter has found 16 cases among his 300 observations.

Cancer of the udder and of the uterus is frequent in the human family. In the 300 cases of Trotter, none were found in the mammæ and only one in the uterus.

A cause which has lately been taken in great consideration, and to which I have alluded in a previous article, is also mentioned by Trotter, viz.: chronic inflammation.

After relating the instances of the presence of cancer affecting the lips, tongue, mucous membrane of the mouth and the cheeks in man by the constant irritation set up by clay pipes, etc., or, again, those observed as produced by the irritation through chewing a mixture of betel leaves, areca nut, tobacco and slaked lime, Trotter says: "The irritation set up by the presence of parasites appears also to have a direct bearing on the causation of cancer. In Egypt, cancer of the penis and bladder is frequently associated with bilharzia hæmotobia. Borrel has recorded instances in which carcinomas were associated with nematodes and cestodes. Bashford had one case of carcinoma of the small intestine of a mouse at the site of attachment of a tape worm. Bridré and Conseil have found primary sarcoma of the liver in which there were cystic fasciolaria.

* * * Traumatic and chronic irritation seem, then, to occupy an important place in the causation of cancer."

The article of Mr. Trotter is completed by a detailed list of condition, age, sex, nature of the lesions and classification of the 300 cases which have been the object of this important inquiry. It is a valuable addition to the history of this pathological condition.

* * *

IODINE TREATMENT OF ACTINOMYCOSIS.—Since 1885, when Thomassen made known the effects and results that he had obtained in the treatment of actinomycosis with iodide of potassium, it was almost a revelation for veterinarians as well as for human physicians, as to that date there existed no definite or positive indication for the treatment of this affection. However, as the enthusiasm of the beginning was subsiding, it was observed by some that the efficacy of the treatment was not so general, but that, on the contrary, it was only in some specific manifestations that iodide was sure to be successful.

Every one knows that the disease may localize itself in different varieties of tissues and there is almost unanimity in grouping these localizations in actinomycosis of soft tissues, such as the tongue, the parotids, the mucous or serous membranes, etc., and the actinomycosis of bones, for the lower jaw, in the molar region and for the upper, round the incisive teeth.

As the result of these subdivisions, it is now well admitted that the efficacy of the treatment has almost never been found at fault with the actinomycosis of soft tissues, while in the treatment of the bony lesions the results have varied very much, and the surgeon is often obliged to interfere so as to assist the medicamentous action of the iodide.

After making these remarks before the Société de Pathologie Comparée, Mr. Leduc related two very peculiar cases which were followed by effects which have never been recorded.

In two cows the symptoms of lingual actinomycosis were well developed: hard, stiff and hypertrophied tongue, difficulty

in its motions, difficult prehension of food, abundant salivation, presence of small, yellowish characteristic tufts, etc.

The treatment for these two animals was the same: 10 grammes of iodide of potassium every day for twenty days. The results, improvement after a few days of treatment and in a month complete recovery, barring relapse. This did not take place for two weeks, but then came the unexpected manifestation. After the disparition of all the lesions of actinomycosis, there was every reason to believe that the tongue, once returned to its normal size and functions, would remain as such. On the contrary, it was then that the beginning of the atrophy of the free portion of the tongue was noticed. Little by little then, contracting in a chronic manner, the tongue became smaller and indurated. Two months after the treatment had stopped its free end was shrunk far back from the incisive arch. Prehension of food and complete mastication was impossible. Then the middle portion of the organ and also the base shrunk by degrees more and more in the lingual canal and the entire organ became stiff, dense, hard and perfectly useless. As a final consequence of this severe condition both animals had to be disposed of at once.

In veterinary medicine, should such late sequelae of the iodide treatment show itself in case of actinomycosis of the tongue, it is necessary to advise immediate slaughter before the condition and loss of flesh should be too great.

These serious sequelae have never been mentioned before and deserve the attention of practitioners.

* * *

UMBILICAL HERNIA IN THE HORSE—Taking it from the *Archiv für Tierheilkunde*.—Leclainche records a new treatment for umbilical hernia, by Prof. Casper, which is a modification of the method generally used. First of all, Casper relates the anatomy and embryogenic development of the umbilical ring; he studies the causes of the malformation or of this accident and attributes a great part of it to hereditary transmission in horses as well as in dogs. The diagnosis is ordinarily easily

made, but the prognosis may vary with the age. More than 50 per cent. of the colts affected recover spontaneously in the first months of their lives; methods of contention assisting more or less in the recovery. Later, surgical interference is necessary.

For Casper, the methods of interference are palliative, bloodless or surgical. Bandages are useless, uncertain and inefficacious. Blisters are rarely indicated; the inflammation which accompanies these applications, as well as those of mustard poultices, cantharides, collodium, etc., cannot remove the hernial sac. Sulphuric, nitric or chromic acid may promote sufficient inflammation and even necrosis of tissues which, by the cicatrization that follows, may be accompanied with retraction of the tissues sufficient to bring about a successful recovery. However, all these means are good only with small-sized hernias. Salt water injections under the skin, elastic ligature, suture of the sac, clamps, have their advocates among veterinary practitioners. But for Casper, the method that he recommends is that patronized by Vennerholm.

“The animal is submitted to a severe regime for several days previous to being operated. One or two evenings before, he receives arecoline and is muzzled to prevent him from eating his bedding. For the operation the animal is laid on his back, with the hind legs hobbled and stretched backwards so as to expose the operating field to best advantages. The hernial sac and surroundings are shaved and washed with sublimate solution. An incision of the skin only is made from forwards backwards. The cutaneous flaps are dissected right and left to free them from the deep envelopes of the protruding mass. The dissection is carried out as far as the umbilical ring. The sac is emptied of its contents by pressure of the fingers and an assistant holds it vertically while the operator applies, as near as possible to the place where the pressure of the fingers is made, a small clamp or a long-jawed pressing forceps. Above this, the opposite faces of the sac are sutured tightly without opening the sac. Amputation is made below the suture and the clamp removed. The wound of the skin is closed with sutures. Casper

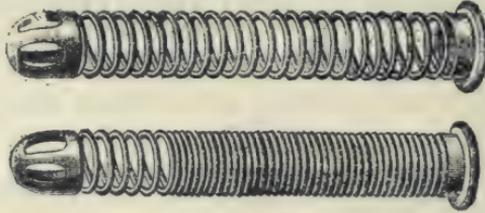
uses a wooden or aluminum clamp which is taken off after the operation, or is left in place for twenty-four hours. Every day the wound is coated over with tincture of iodine. Two or three weeks after the operation the animal is allowed to go loose. This method has given excellent results and, according to Casper, is preferable to any radical operation when peritoneal infection is always more or less possible.

* * *

FLEXIBLE METALLIC DRAINING.—It is to Chassaignac that is due the great innovation of resorting, in surgical practice, to the rubber draining tube to replace the old tents of gauze or muslin used for years before. The great advantage of the rubber tube is in its being supple and flexible; but this quality is, unfortunately, sometimes an objection. A drain of small size may be squeezed between the edges of the wound, it may be twisted in a tortuous tract, or its cavity be squeezed flat under the pressure of the dressing, and in those conditions the escape of the pathological secretions cannot take place. To remedy these possibilities some surgeons have resorted to an old practice and had more rigid drain tubes made in ebonite, in hard rubber, glass or metal, to which various forms and calibres were given. These recalled the old "grooved tents" of Ambroise Paré, sort of perforated canulas, made of gold, silver, or even lead, which were used to allow the flow of all pathological discharge. Those modern inventions, however, just on account of their rigidity and their constant form, difficult to accommodate themselves to tracts more or less anfractuous, irregular or curved, have had only a very limited use.

Dr. Lemaire, in the *Presse Medicale*, has given the description of a new drain tube which he believes will fulfil all the desiderata with almost perfection and which, after many trials, he has finally adopted as the desirable instrument, viz.: one formed by a spiral metallic spring, ending in one end with an oval cap provided with wide openings or fenestrae, and at the

other with a small border with one or two holes to fix the instrument. By the nature of the metal used and the diameter of the wire employed for the spire, any degree of elasticity can be obtained from the suppleness of the rubber to almost the



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stiffness of a metallic solid tube. With such a drain, a bend likely to produce the closing of the tube is not to be feared, its cavity cannot be squeezed flat, and it is principally in cases where such eventuality can be met that Lemaire's instrument will find its indications.

* * *

HIPPONA, THE PROTECTING DIVINITY OF EQUINES.—From the *Archiv. Scientif.* of the Royal Veterinary Society of Italy, the following variety is interesting:

The greatest part of the documents relating to Hippona, the protecting goddess of horses, donkeys, mules and jackasses, has been transmitted by Christian writers, who in their struggle against paganism, mention the religion of Hippona as one of the most ridiculous and disgraceful. The oldest mention of this religion goes back to the end of the second century of our era.

A Greek writer, Argesilas, in the history of Italy, states that a certain Fluvius Stellus, having a special dislike for women,

had sexual connections with a mare and became the father of three girls, which he named Hippona.

Juvenel speaks of a Roman consul, who, having the low habits of stable men, swore only by Hippona and the divinities painted on the walls of stables.

Apulius, in his *Metamorphoses*, mentions the fact of a man, changed as a donkey, which remains in ecstasy in a stable, before a fresh rose deposited on the feet of the statue of Hippona.

Mimuius, Felix and Tertullian reproached to heathens their adoration in their stables of donkeys and other beasts instead of Hippona, and Prudentia speaks of this deity as a pagan divinity of inferior order.

Hippona was held in veneration by mule drivers, stablemen, coachmen, civil and military horsemen. However, in Rome its adoration did not go back to high antiquity, because it was a divinity essentially Celtic and on that account it must have been introduced quite late in Roman religion by soldiers and stablemen coming from Gauls. It is indisputable that Gauls were great raisers of highly renowned horses. Hippona protected them against all diseases which could attack them, and its presence in a stable had a prophylactic value. Her features were generally painted on the doors of stables, inside the windows and little statuettes representing her were placed in special spots.

In rural paintings Hippona was represented as a woman, dressed with a toga dropping down to her feet. Near her were two or three horses, donkeys or mules over which she extended a petting and protecting hand, while with the other she fed them. She is also frequently represented with a sceptre in her hand. She is always surrounded with horses. There are in Italy some twelve paintings representing her.

In marble and in bronze statues the form varies. The goddess is seated on a horse, generally on the right, as women did in antiquity. She is holding a sceptre or a basket of flowers and has a dog or smaller animal laying at her feet. The horse that she rides is a common, low-bred animal with thick neck, Roman face and thick, heavy, hairy tail. She is almost always alone:

There are only five small statues of her in which the mare has a sucking colt with her. The horse is ordinarily represented trotting; rarely walking or at rest. In two representations the horse is shown galloping. All these statuettes are small. There are about sixty of them in Italy.

About thirty-eight inscriptions relating to the cult of Hippona have been discovered in Italy, Spain and Germany. On most of them the goddess is associated with other divinities. All are dedicated to Roman warriors.

* * *

INTERNATIONAL CONGRESS OF TUBERCULOSIS.—The seventh international congress will be held in Rome from the 24th to the 30th of September of this year, under the high patronage of their Majesties the King and the Queen of Italy and under the Presidency of Prof. Guido Baccelli.

The work of the Congress is divided into three principal sections: 1. Etiology and epidemiology of tuberculosis. 2. Pathology and therapeutics of tuberculosis (medical and surgical). 3. Social protection against the disease.

The opening of the congress will take place with the presence of their Majesties in the great amphitheatre of the Augusteum, and the meetings shall be held in the Castle of St. Ange.

The cotisation to be paid is 25 liras (a little over five dollars) for the members of the congress and 10 liras for each member of their family. The card of membership will give right to reduction on Italian railroads; also to the admission to the exhibition and festivals which will be given and to the excursions and receptions.

Address post-office order to General Secretary at Via in Lucina 36, Rome, Italy.

* * *

BIBLIOGRAPHIC ITEMS.—The forty-seventh annual meeting of the American Veterinary Medical Association was held in San Francisco last September and the proceedings, edited by

Dr. R. P. Lyman, chairman of the publication committee, have reached my office in due time.

It is a handsome book, larger than all its predecessors, and its contents show that the promises made by the committee of organization of the meeting were more than filled.

Of course, all are acquainted with everything that took place in those celebrated days of September, when every one could and did take advantage of all the varieties and opportunities that were offered, and it is not necessary to recall all the good time the attendants had! If one wishes to refresh his mind let him read the concise part, "Social Features," as presented in the book. Of course, the new volume is very similar in aspect to those published in previous years, and while its larger size suggests larger contents, one finds, after all, nearly the same arrangements—preliminaries of the meeting, various addresses, all the official reports, the papers and discussions, the clinic, etc. There are, however, some special points which make this volume differ from the others and which call for compliments for the new arrangement and classification of the chapters treating of "Papers and Discussions," although those last are missing. The first part of this relates to the papers presented by Drs. Hoskins, Glover, Noack, Ward and Baker, Bitting, Roberts and Haring. And then, arranged under the head of classification of Pathological Division, Medical Division, Milk Hygiene Division, Surgical Division, the various papers relating to diseases or considerations which will refer them to their specific classes. This is, no doubt, an improvement on the arrangement of previous volumes.

It is not necessary here to mention the rich collection of the many papers that these two chapters contain. They are so numerous and cover so many subjects. But I cannot let the acknowledgment of the receipt of these proceedings pass without calling attention (concisely as I must for want of space) to the paper of Dr. Hoskins and that of Dr. Glover.

To the former I may be permitted to say that "His Nation's Loss" with his "tribute to fallen leaders" is one of the very

best that has been presented to any meeting of the American Veterinary Medical Association. It was a noble gesture to recall the good that had been done by those departed friends, who did love our profession so much.

To Dr. Glover, I hope he will permit me to congratulate him for his paper on the "Uniformity in Degrees and Matriculation Requirements for Veterinary Colleges." While I am reading it, it seems as if I was hearing the voice of "John Smith" telling the association of "his misfortunes" and asking the association why did she not come to his help. John Smith asked justice in 1907; it is gratifying to see the newly elected president of the association call for a protection and a reform demanded so long ago.

The seeds thrown by John Smith four years ago are beginning to bear fruit.

In preparing this new addition to the library of veterinary science in America by the publication of this volume, Dr. Lyman and his associates of the committee on publication have succeeded admirably. Handsomely printed, well illustrated, neatly bound, the proceedings once again have come to tell of the energy and professional enthusiasm with which the veterinarians of America are pushing their way forward on the road of all scientific progress.

Certainly the San Francisco effort must have been a grand success!

* * *

THE DIAGNOSIS OF GLANDERS BY COMPLEMENT FIXATION is the subject contained in Bulletin 130, issued by the Bureau of Animal Industry. It is the report of experiments carried out by the members of the Pathological Division: Drs. John R. Mohler, the Chief, and Adolph Eichhorn, the Bacteriologist.

As Dr. Melvin, the Chief of the Bureau, says: "Since the discovery of the glanders bacillus in 1883, many efforts have been made to find a reliable method of making an early diagnosis of the disease," and as the mallein test and the agglutina-

tion have proved insufficient to be entirely satisfactory, it has been thought necessary for the Bureau to test the German method of Schutz and Schubert, viz.: that of the complement fixation, which has recently been introduced in veterinary science and which has been principally published only in foreign periodicals.

This little pamphlet gives: 1. The definition and explanation of the process of hæmolysis. 2. The deviation or specific complement fixation. 3. The method of obtaining serum of animals to be tested. 4. The preparation of the antigen. 5. The complement fixation test with its application and controls. 6. The controlling of glanders in an infected stable. 7. The results of practical tests with complement fixation.

This long enumeration of the various points presented by this bulletin will permit anyone to learn how to apply the test and to appreciate the four conclusions drawn by the authors:

“1. Horses in which the serum produces a complete fixation of the complement in the quantities of 0.1 c. c. and 0.2 c. c. should be considered as glandered.

“2. Horses in which the serum gives a complete fixation in the quantity of 0.2 c. c. and an incomplete fixation in the quantity of 0.1 c. c. should likewise be considered as glandered.

“3. Horses in which the serum produces an incomplete fixation of the complement in the quantities of 0.1 c. c. and 0.2 c. c. should also be considered as glandered.

“4. Horses in which the serum shows no fixation of the complement in either tube should be considered as free of glanders.”

This is another valuable means of diagnosis which the Bureau makes known to veterinarians of America.

A. L.

TORONTO AWAITS YOU IN AUGUST.

No one can read the advance report of the local committee of arrangements on page 464 of this issue of the REVIEW, following the reports of the heads of the several divisions of the

program, of the A. V. M. A. without becoming enthused over the approaching meeting and possessed of a desire to go to it. That is as it should be; Toronto awaits you; her beautiful, spacious Convocation Hall, with its comfortable and restful opera chairs, are ready to receive you and hold you in their comfortable embrace, while you listen to the very excellent papers that will be presented and the profitable discussions that they will provoke. And a perusal of the program, which has resulted from the reports of those in charge of each of the five divisions to date, will surely convince you that there will be much of interest to listen to and to discuss by veterinarians in *any* capacity or line of work. The surgical program (which interests *every one*), is especially full of interesting topics that promise their full share of discussion. Among other things, it will be interesting to hear an expression from one of the foremost veterinary surgeons in England, on an operation that is conceded, by the title of his paper, to be original, with one of the foremost veterinary surgeons in America. We feel assured that Prof. Hobday's presence at the coming convention of the American Veterinary Medical Association and his contribution to its literary program, will add much to the interest and value of this meeting, from which no one can afford to absent himself.

Aside from the subjects included in the five divisions, other matters of vital importance will be discussed at the Toronto meeting, that should receive the earnest consideration of every veterinarian throughout the entire country, and he should give it that earnest consideration *now* before he goes to Toronto, so that when he gets upon his feet to discuss it he will be prepared to do it the justice it deserves at his hands. We refer to the subject of the uniformity of a veterinary degree. There is likely to be a diversity of opinion on all the points involved, but perhaps more particularly on the point of the particular degree to be adopted. That should be weighed carefully beforehand so that each one may go there, not prejudiced, but prepared. Drs.

Hughes and Schwarzkopf have furnished some excellent thoughts on the subject that will bear rereading.

And now, turning from the more earnest questions, let us give a moment's thought to a no less important subject, our "creature comforts." The spacious and palatial Prince George Hotel, situated at King and York streets, has been selected by the local committee as A. V. M. A. headquarters, and those desiring to stop at headquarters, will probably add to their comfort, by writing the management of that hostlery at once for reservations.

The locations and prices of other hotels will be sent to each member as soon as the local committee has prepared a list of those thought desirable.

THE SPECIAL TRAIN FROM NEW YORK.

The great success of the "American Veterinary Special" to San Francisco last year has clearly demonstrated the added pleasure of a trip by such a plan; and, while our present objective point does not lend itself to the formulation of a plan whereby *one* special can be arranged for practically the entire convention as on that occasion, it is possible to run special convention cars (or possibly in some instances trains) from points where enough people can be congregated for that purpose; and we would urge such a plan wherever it can be accomplished. With the object of stimulating a larger attendance by making the pleasure of the outing begin at the very onset, we have planned to run a "special" from New York City which will be able to take care of the members and visitors from Greater New York and the cities of New Jersey and adjoining states, New England, and the Empire State all along the line, as well as all who may come to New York from Western points en route to Toronto. We propose a round trip that will form one of the most delightful vacation excursions imaginable. Our plan is to leave New York, Grand Central Terminal, at 6.30 p. m. of August 21, stopping at One Hundred and Twenty-fifth street station at 6.40 to pick up those from the Bronx and upper West Side, reaching Albany at 9.55, where we will be joined by the

delegation from New England, who will have left Boston at 2 p. m., coming over the Boston & Albany, stopping at Worcester, Springfield, Pittsfield and Chatham en route. From Albany we will proceed northward, stopping at Utica, Syracuse, Rochester and Buffalo, arriving at Toronto at 8.30 on the morning of the 22d. The train, which will probably be a second section of the "Big Four Limited," will consist of buffet-library-smoking car, dining car, and standard Pullman sleepers. The train to be solid vestibuled, electric lighted and high class in every respect, and will lend itself to the enjoyment of a merry evening. A round trip, going and returning the same way, good to October 31, will cost \$21.25. We believe, however, after we have unfolded our several other plans that we have been considering for the return trip, there will be few who will not want to avail themselves of one of them.

One is, leaving Toronto on one of the palatial Richelieu and Ontario steamers to Thousand Islands, thence through the Rapids of the St. Lawrence to Montreal, returning to New York from Montreal direct. This trip, with all its grandeur and pleasure, to cost \$29.45; only \$8.20 more than the all-rail route direct home from Toronto. Or, on reaching Montreal, instead of returning to New York direct, returning by way of Lake Champlain and Lake George, for \$30.35. The above, with a side trip to Quebec, \$37.70.

Or, after proceeding from Montreal to Quebec by steamer, take a side trip on the Saguenay River to Chicoutimi, back to Montreal, and then all rail from Montreal to New York. \$44.45. Or, instead of returning to Montreal from Chicoutimi, return to Quebec on your steamer on the Saguenay River and return by way of the White Mountains to New York. This last plan will cost \$52.60, and includes, of course, the entire round trip from the time you leave the Grand Central Station until you return to it. We believe that one glimpse at any of the palatial steamers, such as the "Rapids King," the "Kingston," or the "Toronto," or any one of the thousands of wonders and beauty spots that await you on this trip, would convince you that you could not afford to miss availing yourselves of it. And we

believe, too, that Western members would be glad to arrange so that they could avail themselves of the trip described, no matter how they come to Toronto or return from it to their homes. But, unfortunately, we are not able to give you those glimpses beforehand; and yet, it is very *essential* that those contemplating availing themselves of this delightful excursion, notify us beforehand, so that arrangements can be completed. To those who may ask "why not leave New York on a day train?" we will answer that that is not practicable, as our New England friends would either have to leave Boston at 4 a. m. to meet the latest day train we could use, or come to New York the night before. Those coming from towns any distance from Boston to that city, would find the 4 a. m. train entirely impracticable; therefore we had to decide on the evening train going.

So, in order that arrangements may be completed as soon as possible, we ask that every person who expects to be one of the party on the "Empire and New England Special" signify that fact at as early a date as possible (July 15 to 20, or earlier) by dropping a line to Robt. W. Ellis, 509 W. 152d Street, New York, N. Y.; and just as soon as enough letters have been received to justify it, a letter will be sent to every veterinarian in the area that our train can draw from, giving them the exact time the train reaches the point that they start from, and the cost from that point and return. We will benefit, of course, by any concessions that are made by the Trunk Line Association if we get a sufficient number. New England promises the largest delegation that has ever turned out to an A. V. M. A. convention. Let New Jersey, the Keystone and Empire states come out in a way that they may boast of! Remember, your tickets are good to October 31, and you are not bound to return in a body, but when and how you please up to that time limit.

* * *

VETERINARY PROFESSION RECEIVES OFFICIAL RECOGNITION IN TENNESSEE.—Veterinarians throughout the country will rejoice in the appointment of Dr. George R. White, of Nashville, Tenn., as State Live-stock Inspector of that commonwealth, both

on account of the official recognition of their profession in that state, and because of their knowledge of the worthiness and ability of the appointee. "George White" (as he is affectionately known to the profession) is probably one of the most popular men among his brother veterinarians in the country. The American Veterinary Medical Association has expressed its confidence in him by electing him treasurer of that organization six times in succession, the last time being at San Francisco, in September, 1910.

The appointment by Governor Hooper was entirely upon merit, as Dr. White is not of the Governor's political faith. Without telling Dr. White's side in politics (although we have every reason to believe he is proud of it), we may say that the present chief executive of Tennessee is the first Republican that has held that office in forty years. Positions of that character *should* be filled by recognition of merit, rather than of political creed; and we believe we voice the sentiment of the veterinary profession of the entire country when we commend the action of the Hon. Benj. W. Hooper, Governor of Tennessee, in appointing so worthy a member of our profession as Dr. White, State Live-stock Commissioner, and that the doctor will meet his obligation to the state, to his profession and to himself. In common parlance, he will "make good."

His friends will be grieved to learn at the same time, that just on the eve of this honorable recognition from his state, Dr. White had the misfortune of losing a finger.

ON Wednesday, June 21, Prof. Veranus A. Moore, Director of the New York State Veterinary College, received an honorary degree in veterinary medicine at the commencement exercises of the University of Pennsylvania. We commend the action of the University of Pennsylvania, and congratulate Dr. Moore. Never was an honorary degree more appropriately conferred. Dr. Moore has devoted his life to veterinary science and done more for its advancement in this country than any other man outside of the veterinary profession and as much as any man in it. We are indeed proud to be able to welcome him to our ranks as a brother member of the veterinary profession.

ORIGINAL ARTICLES.

SURGERY IN GENERAL—TREATMENT OF WOUNDS.*

BY L. A. MERILLAT, PROFESSOR OF SURGERY, CHICAGO VETERINARY COLLEGE.

As your committee, through whose invitation I have the honor of participating in the program of your annual convention have given me a very wide latitude, I have been as much perplexed over what to omit as over what to include in my address to-day.

It has occurred to me, however, that since there are so many of our surgical practices so deplorably below the standard displayed in our other activities that it would be no mistake to analyze a few of the blunders we are making in our growing, insatiable penchant for surgical intervention.

Asked what subject I could present elemental in character that would do the most good to the cause of animal surgery and which would be the most beneficial to your members individually, I would say without hesitating, "the subject of asepsis." Asked to signalize our greatest blunder I would say: "Our shameful disregard for the teachings of Lister."

It is a notorious fact that while both the student and the practitioner usually take more interest in surgery than in other branches of medicine, they invariably show less intelligence in its application. The student will commit a succession of errors in the performance of a surgical operation that would shock his sensibilities in the pathological laboratory.

In the laboratory he will sacredly guard his flask of bouillon or tube of agar against accidental contamination by exercising the greatest care from the very beginning to the very end of the most

* Read at the Annual Meeting of the Minnesota State Veterinary Medical Association, January 12, 1911.

intricate experiment, but as soon as he passes into the operating room he seems to cast aside all the lessons thus learned and will promptly paw his fingers into the surgical wound or commit other equally overt errors to the dismay of his teacher or critical spectator. Called to account he immediately admits his error, but despite frequent reproaches and admonitions he leaves college still untrained: and upon entering practice soon falls into the prevailing customs of the whole profession—a half scientific surgeon; and a half scientific surgeon he usually remains throughout his whole life.

Now, gentlemen, it would be an insult to your intelligence for me to engage in the discussion of the details of a subject that is forty years old and so well understood by all of you. It should be sufficient to say that your surgical work is not in keeping with your knowledge. You may be giants in theory, but in surgery, you are dwarfs in practice. You know the havoc of wound complication and still you make no effort to curtail them. You leave behind an inflammation of your own making in almost every wound that you handle and yet you continue to plod along in a state of self-satisfaction and even egotism that is becoming more and more difficult to comprehend and interpret, in view of the charming results that can be derived from better practices. You clamor for recognition among learned men and yet you thwart the very hope of ever gaining it by violating or disobeying a simple principle in the most cherished if not also the most important part of your attainments as a professional man.

As important facts will bear repetition permit me to quote from an address made in San Francisco a few months ago. "Some of you may claim that a fair measure of success can be obtained in animal surgery without asepsis, which, though true is unfortunately explained in the ridiculous simplicity of the operations we have thus far dared to perform. If we would march onward to more glorious achievements than it has thus been our privilege to enjoy, we must now enlarge the category of our surgical operations by the addition of the major procedures which can only be safely performed under strict asepsis."

You know now, and you have known for years, that wound diseases are caused by preventable external contaminations. Why not now, henceforth and forever more, improve your surgical work so as to prevent them. Expensive? Why, bless you, no. Of what importance are a few minutes or even a few hours of extra work compared with the numerous fatalities and the costly days of convalescence from septic complications.

If you still shrink from the major operations and the more offensive interventions generally, the practice of asepsis will soon make these as delectable to you as they are now abhorrent. And unless we can succeed in applying our surgery to the graver ills, it is destined to remain narrow in its scope, insignificant to animal husbandry and unsatisfactory to ourselves.

Modernism must now displace the antiquated practices that have already lingered too long in the profession as obstructions to progress.

By dignifying even your simplest surgical work with modern methods you will do much to shame the charlatan out of existence. Modern surgery is your greatest weapon against the quackery that harasses you on every side because it is too intricate for the untrained and uneducated to fathom and to follow. It is impossible for the uneducated empiric to perform a modern surgical operation as it would be for him to conduct an intricate pathological investigation. To keep these facts in mind at every turn, in all of your surgical work, will do much for you individually, and it will also do much to elevate the practice of animal surgery to the high level already attained by the other branches of the profession.

Now, to bring these somewhat vague generalities into an applicable and tangible form, by analyzing the details of some of our shortcomings.

1st. We occupy entirely too much time in combating *effects* and entirely too little in the search for *cause*. The practitioner who is satisfied with the febrifuge to reduce fever, the anodyne to relieve pain, the stimulant to restore strength, the tonic to improve vigor, the antiseptic to heal wounds is not a paragon to the keen,

alert, investigating therapist who turns from these symptomatic conditions in search of their causes. Here is where surgery surpasses the practice of medicine; for if you wish to excel in surgery you must first learn the fine art of seeking underlying causative influences that are too often entirely ignored in medical treatment. The practitioner who treats the poll evil, the quittor, the fistula of the withers, the various colics, the nasal catarrhs, etc., through a large group of diseases without seeking diligently for the underlying influence responsible for the phenomena presented in each is a poor representative of modern veterinarians.

2d. We treat our wounds badly. In this regard it seems to me we deliberate too much over what chemical or mixture of chemicals to apply to wounds, and too little over our first lesson in physiology.

Intelligent treatment of wounds must be based upon a comprehensive understanding of the healing process and upon little else. To obviate an extended discussion of this subject and to make my point clear, I will simply ask you to compare the healing of a wound to the growth of plants.

Seeds sown in a fertile soil soon germinate and push their sprouts through the surface. These soon grow profusely and exuberantly toward maturity under favorable conditions, but they will blight, dwarf or even succumb under harsh influences either chemical or physical. What is true of a traumatic cavity, is analogous to the seeds of the plant. The raw tissues is the seed bed—the soil from which they will grow. The first clumps of cells which shoot up at every part of the wound, are sprouts and the granulations which grow from them may be compared to the plant in full bloom. When these have been transformed into a scar they may be compared to the plant that has ripened, shriveled up and “gone to seed.” Now, to safely nurse this “flesh plant” from cell to scar, as the gardener nurses his plant from seed to maturity, is what constitutes the treatment of a wound. How many of us are good gardeners in our field of activity?

How rash it would seem to saturate a bed of young growing plants day after day with chemical substances to combat invading

parasites as it has been our custom to do in the treatment of wounds. The parasites might be harmed but the plant would be killed or stunted by the treatment.

It is here I think we have always made our greatest mistake, in surgery. Antiseptics devitalize the tissues without equally devitalizing the bacteria and thus are more harmful than beneficial. They actually create more food for bacteria. Yes, antiseptics of the strongest kind are needed in wound treatment. We need antiseptics that will actually kill bacteria, but they must only be used upon the extraneous objects that are likely to carry bacteria into the raw tissues. Thus boiling water is needed to kill the microbes upon the instruments and dressings. Actions of strong chemical antiseptics are needed to clean the surrounding skin, and the surgeon's hands, but when dealing with the raw tissue itself we must think only of sterile water, aseptic gauze, sterilized bland absorbent powders. Strong chemicals have no place here. We must nurse "our plants" by gentle treatment and by putting up a barrier against the invading enemy. In fact, a wound not contaminated should be left strictly alone, as the plant is left alone. Work diligently around it to create favorable conditions like the gardener does, but do not eternally dwarf its growth with direct applications.

If a non-contaminated wound requires no direct treatment to its raw surface, the question will naturally arise as to what to do for the contaminated wound. The answer is: "Submit it only to mechanical disinfection and then create conditions not favorable for the growth of bacteria."

By mechanical disinfection is meant the cutting, scraping and washing away of the tissues known to harbor the infections and when this has once been done the traumatic cavity—the raw tissues are left to the mercies of nature. You may depend upon the leucocytes to complete the disinfection when only a few of the bacteria have been left in the wound and an unfavorable condition has been created, for them, that is they have been, by drainage deprived of the elements essential for their growth.

To those of you who probably have known me to advocate the application of the strongest kind of antiseptics, yes, caustics, directly to the raw tissues of a wound these precepts may at first seem somewhat contradictory.

I have and do now advocate the cauterization of wounds in veterinary practice, when mechanical disinfection is not found possible. It is the repeated, perfunctory antiseptic lavage that I am condemning. When an antiseptic is used at all upon a wounded tissue it must be bactericidal or else should be omitted entirely.

The potential caustics or even the hot iron applied directly to a wound will, of course, delay the healing process until the living tissues can rid themselves of the dead elements thus produced, but when this process of self-amputation is accomplished the underlying granulation, still free from contamination, will now rapidly grow toward maturity. After the eschar has sloughed off the healing is nursed along just the same as if the wound had been aseptic from the beginning.

Here is where the empiric with his strong liniments surpasses you with your deceptive antiseptics in the treatment of barbed-wire cuts and other forms of fresh wounds, and here is also where he sometimes cures the poll evil and the fistula of the withers after you have failed; he cures by unconsciously applying a scientific treatment.

3d. Our methods of suturing wounds are crude, unscientific, harmful and ineffectual. The small percentage of wounds we suture which heal by primary union is a serious reflection upon our surgery.

I am told that the wounds of ordinary proportions that would heal by primary union would be a rare curiosity in a country practice. Why is this? The contrary should be the case. The reasons are manifold. The futility of suturing the unclean wound under unclean methods is, of course, conceded. We should long ago have passed the day when any instruction is needed in this regard. The sterilization of needle thread, and integument to be sutured and the handling of them in such a way as to prevent contamina-

tion as the work proceeds, the first law to keep inviolate in the suturing of wounds, is unfortunately too frequently disobeyed. The practitioner who carries his needle and thread in the fold of his pocket case, handles them with unclean hands and inserts them in the unclean integument, often covering up an unclean surface beneath is not only always unsuccessful in his surgical work, but he is also the man who is degrading the field of animal surgery. Malpractice is a mild term for such methods. It requires but little practice to learn the art of sterilizing suturing material and of handling it afterward so as to avert stitch infection.

I would suggest that you make this your first step in the improvement of your methods of operating. Boil your needles, needle holder, thread and forceps. Touch nothing with your hands except the very end of your thread while threading the needle, and this end can be cut off if you are fearful that your hands are not safely clean. Insert the needle by picking up the edge of the wound with the forcep, and as it comes through the skin catch it with your needle holder, and thus continue the work until every stitch is in place.

Tie each stitch so that the part handled with the fingers remains outside and take pains throughout not to drag the dangling end of your thread over unclean surrounding parts. Follow up this suggestion, improving upon your methods as you learn, and then note how different your wounds will behave. There are, however, other things to be considered in this regard.

Aside from the matter of cleanliness, the suturing of wounds in animals presents special problems which require special management. Motion and tension are two influences which work greatly to our disadvantage even after we have faithfully attended to the matter of cleanliness and drainage. Motion will prevent the formation of the first delicate fibres which are interwoven from edge to edge of sutured integuments, and must therefore in some way be prevented. The old fashioned interrupted or continuous sutures, classical I admit, were, however, never designed for the surgery of animals. We should long ago

have looked about for more ingenious sutures than these. The most successful system of approximation I have yet found to reduce edge-friction to the minimum, consists of the insertion of three different sets of sutures along the whole part of the breach to be approximated.

An outer row of mattress or button sutures placed some distance from the wound edges and about one inch apart; a row of crucial sutures, one between each pair of the former, and lastly neat short interrupted sutures between the latter, to assure a good apposition, will reduce motion of the edges better, and will impair the circulation of the skin less, than any group of sutures it has yet been my privilege to apply.

Tension is also a bane in suturing wounds of animals. To restore continuity of the elastic skin often over tissues which bulge beneath requires stretching, which is indeed a very harmful condition. The taut suture is always a failure, because it softens the incarcerated tissues and soon cuts through the edge, with, of course, disastrous results; the wound at once gapes and further attempts at approximation are hopeless.

Remedial measures here vary with conditions at hand. Relaxing incisions made at some distance from the edges after the wound has been sutured are sometimes of service, but these leave new gaping skin wounds to heal by the formation of considerable scar tissue.

The underlying bulging mass when such exists can be cut away to the level of the body, and this should always be done when underlying muscles threaten to bulge tightly against the sutured patch. Another recourse, one which I think can be more universally used, is the relaxing suture known as "Mayo's Running Loop." This consists of running series of stitches extending across the edges from considerable distance on either side. As many of these as needed can be applied along the course of the wound. The advantage of this particular suture is that the traction is evenly distributed among the various loops of which it consists, and thus it reduces the danger of pressure necrosis.

Other rules to be respected in suturing wounds are legion. The skin must never be infolded. Raw tissue must contact raw tissues, otherwise primary union is defeated. Buried sutures must be absorbable, and lastly, the patient must be so handled as to reduce the danger of physical injury to the minimum. The application of braces to the legs, the use of slings, immobilizing bandages, tying the patient on the pillar reins, etc., etc., are so many important precautions the careful practitioner will not omit.

4th. Our hands, on account of the nature of our work are always dangerous carriers of infection. Here is a fundamental study over which we have deliberated too little. If the human skin is a constant carrier of pathogenic bacteria what must be said of the hands of a veterinarian who is continually handling objects and products that teem with dangerous micro-organisms? Leaving the merits of this question for you to discuss among yourselves on account of my limited time I shall simply say that our hands are never fit to touch a raw surface. On this account we should govern our manipulations accordingly. Digital manipulation should be avoided, the hands should be cleaned in accordance with the more modern methods, gloves should be worn and important operations should be avoided immediately after handling putrid and highly virulent conditions. The answer to the question, "Why are veterinarians often less successful in castrations than the so-called gelder?" is found in the condition of his hands. The gelder handling only healthy objects, although sometimes apparently a dirty operator can handle raw tissues with much less danger to his patients than you can. The perfunctory cleaning you give your hands, the deceptive antiseptic lavage you carry out on your field, and the feeble disinfection to which you submit your instruments in your vaunted ostentation to perform a classical operation is not sufficient to offset the havoc that may follow your infected hands. Ablutions of soap and water followed with brisk frictions of alcohol is given to-day as the safest method of cleaning the hands, but in our profession such precautions must not be regarded as sufficient for important visceral manipulations. The wearing of sterile gloves when

tissues must be handled manually is the only absolutely safe course. In the castration of cryptorchids where the tactile sense is depended upon, the above treatment followed with friction of 50 per cent. tincture of iodine, which is allowed to dry upon the hands for a few minutes, is about the best method you could adopt.

5th. Surgical instruments require heat sterilization. No veterinarian should operate without first sterilization of his metallic instruments by boiling. Instruments become progressively more virulent when not submitted to effectual sterilization frequently. The rule should be to precede each operation by first sterilizing all the instruments required in the procedure. You can no longer shirk your responsibilities in this regard. The coming generation of veterinarians is now laughing at you precisely as you are to-day laughing at the generation of non-graduate practitioners who preceded you.

6th. The air as a cause of operative infection has been frequently misjudged. In the early days of aseptic surgery the danger from this source was overestimated, yet in animal surgery it presents a problem we should not entirely ignore. The danger from this source lies largely, however, in the particles (hair, dust, litter, etc.), whirled into the air by gusts of wind and the struggles of the patient. This controlled by moistening our patient, especially round the environs of our field and by selecting a dust-free place for the operation there is little to fear from aerial contamination. I have recently been told that a teacher of surgery disparaged the sterilization of instruments on the ground that they would become contaminated again by the air before the operation could be performed. Such statements give the student an entirely erroneous impression of surgical infections and are based not upon experience, but upon a lack of it.

Observations in this regard show that an instrument once well sterilized is indeed little likely to bear infections for some time. Even when soiled by putrid products during an operation a rinsing in sterile water makes it infinitely more safe than the unsterilized one, without such a soiling.

7th. Only sponges of gauze and cotton should be included in the surgical paraphernalia. The old-fashioned sponges are now discarded, owing chiefly to the fact that they are carried time after time into the wound in any given operation or even used for operation after operation, in contra-distinction to the gauze or cotton wad that is immediately cast aside when soiled. The sponge has no place in the modern wound treatment, and especially in the treatment of the wounds of animals.

In closing let us not forget the boiled water that is needed in every wound treatment. Boiled water and a clean bar of soap is a much better ablution than an antiseptic solution made from water of doubtful purity. To illustrate my point here permit me to relate a circumstance that occurred to me several months ago. In a call to the country to operate upon a hernia in a three-year-old gelding, I was driven to the farm some five miles from town by the veterinarian who had called me.

Upon arrival at our destination to his dismay he discovered that among his entire assortment of pharmaceutical preparations and other appurtenances which filled his vehicle to overflowing not a single antiseptic could be found. Being a man with set ideal and a profound confidence in the virtue of antiseptics he actually stormed with rage when I said we could probably get along as well without any. "What, perform this important operation without antiseptics? No, sir, I want a scientific operation performed here," were his exact words, with the profanity omitted.

It required a lecture almost as long as this paper to bring him to my way of thinking, and as he let the owner into the secret of his missing antiseptics my task was thrice more difficult to convince him that the doctor should not go back to town to replenish his supply. In a mood of incredulity that was actually painful they finally reluctantly consented to allow me to go ahead.

A wash boiler full of water, containing also a large dipper and about a dozen large wads of absorbent cotton to be used for sponges, was placed over a roaring fire, together with the instruments which I had conveyed with me in a small sterilizer. In

fifteen minutes we had a supply of about ten gallons of sterilized water, a sterilized dipper to handle it, plenty of sterilized sponges and a set of well sterilized instruments.

The boiler and the instrument sterilizer were carried to the place selected for the operation to cool while the patient was being brought up from an adjacent pasture, secured and properly positioned. With a new bar of ivory soap and the water poured over the field with the dipper the field was given a good washing lasting ten minutes. The parts surrounding, that is the thighs, legs and abdomen were well moistened to prevent flying hairs from contaminating the wound when made. The sac which, by the way, proved to be a hydrocele instead of a hernia was dissected out, tied off and removed at the internal abdominal ring. The incision about eight inches long was sutured with interrupted stitches of No. II gut with the exception of a small orifice for drainage. This orifice was wadded with a wick of gauze. There being no bleeding, no packing was required. The patient was tied up over night, and then after removing the gauze in the morning, was turned to grass and given no further attention. To their utter surprise no visible reaction supervened. In fact, the recovery was ideal. The usual edema, of the sheath, swelling of the scrotum and purulent discharge were looked for in vain.

While there is nothing remarkable about this operation nor its outcome, it is given as an illustration that aseptics without chemical antiseptics is after all the best surgery as well as the cheapest.

NEW JERSEY veterinarians have again demonstrated their progressiveness by organizing a county veterinary association in Essex County, to be known as the Essex County Veterinary Medical Association, holding monthly meetings in the city of Newark. Dr. J. T. Glennon, of that city, is president, and Dr. J. F. Carey, of East Orange, secretary. They have twenty-five members at the start, who are all enthusiastic. We wish them success in their work.

COMMENCEMENT ADDRESS.

KANSAS CITY VETERINARY COLLEGE, APRIL 13, 1911.

BY DR. W. H. DALRYMPLE, BATON ROUGE, LA.

Mr. Dean and Faculty, Fellow Students, Ladies and Gentlemen:

I esteem it a very great privilege, as well as a very great compliment, to have been invited by the authorities of the Kansas City Veterinary College to participate in the commencement exercises here this evening, although at the same time being fully, perhaps painfully, aware of my inability to measure up to the standard as an orator that is usually expected on such an auspicious occasion.

Although having been considerably over twenty years in the United States, this is the first time I have had the pleasure of being present at a function of this kind in connection with any of our American veterinary schools; and I can assure you it is a most inspiring sight to witness so many of you, gentlemen of the graduating class, going out into the world fully equipped with splendid education and thorough training, to further the great cause of humanity in your professional work; to help conserve the wealth of the country by fostering the great live-stock interests; and, which is sincerely to be hoped, become standard-bearers, each one leading in the good and noble fight for a better, a cleaner, and a more elevated plane on which to place the profession you have just espoused, and which we all love and so highly respect.

Gentlemen: You have every reason to be proud of your alma mater. This institution has accomplished a great work for the veterinary profession in this country, not merely from the more local point of view of this, and a few contiguous states, but all over this great union of states, where her alumni are to

be found and honored in every branch of professional activity. And it is earnestly to be hoped, I feel sure, by those who have the best interests of the college at heart, that the latest "crop" of graduates, scattered, as they are likely to be, throughout the length and breadth of the land, will add greater glory and renown to the institution, and, thereby, reflect greater credit and honor upon the profession of which they have just become welcome and valued members.

As no doubt many of you are aware, the veterinary profession in America is but a young profession as compared to its standing in some of the older countries of the world, where it can lay claim to something like a century and a half of service, and where its representatives frequently receive not only honorable recognition from their crown heads, but substantial recognition from their governments, as well for scientific and other meritorious work performed.

Yet the strides that the profession has made, and the prominence to which it has attained on this side of the Atlantic, is little short of phenomenal. Take my own southern section of the country as an example. Twenty years ago, veterinary medicine and surgery, as a science and art, were almost wholly unrecognized and unappreciated.

Yet, to-day, there is scarcely a state that does not have its veterinary practice law to protect the profession from unqualified competition, and the stock-owning public from the perpetration of fraud and inefficient service, by unscrupulous and incompetent individuals. Moreover, it is rare to find a commonwealth without its state veterinary organization for the encouragement, protection and enlightenment of the members of the profession within its borders. Such, however, may, I presume, be said of other sections of the country.

A glance at the membership of the American Veterinary Medical Association will afford some idea of the growth of the profession in America; although unfortunately, there are many veterinarians, eligible to membership, who still seem to hold aloof from this organization who should be a part of it, to help

further the cause of veterinary science on this continent and in our dependencies.

In 1896, the year in which the thirty-third annual meeting of this association was held, the list of active members showed slightly over 300. While the additions at the last, or forty-seventh annual meeting, brought the total up to something over 1,200.

Such a substantial and healthy increase in the membership of this great body of veterinarians indicates, most assuredly, a steady growth of interest and enthusiasm in matters professional in this country.

But it means more than this. It shows that the profession, from the early days up to the present time, has been, and is, composed of strong, clean men; men of thought, of power, of judgment, of action—leaders, in short—to have been able to steer the frail, diminutive craft, launched away back in the 60's, until it has assumed the proportions of a veritable leviathan at the present time. In fact, the most powerful veterinary organization of modern times.

Such are the kind of men the profession is constantly in need of: Many of the "builders" have passed from the scene of action, leaving behind them a rich legacy of good work accomplished; and others are nearing the goal of well-earned rest from active labors. So that it will devolve upon you, gentlemen of the graduating class, and those who are still in embryo, to buckle on the armor of progress and activity which has been laid aside by your elders and predecessors in the profession, and help keep up the good fight for advancement—moral, intellectual, elevating and ethical—in whichever branch or phase of professional work you may chose, or in which you may be called upon to serve.

And now, what of the future? The midnight oil of undergraduate days has ceased to burn; the incessant stew and grind of college days have come to an end; the coveted "sheepskin" has been won. What next? Ah, there's the rub!

It may be different now to what it was when your humble servant occupied a similar position to that which you hold this

evening. But what we did not know about the science and art of veterinary medicine and surgery could not amount to much.

If any of you should be imbued with that pleasant, but most deceptive impression, please take my advice and "cut it out" at the very beginning of your professional career, or it will most assuredly obstruct and impede your progress.

The student of medicine, whether human or veterinary, who expects to attain to anything, must begin when he enters college and continue to study throughout the remainder of his active life. "Once a student, always a student," must be his motto. The man who "knows it all" in this day of rapid advancement in investigation and research is simply deceiving himself; no one else. In fact, he is unjust to himself.

As in other phases of human activity, so it is in the veterinary profession—"many men, many minds." Or, to put it more appropriately, perhaps: Many men, varied adaptabilities. Men in all walks of life occasionally make failures of otherwise useful lives by not first carefully considering and selecting that branch of work for which they are, by nature and training, best adapted. And such, no doubt, is frequently the case in our own profession.

However, in these days of greater division of labor, so to speak, or greater diversity in the options offered the young veterinarian, the risk of failure may be greatly minimized, if he but knows himself, his shortcomings and his capabilities; or, in short, his adaptability, then chooses the department of work to which he may apply himself with the hope of greatest success.

Know thyself; then choose wisely, might be a motto worthy of adoption to-day by the graduate just entering upon his life's work.

I have no doubt, however, that although many branches are open to the veterinarian to-day, the majority of the graduates will enter the field of active practice. And it is questionable, I think, whether any other phase of the work offers greater opportunities from the purely mercenary side of the proposition, which is, more or less, an important one with all of us.

Yet, while the "practical" man is lining his pockets with the "golden shekels," he must not forget his brother, the "pure science" man, who labors at his subject indefatigably, with the sole object of acquiring and extending knowledge; of investigating the laws of nature, etc., without any particular thought of practical applications, perhaps, but of which the practitioner is, ultimately, the chief beneficiary.

But there is not, and should not be, any conflict between science and practice. Science is simply accurate knowledge acquired; practice, the intelligent application of that knowledge. In fact, I think we should realize more fully than is often done that the "pure scientist" and the "practical man" are both equally necessary, and that the one is the corollary of the other.

In his address before the British association last year, the president, in referring to the work of modern universities, stated, "that abstract thought is not antagonistic to practical work, or scientific research to the labor of the factory or foundry. The one and the other can harmoniously co-operate in the advance of knowledge and the progress of civilization—which is quite germane, I think, to the point I desire to emphasize.

In days gone by, or, at least, it is to be hoped they have commenced to disappear, there seems to have been a tendency, on the part of the practical man, to scoff at and ridicule the scientist and his work. But, in this day of greater enlightenment and wider grasp such shallow and visionary notions are as foolish as they are fallacious. For, as Dryden says:

"Errors, like straws, upon the surface flow;

He who would search for pearls must dive below."

All work is good, if it is honest work, whether it be of the hand or of the head; and all honest workers deserve credit for their work, whether it be skilled or unskilled, scientific, or so-called practical.

"All hail! the honest working man,
If earnest, sober, true he be;
The noblest work in Nature's plan
Is he, is he—if faithful, he."

In this mercenary age, with its incentive to "get there," to use a slang expression, there are, unfortunately, some pitfalls strewn along the path of the practitioner which requires strength of character and determination to steer clear of.

It has always been my own belief that the profession should be looked upon more in the light of a "brotherhood," and that, in assisting a fellow practitioner at any time, or in any legitimate manner, it is not only a generous act toward the individual, but an absolute duty one owes to his profession. Yet, how frequently do we hear of practitioners in the same community with "daggers eternally drawn" toward one another; tearing each other's professional ability to pieces; cutting legitimate fees; each intoxicated with an "exalted ego," and so forth and so on. And all for what? Merely to obtain an extra paltry fee, or an additional client, at the expense of a brother practitioner in the same professional brotherhood.

I am convinced, however, that you, all, as ethical professional gentlemen, going out into life with more or less fixed principles with regard to professional right and wrong which you have imbibed during your sojourn at this splendid institution, will agree with me in saying that such procedure is not only unfortunate, it is wrong; it is casting dishonor on the fair name of our noble and honorable calling.

When such conditions exist, is it any wonder that the profession, as such, should be somewhat slow of advancement, and of recognition, and appreciation, by the laity in general?

It should be remembered that it is not the profession that makes the man, but the man who either makes or mars his profession.

Perhaps I should have refrained from reference to such matters on this occasion. However, "facts are chieft that winna ding," as Burns puts it, and I thought I might be pardoned the allusion, as it is often just such little condescensions to unprofessional practice that are the beginnings which, later, dull the sensibilities to graver breaches of professional ethics; and it is much safer to avoid them.

The entire country, with its large and increasing monetary interests vested in live-stock, is calling for better professional service for practitioners of education, intelligence, integrity, more thorough equipment in every sense of the word, to help conserve those interests. The "hoss doctor," or "cow leach," of a few decades past may have filled his place to the best of his ability, or inability. But the day of the mere "livery stable attache" is gone; and in his place has arisen the educated professional gentleman, possessed of a knowledge more or less profound, of the natural sciences connected with medicine; whose position and standing in the community should be considered one of the most important; and in society, as ranking with the exponents of the other learned professions. All of which means, necessarily, that more is to be expected of the modern graduate than of his predecessor of the past, and, in consequence, he must be thoroughly prepared for the more advanced conditions and demands.

But although general practice may be the lot of the great majority of graduates, there are other departments, or branches of the science, which afford work of a most interesting and fairly remunerative character to the man whose inclination and special adaptability run in other directions.

What more interesting and valuable than biology, for example? I believe we can say, that it is to the work of the pure biologist (using the term in its broadest sense) that nearly all of the more important advances in biologic knowledge are due.

The science of biology, including physiology and pathology, as well as their simpler and purer developments as in their practical applications to medicine, both curative and prophylactic, has, during the past few decades, undergone most wonderful changes, more particularly, perhaps, with reference to the lower parasitic forms both vegetable and animal; their genesis, and the methods that may be successfully employed to destroy them, or render their effects more or less nugatory. The discoveries which have been duly credited to this department of knowledge, and which are gradually being added to, may justly be regarded

as, perhaps, the most important and far-reaching which have blessed humanity since the days of Galen.

Glance for a moment at the academic researches of Pasteur upon the growth and nutrition of the yeast plant; his work in connection with fermentation; and, perhaps, more than anything else, as one authority refers to it, his researches, commenced in 1865, into the causation and prevention of silkworm disease; and note how they paved the way for the germ theory of disease. To quote the words of Calkins, one of our distinguished American protozoologists: "it is of no importance that the characteristic black spots of pebrine were not recognized by Pasteur as the spores of a protozoon, but the important results which followed their discovery, and which led to increased length of human life, and to the mitigation of human and animal suffering throughout the civilized world, would make an increasingly substantial monument to the patience, courage and virility of the man of pure science, who, by the apotheosis of scientific method, proved these unknown corpuscles to be the cause of silkworm disease."

But, although the researches of Pasteur did so much to stimulate the study of micro-organisms, it is said that members of the two great groups of protozoa, the hæmo-flagellates (to which the trypanosomes belong) and the sporozoa, were known before Pasteur's work on the silkworm disease.

The first trypanosome appears to have been discovered in the blood of the trout by Valentin, in 1841. Shortly afterwards, Renak and Berg noted their presence in other fishes; and which was subsequently followed by the discovery of these organisms in the blood of frogs, birds and rats.

The first trypanosome met with in disease, however, was by Evans in 1880, who discovered them in horses, in India, suffering from surra.

Then we have the brilliant researches of Bruce, in 1895, which resulted in his finding the parasite of nagana, or tsetse-fly disease, in the blood of infected horses and cattle in Africa;

and the important part played by the fly in transmitting the parasite.

It is said that the late Dr. Koch regarded the discoveries of Bruce and Laveran (the discoverer of the plasmodium of malaria), together with that of the parasite of tick-fever in cattle, in 1893, by Smith and Kilborne, as the three great landmarks in the history of our knowledge of the pathogenic protozoa; each of which opened up new and fresh fields of investigation.

Thus it may be seen that the early discovery of these important organisms was due to the labors of men of pure science, who found them in the lower vertebrates, and in some invertebrates, and that they, unimportant as they appeared to be in themselves, formed the basis of the later work which has been of such incalculable benefit. Indeed, it may be safe to venture the assertion that bacteriology and the whole principles of asepsis and antisepsis, as well as of protozoology, and the later discoveries along biologic lines, take their root in the classic researches of the great Frenchman—Louis Pasteur. And where would medical practice have stood to-day but for the work of such a pure scientist?

I have previously suggested that there are many opportunities offered the educated veterinarian, in addition to what might be termed general practice, and I have briefly alluded to biology, merely, as setting forth the pure science side of the subject.

However, I would not have it understood that the two are separate and distinct by any means, but rather that they go hand in hand; and while the man of research in biology need not, perhaps, be an expert in practice, as we usually understand the term, the general practitioner will enhance his value to his clientele, and make a better practitioner, if he strives to keep in touch with what is going on in the field of biology.

The economic importance of veterinary science, in its many departments, is so rapidly becoming realized that the different openings, some of which I shall briefly refer to, have in reality

been created by the demands of twentieth century progress, generally.

Take, for example, our agricultural colleges in the various states. With very few exceptions, each one of these institutions has a department of veterinary science, with, at least one veterinary graduate as a member of its faculty.

I do not here refer to the state universities and agricultural colleges having regular veterinary medical departments, and which graduate their students with a veterinary degree after the completion of a three or four years' course, as the case may be, but rather to those which include veterinary hygiene as a subject in one or other of their regular college courses, more particularly agriculture; although I should, of course, also include those larger departments just alluded to as offering opportunities for the educated veterinarian.

Then, again, none of our agricultural experiment stations in the various states and territories, which are established for, among other things, the investigation of plant and animal diseases, and the dissemination of useful information concerning them, is considered equipped without its veterinarian, or animal pathologist, to investigate the causes of, and the remedial measures for, the more obscure diseases of farm animals that may occur within its borders.

Here is another opportunity in a department of work that is very congenial, and reasonably remunerative, to the man whose education and training are such as to fit him for the occupancy of such a position. And, if you will pardon me, I might say, incidentally, that the profession generally owes a good deal to the work of our experiment station veterinarians.

And, again, our great national Department of Agriculture, through its Bureau of Animal Industry, is continually seeking the services of the educated veterinarian to aid it in controlling and suppressing the different fatal maladies to which our farm animals are susceptible; and, also, to protect our citizens against the dangers arising from an unsound and unwholesome meat supply.

But, still further, the great majority of the states have come to a realization of the fact that the services of the educated veterinarian are indispensable when having to deal successfully with diseases that are not only communicable from animal to animal, but from animal to man. And the same may be said with regard to boards of health, state, parochial and municipal. These departments of public health are rapidly finding out that the individual best qualified to protect their citizens from an unsound meat and an unwholesome milk supply, especially with regard to the children in the latter case, is the thoroughly equipped graduate of our modern veterinary school. And here I shall take the liberty of a brief digression, to address myself more directly to our lay friends present, as the thought occurs to me that, although no one is so well qualified as the veterinarian to afford protection to the private citizen in the matter of sound meat and wholesome milk, there is a certain duty which the latter owes, in contributing his part, by assisting those in authority, whose sole aim is the betterment of the conditions under which the citizen has to live, in this regard. Or, in other words, for the general public good, there ought, it seems to me, to be greater co-operation on the part of the citizen, who is the consumer of meat and milk, with the authorities, who are striving to insure greater wholesomeness in these indispensable food products.

Let me say briefly, then, that the American citizen should demand that the meat he eats, and the milk he drinks, should not only be what it professes to be, but that it should be sound, wholesome, and nutritious, and free from anything of a noxious nature.

Such a demand, I say, is the sovereign right of every American citizen; and it should be made not solely, moreover, for his own sake, individually, but in behalf of those of tenderer years, who are dependent upon his maturer judgment and closer discrimination in a matter of such vital moment to their health and well-being.

But, as an eminent authority has remarked, "on no question of social economy is the general public more ignorant than that of the wholesomeness, or otherwise, of the flesh they consume; and on that ground alone, low as it is, it is incumbent upon sanitary authorities to guard them against abuse and injury."

This question of the sanitary supervision of the traffic in meat and milk for human consumption is, of course, extremely ancient, being shown in the traditions of the oldest civilized nations, more particularly, however, with regard to meat. But in recent years, with the rapid strides in our knowledge of germ life, and in bacteriologic technique, etc., milk, which has been aptly termed "the great uncooked food," has been shown to be a vehicle of even greater danger than meat, because of the germ-destroying influence of cooking which the latter usually undergoes. And to-day there is no topic engaging the serious attention of sanitarians the civilized world over more than that of meat and milk inspection, with the view of securing for the people a sound, nutritive and wholesome supply of these important articles of food which figure so largely in the health, the development and the very existence of the race.

With the opportunities which our modern system of education affords, for a fuller knowledge of the subject of hygiene, is it not a little surprising to find the amount of ignorance which still prevails amongst the people generally with regard to the simple laws of self-preservation and protection, as apply to food? And yet, the prevalence of the lack of this information is the most impenetrable barrier to the progress of the very movements which are directed solely at an amelioration and betterment of their condition in this respect. And still, without an educated public opinion, without an enthusiastic public sentiment, based upon a knowledge of the right, and a will to put it into service in behalf of the public good, it is extremely hard for the few who realize, from their information and education, the importance of such work, to obtain the most satisfactory results when confronted by an opposition of indifference and inertia, born of

ignorance on the part of the people themselves, whose sole benefit is the chief object in view.

I should like to emphasize the point, viz. : that the inspection of the meat that our people eat, and the milk which our people drink, more especially the children and the youth—our future citizenship, so to speak—is directed solely at securing for them a sound, wholesome and nutritious supply of these necessary food articles in order to protect them against the untoward consequences liable to result from conditions of an opposite character.

In other words, when a citizen pays his money, he should not only receive a quid pro quo in meat and milk, per se, but he should have the comforting assurance of knowing and feeling that the meat he receives is wholesome and nutritious meat, and the milk he buys, and which is mainly consumed by his children, is pure milk, free from germs or bacteria of a disease-producing nature, and up to the required standard of nutritiousness. This, I say, is the sole purpose of meat and milk inspection, whether it be municipal, parochial, or state. Consequently, when the purpose is such a laudable and humane one as the protection of the health of the individual or the community, is it reasonable or right that anyone should stand aloof, through indifference or otherwise, and not lend his aid in this great cause of humanity? Rather, on the other hand, is it not reasonable; is it not right; nay, is it not the bounden duty of everyone to make common cause against any eradicable agent or factor that may be responsible for imperiling the health, and sometimes the life, of the citizen? In short, the people have a share in this work, and their part is to hold up the hand of and assist, by every legitimate means in their power, those who undertake and are intrusted with its carrying out in their behalf.

Here is a department, then, in which there is not only a wide field of usefulness open to the educated veterinarian, but one in which he may hold high rank as a conservator of the public health.

Still another opening for the veterinary graduate is that offered by the national War Department in connection with the mounted and artillery arms of the service. And while, unfortunately, the United States army veterinarian does not, as yet, receive the rank which is conferred on his confrère by the war departments of other civilized nations, and which his own fitness merits and better military service demands, yet I believe the time is not far distant when both will receive due recognition by the country as an absolute necessity, for the more perfect equipment of the nation's defense.

JUST A WORD TO OUR UNDERGRADUATE FRIENDS.

Gentlemen: The more diligently and the more honestly you work, the greater will be your reward and the prouder you will feel of your self-won attainments; and the best work is often that which is done quietly and unostentatiously, with, at the same time, a minute attention to details. The coral reef, as I once read the simile, is the product of tiny creatures, whose work has been carried on without any external show or parade; yet see how firmly it retains its position in the ocean depths, and what an enduring monument it is to the industry and untiring energies of its insignificant builders.

As the years pass, the sum of professional knowledge grows apace, and many of the educational advantages and opportunities enjoyed by you to-day were denied your predecessors. Be sure, therefore, you not only appreciate these privileges, but that you take advantage of them to the fullest extent; because, more will be expected of you than of those who have already entered into active service.

I have known students who were said to be guilty of reading too much—for the amount of thinking they did. This is somewhat of a badly balanced or one-sided development. It is like getting the impression of the printed page only, without the thought which the page is intended to convey; or, the shadow without the substance.

To those of you, if there should be any here, who might be so inclined, let me offer you the advice which one of my old

professors used to give, under the circumstances, viz.: "Read less and think more!"

And now, in conclusion, and for the benefit of the graduates, in particular, and of all the rest of us in general, permit me to quote those familiar lines of the immortal Shakespeare:

"This above all to thine own self be true;
And it must follow, as the night the day,
Thou canst not then be false to any man."

THE Veterinary Medical Association of New York City declared itself in favor of a uniform degree in the veterinary schools of North America at its June meeting, and indorsed the movement taken by President Glover, of the American Veterinary Medical Association, toward the accomplishment of such a condition.

THE commencement exercises of the Kansas City Veterinary College were held in the large auditorium on the evening of April 13, 1911, when that spacious hall was filled to its capacity. The Rev. W. F. Sheridan opened the evening exercises with an earnest invocation, which was followed by a solo by Mrs. Geo. N. Russel. Prof. W. H. Dalrymple, of the Louisiana State University, Baton Rouge, delivered an address* to the graduating class, which was full of wisdom and good advice; and held the audience, both students and visitors (as Prof. Dalrymple always does), from start to finish. One hundred and fifty-eight men, from all over the country, reaching from the Atlantic to the Pacific, received their degrees from that excellent institution, and carried away with them, not only a splendid veterinary education and moral influence gained at the hands of their Alma Mater, but also many grains of wisdom dropped by Dr. Dalrymple that will bear good fruit in after days.

The annual dinner tendered by the college to the senior class and alumni, was held at the "Coates House," on the evening of April 7. 250 guests, ladies and gentlemen, were present. The annual dinner of the freshman and junior classes, was held on March 31, also at the "Coates House." Dean Stewart is indeed to be gratulated.

* Published on page 395 of this issue of the Review.

ENTERO-HEPATITIS (*Amœbiasis*).

BY B. F. KAUPP, PATHOLOGIST, DIVISION VETERINARY SCIENCE, COLORADO AGRICULTURAL COLLEGE, AND PATHOLOGIST TO THE COLORADO EXPERIMENT STATION.

History.—A parasitic disease of turkeys commonly called black head. This common term black head does not always hold good, as many birds infected with the malady observed in our investigations did not show purple heads.

This disease was first scientifically studied by Theobald Smith of the United States Bureau of Animal Industry in 1893. The protozoon causing the disease was called by him, *Amœba meleagridis*; the condition produced by it, Infectious Enterohepatitis. The fact has been established, that the disease can be transmitted from bird to bird. The amoeba requires no intermediate host. A similar disease has been reported as attacking chickens. Many of our flocks of turkeys were running with chickens, but so far we have not observed the disease among the latter. The disease has been reported from nearly every state in the union, hence is widespread. The eradication of this disease is worthy of the attention of scientific men as its ravages cost the poultry industry hundreds of thousands of dollars annually.

Symptoms.—The amœba are probably taken through the food or water soiled by the excrement of the infected birds. First they become lodged and produce diseased areas, in the cæcum. Later they invade the liver and inflammation and degeneration follow. The head may or may not become purplish. The turkey sits around, mopes and gradually becomes weaker and weaker until he is unable to walk. Later diarrhœa appears, there is a loss of appetite and the bird dies. If the case assumes a chronic type the bird gradually becomes emaciated. It has been

proven by Dr. Cooper Curtis that the intestinal tract of the chicken may furnish a normal habitat for the amœba, and with the chronic type in the turkey, both serve to spread the con-



FIG. 1.—ENTERO-HEPATITIS TURKEY.

A—Cæcum showing ulceration. B—Liver showing greenish-yellow necrotic areas.

tagion through their droppings. Birds picking food from the infected ground or drinking contaminated water, may become infected and develop the disease. The disease is probably not transmitted through the medium of the egg as in some bacterial diseases.

The protozoon measures from 7 to 10 microns in diameter. It is round or oval in shape. The nucleus is relatively small and located either in the centre or a trifle to one side.

Gross Pathology as Observed at Autopsy.—It has been our experience that adult turkeys are attacked and succumb to the

disease. One or both cæca may be affected, frequently only one. Upon first observation it will be noted that the cæcum is enlarged and possibly more or less distended with gas. Upon opening the organ it will be found that the wall is much thickened and an ulcerated area covered with a dirty brownish mass of necrotic tissue. The cæcum is partly occluded with fecal material and necrotic tissue cast off, together with other products as effusion from the ulcerated area. The diseased part is more often circumscribed, although it may be more or less diffused. Upon opening the abdominal cavity the attention will be directed to the liver, which is usually two or three times its normal size. There will be observed over the surface whitish, yellow or yel-

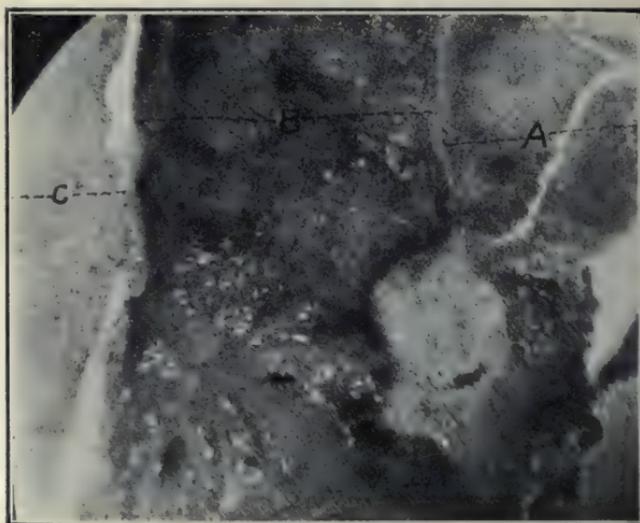


FIG. 2.—ENTERO-HEPATITIS. SECTION THROUGH ULCER OF CÆCUM. 4-INCH EYE-PIECE. NO. 3 OBJECTIVE, LEITZ.

A—Area showing necrosis from inner surface. B—Area showing cloudy swelling and necrosis. In this portion are found many amœba meleagridis. C—Submucous tissue, the major portion of which is normal.

lowish-green areas which vary in diameter up to three-quarters of an inch, and which may be even with the balance of the liver or possibly slightly depressed. These areas are usually irregular in outline. These represent areas of necrosis. The theory has been advanced that the amœba enters the blood from the diseased

area in the cæcum and becomes lodged in the liver, where, finding a favorable field for development, begin to multiply.

Outbreak No. 4 gives a clear history and autopsy record.

This flock consisted of 60 birds, all practically mature. They run at large in the grain and beet fields picking up waste grain,



FIG. 3.—ENTERO-HEPATITIS. SECTION OF LIVER OF TURKEY, IN EDGE OF NECROSING AREA. HEMATOXYLON-EOSIN STAIN. 2-INCH EYEPiece, 7 M. M. OBJECTIVE.

A—*Amœba meleagridis*. B—Giant cell.

grasshoppers, etc. They were fed very little extra, and their water supply was mainly secured from irrigation ditches. At the time of investigation 25 birds had died.

The symptoms observed were as follows: Turkeys sit around much of the time. Were weak. Partial loss of appetite, head may or may not turn purple. The discharge from the bowels is watery and of a greenish-yellow color. After the aggravated symptoms appear the turkey usually dies in from one to five days.

At autopsy one or both cæca are noted to be enlarged and distended, and upon opening found filled with products of the disease and fecal material. The wall is noted to be thickened. Ulceration in one or more places is always present. This ulceration may be toward the blind end or toward the opening into the balance of the intestine. Figure 1a shows ulceration on inner surface of cæcum.c the blind extremity of cæcum. Surrounding the area of necrosed tissues there is observed hyperemia. The color of the necrosed area is brownish. The liver is usually found to be two to three times its normal size, is dark in color and studded with areas varying from whitish to greenish-yellow. These represent the areas of necrosis. Figure 1b illustrates the *macroscopic* appearance of the liver. Pericarditis with hydro-pericardium and edema of the connective tissues adjacent to the heart is often noted.

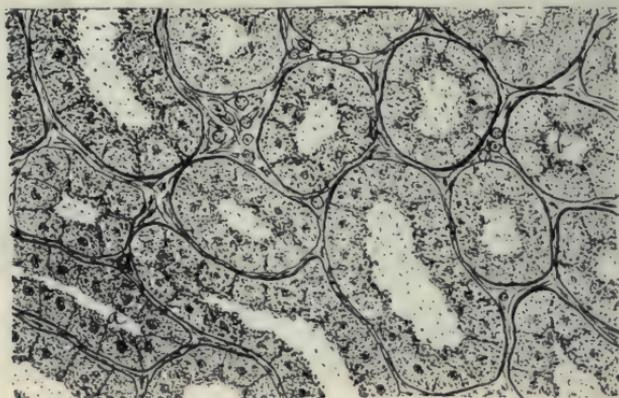


FIG. 4.—AREA THROUGH KIDNEY OF TURKEY WHO HAD DIED OF ENTERO-HEPATITIS.

A—Area showing cloudy swelling. B—Area showing focal necrosis.

All bouillon and agar cultures made from the heart blood, spleen, liver and kidneys remained sterile.

The microscopic study revealed the following:

Specimens from the cæcum and liver of turkeys that had died of the disease were placed in 4 per cent. formaldehyde for the purpose of fixing, then passed through alcohol, alcohol and

ether and celloidin and mounted on blocks and sectioned and stained with hæmatoxylin and eosin for microscopic study. There is noted a caseation necrosis. In Figure 2a will be noted an area of necrosis; *b* shows area of cloudy swelling and beginning necrosis. In this portion is found many *Amæba meleagridis*.

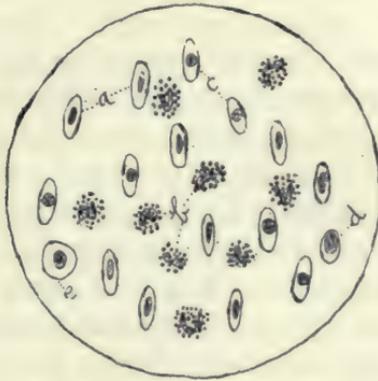


FIG. 5.—FOUR-INCH EYE PIECE $\frac{1}{6}$ -INCH OBJECTIVE. EOSINOPHILIA FROM HEART BLOOD OF TURKEY. ENTERO-HEPATITIS. WRIGHT STAIN.

A—Erythrocytes. B—Eosinophiles. C—Thrombocytes. D—Lymphocyte.
E—Large mononuclear leucocyte.

The first involves the mucosa, the second the mucosa and upper part of the submucosa with *c*, the lower part of the submucosa and upper portion of the musculature which is practically normal. Microscopically the first changes noted in the cells are those of cloudy swelling. The cell cytoplasm appears granular, the nucleus stains paler and finally disappears. The cell is now in a state of necrosis. Later breaks up forming a cheesy mass of proteid derivation which stains homogeneously with eosin.

A section of the liver extending from the normal hepatic cells to the caseated mass shows similar changes as noted in the sections from the cæcum. The amæba are rarely found in the caseated mass. They are found in the newly involved portion where toxic products cause cloudy swelling and necrosis. In this area is also occasionally noted giant cells. Figure No. 3 shows a photomicrograph taken with a No. 2 eyepiece and 7 objective (Leitz); *a*, indicates some of the amæba; *b*, a giant

cell. That a toxic product results from these diseased areas or from the amæba themselves is clearly shown by a study of the kidney. The functioning cells of the tubules show first a state of cloudy swelling. The cytoplasm becomes coarsely granular, the cells appear swollen and the lumen of the convoluted tubules becomes partially occluded. The nucleus stains faintly and finally, in more advanced conditions, not at all. The cell is now in a state of necrosis, and later begins to break up. The connective tissue around the tubules is the last to become involved, later this, too, breaks up and we observe focal necrosis. Passive congestion is also noted. Figure No. 4 shows a drawing under No. 4 ocular and 7 objective (Leitz). In this will be noted: *a*, showing cells in a state of cloudy swelling; *b*, a corner of an area of beginning focal necrosis. It will be noted that the cells are swollen, granular, devoid of nuclei and disintegrating.

Smears made from the blood of these turkeys also show evidence of toxic products. In one field 73 eosinophiles were counted, indicating an intense eosinophilia. Figure No. 5 illustrates a field from a very thin smear showing 9 eosinophiles. There were no intestinal parasites in this turkey.

Conclusions.—Amœbiæsis, entero-hepatitis, or commonly called black head of turkeys, is due to a protozoon (*Amœba meleagridis*).

The disease is fatal to birds in the majority of cases, although it may assume a chronic type.

Eosinophilia is present.

The lesions found are those of ulceration of one or both cæca with cloudy swelling and caseation necrosis of the liver. Cloudy swelling and focal necrosis of the kidneys.

OWING to the growth of their business, the Sorby Vaccine Company, of Chicago, have *removed to* 157 North Franklin Street (corner of Randolph), two blocks west of their *former location* at 163 Randolph Street. Veterinarians in ordering their products should be careful to observe the *new* address, which also appears under their advertisement on page 11 (Adv. Dept.) of the present issue of the REVIEW.

REMARKS ON APPLIED ANATOMY.

BY SEPTIMUS SISSON, S.B., V.S., PROFESSOR OF COMPARATIVE ANATOMY, OHIO STATE UNIVERSITY, COLUMBUS, O.

There is an old proverb which asserts that "It's an ill bird that fouls its own nest," and it is not usually expected that one will criticise unfavorably the methods and results of the branch of scientific work in which he is engaged. In the matter now under consideration, however, it is probably only necessary to concur, in part at least, in the opinion which has often been expressed by clinical teachers and by practitioners, but the anatomical knowledge acquired by students is not adequate for the successful practice of medicine and surgery, and that a very considerable part of this information is not applicable to professional requirements.

In discussing this situation, it is necessary to bear in mind certain circumstances over which the instructor has no control, although the success of his work is largely influenced thereby.

In the majority of cases, the student has had no work in natural science previous to beginning anatomical study. This means that he has no training in observation or in laboratory technique and no familiarity with the formidable terminology into which he is suddenly plunged. Every conscientious teacher and student is painfully aware of the tremendous handicap imposed by the foregoing conditions.

The inherent difficulties of the subject are very considerable. The student is expected to accumulate a working knowledge of the structure of four or five types of animals which are not at all closely related to each other and hence present very striking anatomical differences. Furthermore, it is perhaps now platitudinous to say that sound anatomical knowledge is very largely the product of thorough and systematic work in the laboratory

and that all other means of instruction and information are to be regarded as accessory thereto. There is no royal road to anatomical competence—the way is slow and laborious. Clear mental pictures of structures cannot be gained by rapid, slovenly dissection and superficial observation. No neurological arrangements have been made for mental get-rich-quick schemes, nor do intellectual short-cuts exist except in the imagination of misguided persons and in the disingenuous devices of charlatans who proceed on the assumption that there are a good many people who believe or act as if they believed that they can get something for nothing.

The time of the student is divided between this subject and some others with which it has few or very distant associations. Commonly each instructor appears to be determined to make his unhappy victim a specialist in the branch which he teaches. The result often is that the student suffers more or less acutely from intellectual dyspnea or dyspepsia, unless he is strong enough mentally to ventilate or assimilate properly this deluge of information.

One often hears the view expressed that it is necessary only to have a "general idea" of certain subjects. Two comments may be in place here. A "general idea" is very often a euphonious synonym for a vague and useless impression and it is of vital importance to select with care and judgment the "certain subjects" concerning which more detailed knowledge may not be essential for the end in view. It is precisely in this difficult matter of selection of material that the critical discrimination of the instructor is often severely tested. He must deny himself the pleasure of riding his hobbies, unless he has chosen only such as he can bestride for the direct benefit of his students. There is often the temptation to indulge in the spectacular, to play to the gallery, even to descend so far as to attempt to dazzle the student by pedantic display of profound erudition. In the same category belongs the indulgence in salacious jokes and stories with a strong odor of putrefaction. The teacher who realizes the seriousness and the difficulties of the work in

hand has neither time nor inclination for this sort of thing. On the other hand, he must insist absolutely on a full knowledge of many details which he knows to be essential to competence in clinical work, even when many students regard them as a weariness to the flesh. Text books are commonly of little use in enabling the student to emphasize those data which have the greatest practical value and he cannot be expected to have any considerable ability to see the clinical implications and applications of anatomical data prior to his introduction to the clinical branches.

Let me illustrate this important matter of judicious emphasis. The internal pudic artery of the horse is being described. What should be impressed specially on the student's attention? Two practical considerations. First its position at the pelvic outlet in relation to dealing with paraproctal abscess or tumor. Second, its continuation as the artery of the bulb in relation to urethrotomy.

As another illustration of selective methods might be mentioned the importance of the arrangement of the deep fasciæ in relation to drainage, etc. In my undergraduate study, I have no distinct recollection that the fasciæ were regarded in any other light than membranous nuisances which rendered approach to other structures more difficult, while it was a matter of the utmost importance to know how many transverse processes of the thoracic vertebra the complexus muscle was attached to.

It was actually distressing to note in a recent catalogue of an important veterinary college that none of the questions in anatomy asked of second and third students were topographic in character.

The physiologist, the pathologist, the internist, and the surgeon each and all expect the anatomist to ground the student in those facts which they consider fundamental prerequisites to their respective branches. Is it then very remarkable that instructors in anatomy find themselves at a loss sometimes to know how best to meet these multifarious demands? The problem

may be solved best perhaps by laying down certain general rules of procedure and by processes of exclusion.

It is evident that detailed topographic knowledge is necessary in regard to those regions which are most commonly the seat of operative interference. Fortunately a good many of these regions are comparatively simple in their anatomical arrangement and hence are easily learned and remembered. A few, *e. g.*, the parotid and the inguinal, are rather complex and require very careful study. Once they have been thoroughly mastered in the dissecting room, however, it is usually possible to refresh the memory sufficiently for surgical purposes by the study of appropriate illustrations. The number of veterinary operations which are difficult on account of structural complexity is still small and is not increasing rapidly. It is, however, essential that anatomical teachers keep in close touch with surgical progress and do their share in contributing to improvement in operative procedure.

It is the belief of the writer that all superficial structures must be regarded as important and especially those which constitute reliable surgical landmarks. This aspect of the subject has not, in my opinion, received the attention that it deserves in veterinary schools. A properly equipped laboratory should have arrangements by which dissectors may have constant access to appropriate skeletons and also to the living subject. Anatomy is said by a standard text book to be the study of "the structure of animals when they are dead." This is a most unfortunate statement, as it makes the study dead too, *i. e.*, cuts it off from the applications which alone make it worth while. The real teacher knows and must bring his students to see also, that the study of dry bones and the dead body is the means and the only means by which an accurate knowledge of the structure of the living organism is to be obtained.

The applications of anatomy to physiology, pathology and internal medicine may well be considered together, and it is here, perhaps, that the problem is the most difficult. One has only to think, for example, of the organs possibly involved and the

heterogeneous group of conditions which are often thrown together under the very convenient and inclusive term "colic" to see that the selection of anatomical facts to be insisted on in this connection is not at all simple. And what shall be required in regard to the nervous system and the organs of the senses? I may admit very frankly that I have never been able to formulate very definitely what the practitioner needs to know concerning the structure of the central nervous system and have tried to cherish the hope that sufficient additional information would accrue from courses in histology and physiology and voluntary reading on the part of the student. As to the nerves, I adhere to the principle that all superficial nerves of large or medium size are practically important, and that the nerves of the limbs must also be accurately known; others, in my opinion, may be studied systematically with reference to their general distribution and function, but without insisting on details of topography.

At the risk of being accused of condoning careless dissection, I advance the opinion that it is inadvisable to devote much time to the small branches of arteries, since these are not alike in any two bodies and have no surgical importance. The time thus saved can be devoted very profitably to obtaining thorough and definite topographic knowledge of the arteries of large and medium size and the occasional variations found in them. On similar grounds it seems unnecessary—if indeed not futile—to follow the branches of arteries within muscles. On the other hand, it appears to me that the superficial veins in general and the veins of the limbs have not received sufficient attention. The examination of the superficial veins should be done chiefly on the living subject, because of the simplicity and efficiency of the method and the frequent variations, even in large veins. Practice in this method enables the surgeon often to raise and determine readily the particular arrangement of the superficial veins in the field of operation in a given case.

The lymph glands are sometimes studied almost entirely in relation to meat inspection, but it should be remembered that abscesses are more likely to occur in groups of lymph glands

than elsewhere and hence the glands should be studied with reference to operative procedure, noting their relations particularly to the larger blood vessels.

Perhaps the greatest weakness in veterinary anatomical work has been and still is in a great many places, I fear, the lack of genuine topographic method. It seems almost incredible that there exists no topographic work in English on veterinary anatomy at all adequate to professional requirements. This unfortunate condition is and can be only partially relieved by works on systematic anatomy, physical diagnosis, and surgery. It is to be hoped that the comparatively recent introduction of improved methods of preservation and preparation of anatomical material will lead to the appearance in the near future of a satisfactory manual or atlas of topographic anatomy for students and practitioners of veterinary medicine.

The anatomical laboratory is the oldest laboratory in the history of medicine. Has veterinary anatomical teaching kept pace in method and matter with related branches and is it adequate to professional requirements? I fear that the answer must be in the negative. It seems inadvisable to enter here into further consideration of the factors concerned in this condition, although some of these might be evolved in the subsequent discussion, which I believe the subject deserves.

I have discussed the subject as the title would suggest, from a purely utilitarian standpoint and without any reference to its cultural value. I firmly believe, however, that it has great value as a means of mental discipline, even when pursued frankly as an applied science.

THE commencement exercises of the Colorado State College were held June 8. The following is a list of seniors of the Division of Veterinary Science who received the degree of Doctor of Veterinary Science: Arthur L. Bevan, Harry F. Karn, Cecil S. Lemon, Walter G. Blake, Horace S. Eakins, Jean V. Knapp, A. H. Hinken. The alumni banquet and ball was held in the evening.

THE DUTIES OF THE VETERINARIAN AND THE AUTHORITIES.*

BY WALTER G. HOLLINGWORTH, D.V.S., UTICA, N. Y.

The majority of the maladies that come under the cognizance of Veterinary Sanitary Science more or less affect every branch of agriculture, and the damage they cause is not limited to the immediate pecuniary loss and inconvenience attending the influence or death of those affected, but extends to the breeding and multiplication of animals, embarrasses one or more departments of commerce, and generally injures to a more or less considerable extent, the well-being of mankind. Not only are such diseases formidable by the damage they inflict, but some of them are more serious from the pernicious influence they exercise on the public health either by their transmission to mankind by contact or actual inoculation, or by the use of the flesh or products of the diseased animals as food; some of the most dreadful and fatal maladies are thus occasioned.

The intimate knowledge of the disease and the nature of the contagion upon which its propagation depends, is the basis of Veterinary Sanitary Science.

The duties and responsibilities of the municipal and county authorities should constitute, collectively, an unceasingly vigilant guardianship over the interests of the community; and one of these duties is that of protecting it from ravages of contagious diseases. Now, if one of these scourges appear in a community their duty is to act decisively, and immediately adopt all sanitary measures to check its further invasion. The health of the community rests to a great extent upon the shoulders of the authorities. Why? Because it is their duty to comply with the law

* Presented at the April Meeting of the Veterinary Medical Association of New York City.

(in such cases they have unlimited power), and by so doing, unnecessary death can be obviated. There is great trouble in enforcing the law; in one community extreme rigor will be practised, and the grossest carelessness and laxity in another may exist. When informed of the existence of a contagious disease, their duties are twofold, those of a general kind and in the interest of the community, and those having special reference to the interest of the individuals, the owners of the animals.

In this case such persons can be of great help in checking the spread of the scourge, by communicating to the authorities the existence of a contagious and suspicious malady; and it seems to me that it is a very serious crime for any one to conceal the existence of a contagious malady, and especially disposing of the sick and contaminated animal. It is directly against the purpose of our sanitary laws. The authorities should be broad-minded men, they have much to look after in regard to the public health; by so doing they will insure public health, which will stimulate longevity of life and perpetuate the human race.

Sanitarians know that more must be done to protect the consumer from the unwholesome conditions of our food and water and the diseases that are transmitted from animals to man through flesh and fluids; and immediate contact from such diseased live-stock is of much greater proportion than the public realizes; such being the case, hundreds of lives are annually sacrificed, that are entirely unnecessary.

Our State is backward in regard to inspection, especially that of meat and milk. This taking such conditions which are of such vital importance to the public health of live-stock in the lax way which we are doing now, means a great financial loss to the State, nation and communities. It enhances fraud, and the result will be nothing less than a perpetual scourge. I need only mention the glanders situation, which is confronting us at present; little do the laity realize the great danger that they are subjected to. I understand that in your city that the loss of life in the human race due to this disease during the year 1910 was 29. Is not that a terrible condition of affairs to exist? The au-

thorities will never meet the situation in a scientific way till they procure the services of veterinarians to act as their advisors, as they are naturally sanitarians, due to their comparative knowledge of such kinds of diseases that are transmitted from animals to man. There is a vast amount of money spent to prevent crime, but is there a sufficient amount spent to suppress disease? The authorities, as guardians of health, should think that condition over very seriously.

To sum up the duties of the authorities, I will say, that according to the year book of the United States Department of Agriculture, the estimated value of live-stock, exclusive of poultry and pet animals, is about \$190,000,000, and the death rate is about 10 per cent., and there is no doubt but that percentage could be much reduced by an efficient veterinary service. Now see what an asset it would be to this State to seek the services of such professional men who are best qualified to look after such conditions, and such professional men are qualified veterinarians; so it is up to the authorities to "sit up and take notice." I mentioned inspection (meat and milk, especially). All abattoirs and killing houses should be thoroughly inspected. Any city should have its abattoir; or, if any person or corporation conducts such a building on sanitary lines, it should receive the city's approval. As to milk inspection, very little is done along this line, I assume because of the expense. What does expense amount to, if you get results? It costs money to run any government, but put the money where the best results are obtained. And a city that can boast of a clean milk supply can surely boast of a low death rate, which is the pride of the authorities of any municipality.

DUTIES OF THE PUBLIC.—They should be interested in the suppression of any contagious disease; they should be active and work in concord with the authorities. When the local government gets the assistance of the public, the spreading of a contagious disease is greatly lessened. It is just as much a duty to live up to the laws governing Sanitary Science, as it is to live up to the laws governing crime—a person that willfully sup-

presses the existence of such maladies should receive the punishment prescribed by law.

The greatest drawback that Sanitary Science has to contend with is the uneducated public opinion, as to the nature of contagious diseases. Those of the public who realize the serious nature of transmissibility of diseases should become educators at such times, and their services will be greatly welcomed by the authorities. The public press, above all, can be a great help during an invasion of a contagious outbreak, by getting in communication with those that are well qualified to give opinions in regard to the health of the community and livestock. I know of no better educating medium.

It is, further, a duty of the public to use their influence in a legitimate way with our representatives at Albany. They are our servants; it is up to them to have enacted laws that will meet with the approval of their constituents. All they want is to be put right, so to speak. Whatever defects exist in our present sanitary laws let them be repealed and righted. I am of the opinion that an act establishing a livestock sanitary board, properly drawn, would be a step in the right way.

Death and sickness are not considered serious enough, only when they are in our own household or among immediate relatives or friends. It is too late to lock the door against the unwelcomed visitor, when once it appears; but remember prevention is better than cure. If any of your family become affected, live up to the statutes regarding further invasion. People are beginning to realize the necessity of emphasizing sanitation rather than disease. We are living in a progressive age. Pasteur once said that it is within the power of man—(which would come under the head of the public)—to eliminate the contagious diseases from the face of the earth, and that is the goal sanitary science is trying to reach.

The duties of the veterinarian, as well as his responsibility in case of the existence of a contagious disease, are of great magnitude. The duties of the veterinarian are of the greatest importance; the responsibility that rests on him is greater than upon

any of those who in any way officiate during the crisis. The veterinarian owes an obligation to himself, his profession, his colleagues, and to the law to perform such duties as may evolve the meaning of Veterinary Sanitary Science. To himself, to become proficient, to specialize himself in such work. When his services mean much to the community, his aim should be to prevent disease and death, not only in livestock, but human life also. In case of an outbreak, he should be in a position to bring every available resource into activity to combat the same. It may be true that the veterinarian does not receive the appreciation and acknowledgment that the physician will in his endeavors to suppress an epidemic among his own species, but the work of the veterinarians is no less meritorious. Why? Because he is able to work at the fountain head of many epidemics that are transmutable from animals to man, which the physician would not be familiar with. And that not alone—there is the monetary value of the livestock, and the products of the same, which amount to enormous wealth in this state; and, as the livestock is an absolute necessity to the fertility of the soil, which the population depends on for their subsistence, it is a duty he owes himself to cultivate his intelligence and maintain those moral qualities which can alone enable him to exercise his professional qualifications with advantage to himself and the community.

TO THE PROFESSION.—When we decided to take up the science of veterinary medicine for a livelihood, we at once assumed an obligation to perform duties which are of great magnitude, in regard to the health of livestock and the suppression of disease, and as the goal of the veterinarian is advancement, it is the duty of each and all of us to work along that line, and use all legitimate means to accomplish the same.

TO THE COLLEAGUES.—It is our duty as veterinarians to act in harmony, and bring about the highest principles of equity toward each other. We are bound, or ought to work, for the interest of the profession. The public interests are at stake; we are looked upon as their benefactors. We should familiarize ourselves with the work of our colleagues, consult each other on sub-

jects pertaining to the profession, in time of doubt communicate to others results, good, bad, or indifferent. The aid of association work is the one thing we should stimulate. It is bound to do good. Seed planted in fertile soil is bound to grow; all it wants is good tilling afterward. That is just what any active society is doing. This society is bound to help its members more than words can tell, and it will indirectly greatly benefit the agricultural interest, which is the keystone of prosperity, not only in this state, but in our nation.

DUTIES OF THE OWNERS OF ANIMALS.—Now, if anyone needs education along sanitary lines, this is one of the individuals. They do not seem to realize what a diseased animal means to them. They, in many cases, have no scruples in disposing of a diseased animal to be used for food, or disposing of the products of diseased animals for the same purpose. There is no economy in harboring diseased animals, and hence it would be dollars in their pockets to seek a healthy herd, but not at the risk of aiding sickness and death to the consumer. He should realize that the sanitary conditions surrounding his buildings would greatly benefit his stock, increase his returns. The owners of livestock, the products of which amount to more than one-third of the products of the soil, should act in unison with the authorities and veterinarians who are their guardians. Time spent in thought along benefiting their sanitary condition would be a great asset.

We have an agricultural law which we should live up to. If it were not for such, the health of livestock would be jeopardized. I am very sorry to know that there are unscrupulous members in our ranks, but we are not alone. It is our duty to bring such culprits to the hand of the law, so they can get their just deserts. When a dollar is in sight, some people lose their consciences. They do not for a moment care to realize what result might happen, due to their fraudulent statement. The work of the suppression of a contagious disease ought to be courageously, strictly, and conscientiously carried out with sufficient zeal to get the best results.

VETERINARY ACTIVITIES IN GEORGIA.

BY DR. W. M. BURSON, ATHENS, GA.

The veterinary profession is coming into its own in the Southern States, especially Georgia. Within the last two years a State Veterinarian has been appointed; a Department of Animal Pathology has been installed at the Georgia Experiment Station, and a Department of Veterinary Science has been installed in the State College of Agriculture and Mechanic Arts, of the University of Georgia, at Athens. The state has a good Veterinary Practice Law, a State Board of Veterinary Examiners, and a lively State Veterinary Association, which meets semi-annually. Georgia is making rapid strides in agricultural progress and the various live stock industries are receiving much more attention than in the past.

Tick eradication in co-operation with the Federal Government is being carried on successfully and in the recently freed localities there is enhanced interest in improvement of cattle breeds and types. The hog industry is growing by leaps and bounds, and it is expected that the Legislature at its next session will make appropriation for the manufacture and distribution of hog cholera serum.

During February and March of this year the State College of Agriculture ran an "Educational Special" train of seven cars, one of which was a car of live stock. The train traveled over 6,000 miles and covered nearly all parts of the state. It visited over 150 towns in 114 counties.

Accompanying the "Educational Special" were three veterinarians giving talks, lectures and demonstrations on various subjects pertinent to the live stock industry. They were: Dr. E. M. Nighbert, in charge of Tick Eradication in Georgia and

South Carolina; Dr. Peter F. Bahnsen, State Veterinarian, and Dr. W. M. Burson, Professor of Veterinary Science, Georgia State College of Agriculture.



In the accompanying photograph Dr. Nighbert is at the left, Dr. Bahnsen in centre and Dr. Burson on the right.

THE midsummer meeting of the Veterinary Medical Association of New Jersey will be held at the Experiment Station, New Brunswick, July 13 and 14. Papers will be presented by Mrs. Jasper Lynch, of Lakewood; Dr. Clarence Marshall, of Philadelphia, Pa.; Dr. McDonough, of Montclair, and Dr. McLaughlin, of New York City. A splendid treat awaits those whose good fortune it will be to be present. Luncheon will be served at the Experiment Station.

President Rogers extends a cordial invitation to *all* veterinarians to be present, and it is expected that a great many from the adjoining states of New York and Pennsylvania will avail themselves of this opportunity of being with their friends in New Jersey.

STATISTICS OF TUBERCULIN TESTS AND POST MORTEM FINDINGS.*

These tests were made by different veterinarians under ordinary varying conditions and circumstances:

Number of animals tested and condemned.....	2,002
Number of generalized cases.....	636
Number of localized cases.....	1,295
Number of no lesions cases.....	71

Generalized, about 32%; Localized, about 65%; No Lesions, about 3%.

Comparative percentages of different temperature readings of generalized cases.

Temperatures, 102-103.....	1%
Temperatures, 103-104.....	5%
Temperatures, 104-105.....	19%
Temperatures, 105-106.....	75%

Comparative percentages of different temperatures readings of localized cases.

Temperatures, 102-103.....	1%
Temperatures, 103-104.....	6%
Temperatures, 104-105.....	21%
Temperatures, 105-106.....	72%

Comparative percentages of different temperature readings of no lesions cases.

Temperatures, 103-104.....	30%
Temperatures, 104-105.....	20%
Temperatures, 105-106.....	50%

Number affected in glandular tissues.....	1,740	87%
Number affected in lungs.....	821	41%
Number affected in miscellaneous parts and organs.....	1,001	50%
Number affected in udders.....	51	2½%

Breed, Number and Percentum of Each Breed Condemed.

Ayrshire	76	3½%	Guernsey	30	1½%
Ayrshire Grade	28	1½%	Guernsev Grade	44	2%
Dutch Belt	8	.04%	Holstein	280	15%
Durham	15	.07%	Holstein Grade	390	20%
Durham Grade	9	.04%	Jersey	262	14%
Jersey Grade	206	10%			
Native	214	10%			
Grade	314	15%			
Swiss	40	2%			
Swiss Grade	85	4%			

* Statistics given by Dr. J. F. DeVine at the Twenty-first Annual Meeting of the New York State Veterinary Medical Society, Ithaca, N. Y.

This data was carefully prepared to ascertain if any distinct relation existed between the temperature readings and post-mortem findings. Comparison of the above temperatures of generalized and localized cases tends to show that the temperature readings are no positive indication as to the extent of the disease in the animal other than that in about 75% of the generalized cases the temperature readings were from 105 to 106 as against 72% of the localized cases giving the same temperature readings, but it should again be noted that the percentage of localized cases was more than twice as many as the generalized cases of the total number tested and condemned. The number of no lesions, viz., about 3½%, seems to be quite in keeping with statistics furnished by others. I would add, however, that post-mortem inspection was carried on only to the extent of ordinary meat inspection and in no instance were minute or microscopical examinations made. Since completing this data I have regretted that the entire number of the various breeds tested was not given, followed by the percentage of reactors, but I might add that from inquiry and personal knowledge the ratio of reactors of all breeds was very much in proportion to the number of animals tested and conditions of their environment irrespective of breed.

OBITUARY.

R. R. HAMMOND, V.S.

Dr. R. R. Hammond died at his home in Cherokee, Iowa, on April 26, 1911. He was graduated from the Ontario Veterinary College in 1885, and has been a constant reader of the REVIEW since.

Dr. Hammond was a member of the American Veterinary Medical Association and of the Missouri Valley Veterinary Association. He is survived by a widow and one daughter.

REPORTS OF CASES.

SOME CASES OF STOMACH ENGORGEMENT.*

By L. U. SHIPLEY, Assistant State Veterinarian, Sheldon, Ia.

CASE 1.—A black mare with foal by her side one week old was allowed access to a clover meadow and green corn, engorging her stomach with the latter. When I was called I found the animal in considerable distress, but not apparently suffering acute indigestion in the advanced stage; gave arecalin and passed the stomach tube getting negative results from both, except the characteristic salivation from the latter. Could not even get the escape of gas, saying nothing about the solid contents of the stomach from the tube; followed this with some anodyne treatment, later gave eserine sulphate 1 grain, getting considerable peristalsis and some evacuations of the bowels, but not relief of the engorged stomach, which ruptured; the time of its occurrence being very readily determined by the sudden cessation of distress and the appearance of a cold perspiration. However, the symptoms were never very violent in character. Apparently, here was a case where the stomach was engorged with such a solid mass of corn that the much lauded stomach tube as a panacea for the cases, failed; also the therapeutic treatment.

CASE 2.—A large two-year-old filly gained access to an open crib of corn filling her stomach to its fullest capacity. Being promptly called I found this animal not suffering any acute pain evidently, digestion not having been completely suspended; but the stomach so engorged that a grunt was observed with every respiration. The animal was in a standing position, head lowered and a dull listless expression of countenance, indicating anemia of the brain. I gave this animal 1 grain of eserine sulphate, followed later with 1 grain of arecalin and one-half grain of strychnia sulph. This treatment, while not producing as much evacuation of the bowels as it does in acute indigestion, did cause active peristalsis that seemed to give relief to the en-

* Presented at Twenty-third Annual Meeting Iowa Veterinary Association, Marshalltown.

gorged stomach, presumably by causing some of the contents to move along into the bowels; this was followed with a bolus containing aloes 1 ounce, calomel 1 drachm, powd. nux 12 drachms, and 1 pint of raw oil; also some hyposulphite of soda was given in this case. The alkaloidal cathartics seemed to give relief to the engorged stomach, the slower purgatives giving beneficial results later.

CASE 3.—A large three-year-old Clyde mare had been running in a stock field where husking had just been completed a few days previously. She was first observed standing apart from the other horses three days prior to my visit; but when approached trotted off to the field with the other horses. The next day she was observed lying beside a straw stack in the barn yard, and again when driven up went out to the stock field. On the morning of the day of my visit, which was about 9 a. m., she was standing at the barn door, the owner thinking perhaps she was indisposed, took her into the barn where she stood quietly all day; the owner observing nothing unusual in her condition until about 8 p. m., when he found the animal wet with perspiration, but in a standing position, and not making any violent demonstrations of acute pain. Upon my arrival she had just lain down in a natural position and assumed the standing position when spoken to. The following symptoms were observed: Pulse very weak and irregular, muscular tremors, cold clammy perspiration and a sub-normal temperature 99 F.; hanging the head near the floor, respirations rapid and jerky, accompanied with an occasional deep respiratory movement and a groan. There was no tympanitis, exploration revealed the rectum and floating colon empty; being unable to make a definite diagnosis as to the cause of the trouble, of one thing I was sure—that death was rapidly approaching, and so informed the owner. This occurred about two hours later, and on the following morning I made a P. M. and found a large mass of masticated food, consisting mostly of corn stalks and considerable grain in the abdominal cavity. What could be found of the walls of the stomach were in an advanced stage of decomposition; indicating that rupture of that organ had occurred some time prior to death. The peculiarity of this case being the absence of diagnostic symptoms.

Regarding the treatment of these cases, I find in referring to text books that they give of morphine, and anodyne treatment is advised, the theory being to prevent rupture of the stomach by violent movements of the suffering animal; also that the adminis-

tration of alkaloidal cathartics are dangerous because of their liability to cause rupture by the muscular contractions they cause. True it may give temporary relief from distress; on the other hand, prompt administration of quick acting cathartics may give relief to the engorged stomach, as in Case No. 2 of this report.

COLICS, INDIGESTIONS AND IMPACTIONS.*

By JAMES VINCENT, Shenandoah, Ia.

At first thought it seemed useless for me to attempt to say anything on the above subject, considering there has been so much said since the first writings on equine medicine, even back to the Sixteenth Century.

This is not written with the idea of bringing forth any new ideas, as my methods of treating the following cases are much in the same line as some of the writers; but not wholly, else it would be of no use for me to bring forward the subject after so much has been written.

This theme has been chosen with the idea of bringing out a discussion and finding out the variations with which some of you handle this question.

It must be admitted, that like housekeeping, there are no two of us alike in treating a case of this kind, though we are one and all desirous of the same results.

Without going into the subject in detail and dividing it into divisions and subdivisions as do the writers, we will suppose at once that I have a case brought to me at my hospital—one of spasmodic or flatulent colic. Of course, if it is a bad case of flatulency, I thoroughly disinfect my trocar and region in the right flank and relieve the gas as soon as possible; sometimes I have to plunge the trocar in as many as three times before I get the desired results, then no place nearer than three inches from where it was inserted before. If this does not bring the gas I go to the left side and select the most resonant sounding place.

I would say that in case of failure on the right side by trying three times, I have never failed the first time on plunging the trocar into the left side.

The animal now relieved of gas I wait and study my case for some five or ten minutes or longer, as the case may be, get the

* Presented at the Twenty-third Annual Meeting of the Iowa Veterinary Association, Marshalltown.

history from the owner or attendants, as much as possible, consider the temperament, the conditions under which it has been thrown for the past week. If there is no tympany don't be too hasty in giving remedies, and when I do begin to prescribe, it is to try and relieve certain conditions which I see present. If there are no definite symptoms and case seems uncertain as to the direct spot the pain comes from and the pulse is in a reasonable condition, say about 60, and not as full and strong as it should be, I look at once to stimulating the nervous system, arousing and warming up the animal. I never give sedatives. I usually give one ounce arom. spts. ammon., three drachms essence of peppermint, one ounce powd. ginger in a quart of warm water.

If the case does not improve in thirty minutes it most likely has given some definite symptoms as to where the origin of the pain lies.

If the animal retches or belches or gives other evidence of pain coming from the stomach, I at once lose no time in passing the stomach tube, and many times quite a volume of gas escapes. I usually am able to draw off a large quantity of water, food and gastric juice, which is extremely offensive. I now rinse out the stomach with some water and mild disinfectant, such as one-half ounce eucalyptolin or eucamphol in a gallon of warm water or water from the hydrant or pump, usually I use a handful of salt to a gallon or two of water, each time I pump in a quart or two of the above and leave it for five or ten minutes before drawing it off, when through rinsing the stomach out, I usually leave in it an alkaline stimulant, such as carb. of ammon., powd. nux. and ginger.

After this I give my patient time to show evidence of relief, and if he does not, I make a rectal examination, and if I find the back bowel loaded I give a copious enema. Now, if he still gets no relief I begin to give some of the hypodermics, such as Knowles' colic remedy, which is morphia sulph. gr. 2, atropin, $\frac{1}{4}$ gr., aconite crystals $\frac{1}{40}$ gr., or one grain arecoline hydrobromide, and in a large animal I sometimes double it. I have also used physostigmine compound; and at other times barium chloride intravenously.

At the same time using such hypodermics as are indicated to try and keep the animal's heart as near a normal condition as possible.

If still after 12, eighteen or more hours the animal has passed little or nothing from the bowels to indicate that they were acting

normally, and if it is tympanic; here is where my treatment varies from that prescribed by most of the writers on the subject.

I reason that the trouble lies in the large or back bowels, and that there is a partially paralyzed condition or overloaded or an obstruction that nature has been unable to remove. Now, to break this up I never give cathartics.

I call for a pail of clean warm water, I add to this an active stimulant much the same as I put in the stomach, sometimes I add one pound of sulphate of magnesia, usually one ounce powd. ginger, 2 drachms powd. nux, one ounce arom. spts. ammon. $\frac{1}{2}$ ounce essence of peppermint. Now, the trocar and animal's side are rigidly disinfected, the trocar is driven into the large bowel, and if much inflated I let out a good amount of the gas, but not all, before I place a rubber tube three or four feet long over the canula and siphon the contents of any pail into the bowels.

This done I let the balance of the gas escape; in this way I know the fluid has gone where I want it, and the bowel has not collapsed and pulled off the end of my canula and allowed the contents to flow into the abdominal cavity.

I have given this treatment frequently and always with success except once, and I posted the case and found a gut tie.

A history of three cases will illustrate my treatment.

CASE I.—Called to farm to see a medium size mare suckling a fall colt, both running in stalks; owner noticed her up and about the yards not feeling right, rolling sometimes, not in much pain, would get up and go to eating hay, thinking not much wrong went off and returned middle of afternoon and found her alternately up and down and picking, and would repeat these movements every ten or twenty minutes, no action of bowels during the day.

I was called, found her in the above condition, pulse a little above normal, no severe pain, rectal examination found large bowel very full and hard, also lying across the abdominal cavity pushed hard against the pelvic arch. This was 4 o'clock p. m.

She was also a little bloated. I called for two gallons of warm water, I added stimulants as spoken of above and siphoned it through the side into the large bowel, gave no other treatment, ordered her tied in a clean stall with no feed and for the owner to report the next morning by 'phone if nothing serious presented itself before.

Next morning he reported she had emptied out about a bushel basket full and was as hungry as a wolf.

CASE II.—Called at 6 o'clock p. m. November 1, to go twenty miles. Went in my auto, found fine six-year-old mare down on her left side. She was found sick on going to stable in the morning. Another man had been treating her during the day and thought she was about to die, he advised them to call me, then went home.

The bowels had passed nothing during the day, greatly bloated; heavy breathing; pulse 80. I called for a pail full of clean warm water, made up above solution, put trocar in right side while she was down. Let most of the gas escape. Siphoned one-half contents of pail into her when she suddenly arose to her feet. I pulled cantila out as soon as she started to rise. In a minute or two she made an effort to belch. I soon had the stomach tube in her and drew off two candy bucketfuls before it stopped running, then pumped the remainder of my solution into her stomach and removed the tube. She improved very rapidly, and in thirty minutes the pulse had dropped to 60. She straightened up, called for her mate, and by 9.30 p. m. I had gone to bed. Owner went out several times during the night and found her picking at hay each time. Next morning took her feed and drink as usual and had emptied out during the night and now acted as though nothing had been wrong.

CASE III.—This was a twelve-year-old 1,400-pound gelding. Came to the hospital after 5 in the evening, after working, filling sewer ditch. He ate and drank as usual at noon before; his owner noticed that he had not emptied out during the afternoon as usual.

He was not suffering much, pulse and temperature a little above normal. Head down, pawing and uneasy, and at times down and rolling.

I gave a quart of stimulant similar to above and he got easier and went home.

Then about 10 o'clock in the evening he returned seeming worse. I gave him 2 grains arecoline and he passed great volumes of wind for some time and seemed to get better, but no fæces passed, gave him 2 physic balls (P. D.'s), and at 11 o'clock the owner took him home again, in the morning he was returned and seemed worse, I now used the stomach tube and got quite a quantity of gastric juice and gas; he seemed relieved again for some hours; no fæces during this time.

I now gave hypodermically 2 grains arecoline, and in thirty minutes gave two more. You who have used this and similar remedies to any extent, can see the distressed countenance, quivering of the muscles, breaking out in a patchy sweat, and general despondent condition, still uneasy, no action of bowels. Eserine was used twice, 1 grain each time, with no results.

By 4 o'clock or twenty-three hours after coming to barn he began to bloat, and a general appearance of going to the bad, even the owner's wife and children came over to give the old horse their last farewell and never expected to see him alive again.

I now put in my irrigating pail 2½ gallons of warm water and added 1 ounce eucalyptolin, 2 drachms *Cannabis indica*, 4 drachms essence peppermint, 1 ounce powdered ginger, 1 ounce arom. spts. ammon., this mixed well. Trocar and side made ready, trocar drove in the third time before I got gas, let most of it escape. Now attached rubber tube and siphoned this solution into the large bowel; in a short time that distressed condition left him, got easy, head up, noticed things, and in ninety minutes he was picking hay at the manger. Before the middle of the night his bowels had begun to move and by morning he was purging. The following day he ate a little and drank some. From this on he made a rapid and uneventful recovery.

In looking over "Reeks on Colic," he speaks of doing something similar by using a few ounces of water with a little disinfectant in it. Now, if you will look at his cut of an impaction on page 150 you will see at once that the above treatment would more than likely have removed this, also a much larger one or at least the chances are in favor of it; and further will say, I never have had any ill results from the above treatments when I have been unable to get an action of the bowels otherwise, except as I said before, when there is a gut tie, and I consider the above treatment of great advantage over all others even in these cases.

SOME INTERESTING CASES FROM THE NOTE BOOK.*

By L. L. HEWITT, Moran, Kansas.

In giving a report of these cases, it is not with the intention of telling you something new, but that I might interest you and bring forth a discussion that will benefit us both.

* Presented at the Semi-annual Meeting of the Missouri Valley Veterinary Association, Kansas City.

CASE No. 1.—November 10 a two and one-half-year-old filly was brought to me with permanent central incisor, which was just erupting, making its appearance in a very unsightly manner, turned quarter way around and projecting forwards. The owner, of course, wanted it removed.

The filly was placed in stocks and a gouge, such as is used in extracting wolf teeth, forced in beside the tooth, with the use of a dental mallet, and the tooth soon loosened, as it was not a fully matured tooth, and removed

CASE No. 2.—A three and one-half-year-old filly was brought to me December 18, with central permanent central incisor posterior to its normal position, and projecting above the level of the other teeth sufficiently to wound the hard palate.

Extraction was attempted in the same manner, as in the previous case. This tooth was fully developed and firmly implanted within the alveolus, which made the operation both difficult and painful.

Both patients are doing nicely, but hereafter I shall first administer an anæsthetic, for it is too slow and painful an operation to perform without it. The extraction of such teeth is certainly more pleasing to the owner than cutting them off, which only affords temporary relief.

CASE No. 3 was the trephining a two and one-half-year-old gelding for the repulsion of upper second molar. The operation was not the most interesting part, which was completed in the usual manner. But resuscitation of the patient after the operation was completed. Two 1-ounce capsules of chloral hydrate were administered perorem, as I usually do to 1,000 or 1,200-pound horses. Narcotismus was taking place very slowly, so another 1-ounce capsule was given. After the operation the patient began to sink very rapidly. One-ounce strychnine sulphate was given hyperdermically, and the assistants were kept busy doing what they could to stimulate the patient by slapping and rolling him about. In about five minutes another half grain strychnine was given, followed in a few moments by another half grain, but all with no effect. The situation was now very serious indeed, for the horse was now all but dead. One-fourth grain strychnine was now given intravenously, soon followed by another one-fourth grain. Returning life was soon in evidence, followed by toxic symptoms of strychnine, but in about three hours he was on his feet eating hay.

If such an accident should occur with me again I would give the strychnine intravenously at once.

CASE No. 4.—June 2 was called to see a horse that was going lame in hind foot caused by kicking into an iron wheel about two weeks previous. The hoof was split slightly, and discharging pus at coronary band and sole of foot.

After casting the horse and removing some of the hoof so that the deeper parts could be thoroughly examined, the outer ala of the os pedis was found to be completely broken loose from the body of the bone. The foot was dressed and the horse allowed to rise. It being a very vicious horse, I gave it very little attention until about four months later. The horse was still lame and pus discharging from the foot. Again the horse was cast and the horny tissue removed. An examination of the deep structures showed the ala had united with the body, but left a sequestrum which kept up a constant irritation. It was removed, and in a few weeks the horse returned to work sound.

CASE No. 5.—June 23 was called to see a yearling stallion that had gotten in a barb wire fence and tore the skin and connective tissue from the anterior internal surface of the great metatarsus, leaving it entirely denuded for a space of about $3 \times 3\frac{1}{2}$ inches. Moist antiseptic dressings were applied, and in about six weeks a thin layer of the exposed part of the bone separated and came away. A granular tissue now formed over the bone. The leg was considerably swollen, which no doubt was partly due to standing, so the owner was advised to turn the colt loose in a lot to exercise, which he did. Between the hock and pastern the limb is now almost thick with a churn and the wound refuses to heal. What would you do for it? It would be a valuable colt if it was sound.

BLACKLEG (AS I DIAGNOSED IT) VACCINATING AND RESULTS.*

By C. J. HECKARD, Wheatland, Ia.

First I will give the history of the calves as I received it from the owners. All being practically the same; calves seemed to be perfectly healthy and well, would crowd up to their feed troughs

* Presented at Iowa Veterinary Association, Des Moines, Ia.

and eat with a good appetite. Fetal matter looked natural and food was well digested. Urine seemed normal in amount and condition. Food, such as hay, corn, oats and fodder, was all right, excepting in one case. Owner had no hay, so fed fodder with corn instead; and calves manure looked more like that of cattle on full feed. Water in all cases was good. All calves had been pastured on low ground.

FIRST SYMPTOMS.—Calf would move around very stiff, refuse to eat or drink, in four or five hours lay down quiet and seem drowsy. Soon it would lay over flat on its side, and stretch out and show labored breathing. This condition would grow worse until dead. Calves lived from twelve to fifteen or twenty-four hours after first symptoms was noticed.

The following is what has puzzled me in all cases of Blackleg this winter (or as I called it Blackleg), and this is why I am writing on this common disease.

In all cases the poorer, younger, scrubbiest calves are the ones that die. Owners found no swellings or crepitation under the skin on body whatever. But found some congested blood around inferior part of legs, about the meta carpal region or pastern. Calves usually bloated soon after death, which, of course, is common in Blackleg.

POST-MORTEM.—All organs seemed practically normal. Spleen might have been a very little enlarged and dark, but nothing like I have seen before in Blackleg. Dr. Koto will give you a few words on this, if present, as I sent him the spleen and part of lung of a case. Will give you the names of some of the parties who experienced losses: Number of calves lost before vaccinating and after. Might state here that I used good fresh blacklegoids. John Snyder, one mile south of Wheatland, lost two calves; vaccinated sixteen head, lost none after.

H. Wholenburg, one mile north of Wheatland, lost two calves, vaccinated thirty, lost two after; one about four weeks after being vaccinated.

Wm. Hoker, two miles north of Wheatland, lost four calves; vaccinated the remaining six, lost one later vaccinating.

Herbert Rock, near Plain View, Ia., lost three calves; vaccinated seventy-five and lost five after vaccinating. Have not heard from him for three weeks, may have lost more.

S. Crisp, Dixon, Ia., lost one, vaccinated remaining thirteen and have not heard from him.

Now, this is the result I have had this winter from vaccinating and certainly feel disgusted with Blacklegoids. Some farmers lose two or three head, give calves potassium nitrate, copper and salt, and disease stops. Judging from this and results I've had I am rather inclined to think there is not much in Blackleg vaccine, or these calves have died from some disease unknown to me, although I have lost in past years after vaccinating, and the disease stopped of its own accord.

TOOTH PENETRATES LIP OF DOG.

By FRANCIS ABELE, Jr., Quincy, Mass.

A fox terrier dog came home with an abrasion of skin on top and right side of muzzle, so that the skin on its upper lip and nose was bare and red, covered with extravasated serum. Probably auto accident. The mouth was kept open. The lower tusk on that side pressed into the outside of the swollen upper lip.

The dog would hold his paw in his mouth or rest his open mouth on the forepaw, so that both were smeared and stained with the yellowish mucus. The dog was bright and intelligent, but did not want his mouth touched.

On chloroforming him it was found that the upper tusk had penetrated the lip at its inside upper part and followed parallel to the skin.

It took some traction to relieve the lip from tooth. An uneventful recovery followed.

IN explanation to its members of the length of time which has elapsed since the meeting of the Illinois State Veterinary Medical Association, at Chicago, and the publication of its proceedings in the present issue of the REVIEW, we will say that the retiring secretary, who is now president of the organization, was ill, as he states in his letter of transmittal, a few days ago, and therefore was unable to prepare a report. At his request that we publish them "*as early as possible*," we have found room for them in our present crowded issue.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

PARTIAL RADIAL PARALYSIS *E. E. Martin, Major, A.V.C.*.—A large bay mare had a foot injury which was to be operated and required the animal to be cast. She struggled a great deal during the operation, and when this was over she rose with some difficulty, manifesting at once soreness on the leg that she had laid on. She could not put any weight on it and the elbow was dropped. There was no fracture. Taken in her box, she was put in slings. If the leg was put level with the other, and the knee pushed backwards and held in that position, the mare could bear some weight on her foot, but as soon as the support was taken away the leg would collapse again. It was an evident case of partial paralysis of the triceps muscle, probably due to some injury of a portion of the radial nerve. Treatment was confined to fomentations. After a few days the mare was taken off the slings and let loose in her box stall. She laid down and got up. On the sixth day improvement was marked and increased little by little. Massage and moderate exercise was ordered, and after some little time the mare could walk pretty well. It took her, however, three months for complete recovery.—(*Veter. Record.*)

A LOST PROBANG [*J. R. W. Dewar*].—A colt, one year old, got choked and remained in that condition for forty-eight hours. A probang was passed without great difficulty. After a few minutes the operation was renewed a second time. When the instrument was withdrawn it was found that the expanded, cup-shaped end was missing. However, the colt seemed all right and remained so for fully six months, when the foreign body was found on the floor of the box stall where the colt was. It was nearly all encrusted with phosphate salts and weighed 11

ounces and 1 drachm. Its length was nearly $4\frac{1}{2}$ inches and its greatest diameter $2\frac{1}{4}$ inches.—(*Veter. Record.*)

MELANOMA [*E. E. Martin, Major, A.V.C.*].—This gray gelding has on the side of the cheek a tumor about the size of a tangerine orange, and has also the submaxillary space and left parotid region more or less filled with similar growths. They were melanotic tumors. That of the cheek was removed and, the parts having been treated without any difficulty, the animal was able to work for several months. The growth on the cheek did not recur, but those of the maxillary and parotid regions had considerably enlarged, and as the animal had fallen off in general condition, he was destroyed. In the abdomen, the visceral and parietal layers of the peritoneum were found studded with small melanotic tumors. The spleen also with larger ones and similarly the liver. The right kidney and the mesenteric glands were converted into one large black mass. The lungs, bronchial and mediastinal lymphatics were also badly affected. The heart was free.—(*Veter. Record.*)

HEART DISEASE [*same author*].—Thoroughbred Australian mare, aged twelve years; has been a good racer. She is reported sick. Has fever, temperature of 102° and 103° F. The membranes are yellow, the pulse accelerated and the animal is put under treatment for fever. She improves, but soon has a relapse. Careful auscultation revealed bad functions of the heart and serious prognosis is given. Short time later she was very bad, with great difficulty in breathing, even when at rest; the pulse is difficult to take, the heart beats 80 to the minute. There is an edematous swelling under the breastbone. The mare dies. The lungs were found enlarged and edematous. The heart dilated and hypertrophied. The bicuspid valve was covered with vegetations. Tricuspid and semilunar valves of pulmonary and aortic openings were normal.—(*Ibidem.*)

IMPACTION OF INTESTINES—RUPTURE—LARGELY DEVELOPED SPLEEN [*H. C. Stewart, Lieut., A.V.C.*].—Artillery wheeler had colic. Gave barium chloride. Improved, but passed no feces. The next day is in bad condition, having still passed no manure. He is straining badly. Rectal examination shows an empty rectum, also the bladder; an enormous pointed swelling is felt which was supposed to be the cæcum. Abdominal

fomentations, warm soap injections and chloride of barium have no effect; death late in the day. Post mortem: Impaction of the large intestine with small gravel found in it as it joins into the floating colon. There were two ruptures above the impaction measuring 3 and $1\frac{1}{2}$ inches in length. There was extensive inflammation of the small intestine. Some bloodstained fluid in the abdomen. Large cyst was also found on the stomach walls. The spleen was seven or eight times its normal size.—(*Ibidem.*)

PERFORATION OF THE STOMACH IN A DOG [*L. F. Eady, M.R.C.V.S.*].—The dog showed signs of suffering with acute abdominal intermittent pains. Manipulations over the stomach gave rise to acute spasms similar to those of an animal suffering with strychnia poisoning or tetanus. Gasping for breath, frequent attempts to vomit, but only throwing off frothy mucus. Respiration was hurried, pulse wiry, temperature subnormal, pupils dilated. Treatment consisted of hypodermic injections of morphia, hot baths, chloral, bromide of potassium. The dog died in convulsions. Post mortem: Heart hypertrophied; stomach is the seat of perforation by sharp-pointed pieces of bone the size of hazel nuts which acted as foreign bodies and caused the above-mentioned symptoms and finally ended in death.—(*Veter. News.*)

SUBCUTANEOUS INJECTIONS OF MAGNESIUM SULPHATE IN TETANUS OF HORSES—RECOVERY [*Capt. W. O. Dawson, A.V.D.*].—Acting on the results recorded in human practice, the captain has tried it on two cases of tetanus in horses.

One was in a hopeless condition, his attack following his having been docked some twelve days before. He presented a series of symptoms which rendered the perspective of his recovery more than doubtful.

The other case was due also to the same cause, a badly performed docking, with part of a caudal vertebrae protruding, suppuration, etc., but perhaps in not as bad condition, as the case was seen at the beginning of the disease. The treatment consisted in the subcutaneous injection of concentrated solution of sulph. of magnesium in doses of 40 c. c. for each injection, 20 c. c. on each side of the body behind the shoulder.

In the first horse, with also a full dose of serum, the dose of 40 c. c. was renewed three hours after the first; then repeated

twice daily for two more days and so on until the twelfth day, when they were reduced to 20 c. c. once daily until the eighteenth day, when they were stopped. The serum was injected only once.

With this first horse, improvement was already noticeable the morning after the first injection, and it slowly increased until on the twenty-second day, when the animal was in full convalescence, walking well, eating good and having a ravenous appetite.

With the second horse, after the first injection of 40 c. c. of sulphate of magnesium, a well-marked improvement was noticed. A second injection of 40 c. c. was made again up to the fifth day, when this was reduced to 20 c. c. The animal was discharged on the eleventh day. No serum was used in this second horse.—(*Journ. of Comp. Pathol. and Therap.*)

TUMOR IN POSTERIOR NARES [*E. E. Martin, Major, A.V.C.*].—This thoroughbred gelding was eight years old and used for racing purposes. Since a few weeks he has a discharge from the off nostril and recently from both. This discharge is very offensive, and more abundant after work. The frontal bone of the right side is slightly prominent but hard, and not really bulging. Simple treatment was prescribed. Several weeks after, the animal was worse, and as respiration is interfered with and the nostril very foul, it was decided to resort to an operation.

The right frontal sinus was trephined; it was found healthy. The left was then operated upon and found full of pus. An opening made into the superior sinus maxillary allowed thorough washing. But these successive operations did not seem to give complete satisfactory results, even notwithstanding a larger opening of the cavity had been made. As no improvement was shown, the author decided to remove the inside partition of the frontal sinus. "The animal was getting very troublesome, and while struggling to avoid being cast, suddenly a fleshy mass fell out the near nostril; the respiration became normal and gradually the discharge subsided." The tumor was composed of fibrous tissue, weighed a quarter of a pound and was shaped very like the end of a horse's tongue. Attached to it was a triangular flat piece of bone, showing that it had bony attachment, probably on the vomer.—(*Veter. Record.*)

CYSTIC CALCULI AND RUPTURE OF THE BLADDER IN A DOG [*Sidney Smith, Jr., M.R.C.V.S.*].—A retriever dog, aged two years, has refused his food, and when loose makes useless attempts to urinate. Sometimes, however, he succeeds in passing a tablespoonful of very bloodstained urine. Castor oil is given, also gin, and the dog is badly off. In a state of collapse, a catheter is introduced in the urethra and stopped about one inch in front of the testicle by a large calculus. An operation is made for its removal. It weighed $5\frac{1}{2}$ grains. As the wound is sutured the dog dies. Post mortem: Abdomen contains discolored urine; bladder has a rupture $3\frac{1}{2}$ inches long in its upper surface. The mucous membrane was thick, inflamed, and gangrenous in some places. It contained a large calculus weighing 31 grains and a number of smaller ones. The prostate was enlarged and indurated. Kidneys normal.—(*Ibidem.*)

EXTRAORDINARILY LARGE FŒTUS [*A. Whitsea Bland, M.R.C.V.S.*].—After being obliged to remove one foreleg with the hope of being able to deliver a cow from a calf in bad presentation, the author had to give up his task and the animal was eventually slaughtered. At the dressing of the carcass, the calf extracted was found to measure 70 inches from nose to root of the tail, $26\frac{1}{2}$ round the girth of the head, 33 round that of the neck, and $49\frac{1}{2}$ round the body. The whole animal weighed over $1\frac{1}{2}$ cwt. and, minus the amputated foreleg, 166 pounds.—(*Veter. News.*)

CHLORAL HYDRATE IN FISTULAS [*R. Ferguson Stirling, M.R.C.V.S.*].—The writer records a case of fistula of the withers which had been treated and healed by several parties, but had again broken out. He curetted bones and fistula and packed the tract with gauze saturated by a 10 per cent. solution of sulphate of zinc. As this did not seem to bring a good reaction, he replaced the solution by one of chloral hydrate, 5 per cent. first and then 10 per cent. On the third day the lips of the wound looked well. On the sixth day the depth of the tract had decreased by half, and then sulphate of zinc was again used. The discharge subsided and later an ordinary dressing was sufficient. It took between five and six weeks for complete healing.—(*Veter. Journ.*)

TUBERCULOSIS IN A DOG [*E. Wallis Hoare, F.R.C.V.S.*].—Eighteen-months-old Irish terrier has never been in good con-

dition. On percussion of the chest there is complete dullness on the right side and resonance on the left. Auscultation on the right side shows absence of respiratory murmurs, on the left dull murmurs and bronchial rales. Heart weak; no cough. Pleuritic effusion, probable tuberculous, is diagnosed. On account of poor condition the dog is killed. Tuberculous nodules were found in both lungs, on the pleura and the diaphragm; they were also in the mesentery. The bacillus of Koch was found in the lesions.—(*Ibidem.*)

CHOKING FROM AN UNUSUAL CAUSE [*same author*].—Six-months-old kitten has been choking for two days. A foreign body is left on the right side of his neck, which becomes more prominent when the animal moves. An incision is made on this body and a sharp point is left, taken hold of with forceps and a lady's hatpin is extracted measuring seven inches in length. Some dissection was required to extract the head of the pin. The wound was sutured and painted with iodoformed collodion. Recovery was uneventful.—(*Veter. Journ.*)

PHLEGM IN THE THROAT AND CHRONIC COUGH [*G. Mayall, M.R.C.V.S.*].—The writer recommends a mixture of glycerophosphate of quinine, benzoate of eucalyptus, and benzoate of beechwood for these ailments, with which he has obtained excellent results. Half-teaspoonful doses mixed with water, three times a day, will give rapid relief.—(*Ibidem.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

ANEURISM OF THE GREAT MESENTERIC ARTERY [*D. Bonnigal*].—This three-year-old horse has changed hands several times because of his incapacity to do any kind of steady work. Castrated eight days ago, he has violent colic. His water works are said to be out of order and he has received a quantity of drenches to make him urinate. Rectal examination reveals an empty bladder, and as the hand is withdrawn from the rectum it is covered with blackish clots of blood. Internal hæmorrhage is diagnosed, bad prognosis is advanced, and death predicted to take place in short time. It occurs late during the

night. At the autopsy the peritoneum is found inflamed, and on the level with the great mesenteric artery there is a large tumor, measuring 30 centimetres in length, 20 in width and weighing about 3 kilogrammes. It is a large aneurism with thick, fibrous walls containing a big, fibrinous clot and a black magma of blood. The walls of the cavity are thinned on the right antero-lateral part and are ruptured by a laceration communicating with the small intestine, which is adherent to it and permits blood to escape into the intestinal cavity.—(*Presse Veter.*)

VAGINAL POLYPI AND SECONDARY CEREBRAL LOCALIZATIONS [*Mr. Jugla, Student*].—This slut was three years of age, and had a sero-bloody discharge from the vulva. Numerous polypi are seen in the vagina. Some are pedunculated, others have a wide basis. They are excised or curetted out. Free washings with peroxide are carried out. A few days later the dog is found crouched in her kennel, unwilling to move or to come out. She has severe cutaneous hyperthesia, and howls from the slightest touch or handling. She is badly constipated. Then she has fits of excitement; gets up, moves in a circle in her kennel, turning to the left. She carries the head down; her eyes are haggard and the pupils dilated. She has no fever. Brain complications are suspected. The animal dies. Post mortem: Lesions of gastro-enteritis. Liver and kidneys degenerated. In the vagina the polypi have grown again. The left cerebral hemisphere is congested. There are few hæmorrhagic spots. The right hemisphere is normal. A section made above the thalamus optici exposes a neoplasm, situated on the left side, in front of the corpora quadrigemina. It is as big as a small nut and has the macroscopic characters of the vaginal lesions. The microscopic examination of these neoplasms shows them to be lympho-sarcomas.—(*Rev. Veter.*)

FIBROUS BAND STRANGULATES THE PENIS OF A BULL [*Mr. Mellis, San. Veter.*].—Aged two and a half years, this animal when he is brought to mount a cow is very slow in getting ready or in completing the coit. And when he is through, the penis remains hypertrophied, congested, purplish and hanging out of the sheath. It is only after five or six hours that everything has resumed its normal aspect. After several attempts to relieve him by means suggested by the conditions, and having

failed in obtaining any good results, the animal was cast and secured with his hindquarters elevated. In manipulating the sheath and pressing on the penis, this was brought out as far as the first curvature of the penian S, when a little in front, at the insertion of the suspensory ligaments, a band of white, fibrous tissue, one millimetre centimetre wide, and two or three millimetres thick, was found surrounding the penis completely, as a ring on a finger; and when the penis was in erection, strangulating it. This band was excised with a blunt bistoury and scissors. The animal was allowed to rise, and ever since has never had any trouble in the performance of his functions.—(*Ibidem.*)

ANTISTREPTOCOCCIC SEROTHERAPY IN BOVINES [*Mr. L. Paris*].—In septicæmia of the new-born, which is so severely fatal, the writer, as an experiment, has tried the subcutaneous injection of 5 or 10 c. c. of antistreptococcic serum I. P. The injection being made back of the shoulder one or two days after birth. On one farm, where the disease was raging and had already killed a number of calves, this injection stopped the spread of the disease. It was made on all the new-born animals during the following three months. The epidemic had then entirely disappeared. In the diarrhœic form of the disease most satisfactory results were also obtained.

In cases of arthritis, treated at the onset of the disease, say the first or second day after the first manifestations, 10 c. c. of serum with the application of stiff liniment or blisters on the diseased joint produced also wonderful results.

In septic pleuro-pneumonia it worked as well. On a farm where five calves had already died, eight calves aged three and six months which were seriously ill, were saved by an injection of 10 c. c. of serum.—(*Rec. de Medec. Veter.*)

FOREIGN BODY IN A COW [*Mr. L. Laplat*].—SURPRISE OF POST MORTEM.—The cow was eight years old, in good fat condition and seemed to have only a little difficulty in breathing, a slight dyspnœa.

On opening the carcass there was found an adherence existing between the lungs, the diaphragm and the reticulum. These organs were held together by the handle of an umbrella. In the reticulum it was held by the metallic ring which supports the ribs of the umbrella, and the balance of the foreign body

was lodged in the lung, in a gangrenous tract containing fluid having a very unpleasant odor. The lung tissue was otherwise healthy. The presence of this foreign body did not seem to disturb the animal in any way as she was fat, and sold as good meat of second quality.—(*Ibidem.*)

TRAUMATIC ARTHRITIS TREATED BY BIER'S METHOD—RECOVERY [*MM. Darbot and Augustin, Army Veter.*].—"Tison" was a five-year-old horse which received a kick on the inner face of the left hock. Deep, fistulous wound, no escape of synovia, the joint is not affected, and yet the animal is very lame. He is put in slings and the hock is blistered. After a few days there is marked improvement, although the hock is very hot and painful. These symptoms soon increase in severity, an abscess is formed, lanced, and synovial, purulent discharge allowed to escape. Injections of nitrate of silver, boric acid, ambrine—nothing gives relief. The animal is losing ground, his condition becomes alarming and, before destroying him, a last chance is given him by trying the method of Bier.

An Esmarch band is applied, as indicated, a few centimetres above the hock. The first day it is left on two and one-half hours in the morning and three and one half hours in the afternoon. The application gave rise to great excitement and to manifestations of great pain, which were followed by a period of quietness. The lancinating pains were less frequent. The animal eats.

The following day the bandage was left on seven hours. The excitement was again present but lasted a shorter time. The swelling was localized only to the hock. There is less suppuration. The third day the band is left on from 8.30 a. m. to 4.30 p. m. Improvement is much marked; animal rests his foot on the ground; there is less suppuration.

The fourth day the band is put on at 9 a. m. and taken off at 4.30 p. m. The fistula is very much reduced and the discharge is only thin, clear fluid escaping drop by drop.

The fifth day the band is left in place eight hours. There is no more discharge; the fistula is entirely closed; there are no more lancinating pains, and from that day all treatment was stopped and recovery slowly progresses, leaving when completed after a few days only a thickening at the joint, which can be relieved by firing. In five days Bier's method had brought about the recovery of a very severe case of arthritis, which had

been rebellious to all forms of treatment for two months previous.—(*Rec. de Medec. Veter.*)

QUEER AUTOMOBILE ACCIDENTS [*Mr. Chemier*].—First Case: A pointer is ill, eats nothing, and loses flesh rapidly. Examination indicates dullness and loss of respiratory murmur. Pleurisy is suspected. The next day the dog appears somewhat better, or, at least, his appearance has improved. The dullness of the chest has changed and seems to vary in location. Injections of serum are made. Then the dog has nausea, vomits. Morphia is given subcutaneously. The next morning the dog is dead. At the autopsy a diaphragmatic hernia was discovered. The muscle was torn and a portion of the stomach was in the abdomen. Passing to and fro in the chest and in the abdomen, it gave rise to modifications of symptoms at the auscultation and explains the variations in the dullness of the chest. This dog had been run over by an automobile some time before, and probably that was the time when the laceration of the diaphragm had taken place.

Second Case: A fox terrier was also run over, one wheel passing on his belly from backwards forwards and squeezing both of his testicles toward the crural arches. Big swelling took place which was treated by warm applications. The testicles recovered their normal position in time.—(*Rev. de Pathol. Comp.*)

RUSSIAN REVIEW.

By S. A. GRUENER, M.V.S.

ANTIANTHRAX-SERUM [*N. A. Pokshishewsky*].—The author in his investigations concerning blood-serum against anthrax obtained very interesting and important results. The serum used was obtained from a horse he had prepared by producing immunity by repeated inoculations of increasing quantities of the virulent cultures after vaccination with first and second vaccine.

For the study of the potency and quality of this serum he used the new method of fixation or deviation of the complement.

Reviewing the work done by others as well as by himself, he draws the following conclusions:

1. The causative substance in anthrax undoubtedly must be a toxin, which has been produced by the *Bacillus anthracis* in the animal organism.

2. The method of separating this toxin is not yet quite perfected; but this active substance can be isolated in an impure and weak form.

3. The fact that immunity against anthrax can be produced, shows intoxication of the organism by a bacterial toxin which caused death. Formerly it was the belief that the great distribution of microbes in the blood vessels or the capillaries produced bacterial emboli or the air-starvation, etc. Now this cannot be admitted as the cause of the animal's death in this disease, but must be admitted to be a toxin. Toxin is the active substance in this disease and therefore in the organism it stimulates the production of the antibody (immune body).

4. The serum containing productive properties (antibodies) can be produced in the horse or sheep by immunizing with a large quantity of living cultures of the bacilli following the usual vaccination.

5. The antianthrax-serum obtained from the horse or sheep will protect a rabbit from infection with virulent cultures and guinea pig from second vaccine.

6. The antianthrax-serum in vitro possesses decided bactericidal properties against the vegetative form of the bacilli. But in this case we can always deviate the complement by using undiluted serum, and the bactericidal property is more strong by diluting the serum than concentrated.

7. The agglutination property of the antianthrax-serum also will be distinct if the killed culture be used. If living bacilli be used, agglutination and other phenomena will be noticed.

"Thread-reaction" ("Fadenreaction"). This phenomena is caused by the serum which furnishes nutrient material and living agglutinated bacilli growing in a long thread.

8. The antianthrax-serum contained the antibody which fixed the complement and thus prevented it from participating in the hemolytic process in the test deviation of the complement (Bordet and Genzon). This test could be of service for quantitative determination of the amboceptors in the serum.

9. The antianthrax-serum can be used in practice by protective inoculation of both large and small domestic animals. The combination inoculations (simultaneous) gives the most satisfactory results in Western Europe, in Russia and in South America (Uruguay, Argentina).

10. It is desirable to use the combination inoculations (serum and second vaccine at the same time).

11. Serum used for curative purpose in cases of anthrax following vaccination by the Pasteur method has given satisfactory results in Russia.

12. Future experiments must be made to determine its curative properties for natural anthrax.—(*Archiv. Veterinary Sciences*, December, 1910.)

GLANDERS BACTERIA IN THE ORGANISM OF A PIGEON [K. Horomansky].—The author made experiments with the inoculation with virulent culture of glanders bacteria in pigeons. From these experiments he made the following conclusions:

1. The pigeon is absolutely immune against glanders and can endure without harmful effects intraperitoneal injection of large quantities of virulent glanders culture.

2. After two days the glanders bacilli entirely disappear from the organism of the pigeon and cannot be found.

The inoculation of media from the liver of a pigeon gave negative results.

3. Twenty-four hours after the inoculation, we can still obtain culture from the inoculation of the pigeon; but the growth of this culture is very weak.

4. One race of glanders culture can be transferred through the organism of the pigeon only a definite number of times.

5. After three times transferring through the organism of the pigeon, the glanders bacilli become weak and are not able to again go through the pigeon's organism; they will be killed in the pigeon's organism in twenty-four hours.

6. The race of glanders bacilli transferring three times through the organism of the pigeon will be weak as well as unable to kill male cats that are inoculated with it.

7. The cats inoculated by so attenuated a culture receive immunity in as much as they remain living after inoculation with virulent culture which is able to kill control cats.—(*Archiv. Veterinary Sciences*, February, 1911.)

THE Alabama Veterinary Medical Association held its fourth annual meeting at Birmingham on June 16 and 17, which proved of unusual interest. A splendid literary program was prepared, also impromptu addresses and reports were given by many on the printed program. A clinic was held at Dr. A. H. French's hospital on the second day.

ARMY VETERINARY DEPARTMENT.

A NOTE FOR THE TORONTO MEETING.

Aside from the scientific deliberations at the coming meeting of the American Veterinary Medical Association, there are three matters vitally affecting the affairs of our profession at this time, which should be considered and acted upon: The approval of a higher matriculation standard for veterinary students in the United States; the approval of a uniform veterinary degree in the United States, and the approval of the bill, "To consolidate the veterinary service, United States Army, and to increase its efficiency."

It is a curious incident, that these three matters concern directly only the members of the Association residing in the United States, and that they carry them upon Canadian soil to find proper selections and lines of action. At first sight one may fear that these matters must bore our Canadian colleagues. But where we consider that they have successfully outfought and solved these very same problems according to their conditions and needs, we may, on the contrary, feel assured, that their courage, devotion and experience exhibited under similar difficulties, will act beneficially in finding proper procedures for our somewhat different needs.

The Canadian veterinarians have solved for themselves the question of a suitable veterinary degree, and they have been fortunate enough to have their territorial army veterinary forces reorganized on the lines of the British Army Veterinary Department. We shall try to have the new bill and the brief to the bill in the hands of some of our Canadian colleagues at the Toronto meeting, and if the reading of the brief does not make their cool blood hotter (this is written in Texas), we have entirely underestimated the facts set forth in this script.

After all, it may be just fortunate that these three questions are to be considered at Toronto, Canada, a neutral soil and yet friendly.

OLAF SCHWARZKOPF.

ARMY VETERINARY BILL DISTRIBUTED.

The new army veterinary bill, published in the last issue of the *AMERICAN VETERINARY REVIEW*, has been mailed to all army veterinarians with the request for a vote of approval or disapproval, to be marked on an inclosed postal card.

From the twenty-six veterinarians on duty in the States, twenty-two approvals were received, one disapproval, and three votes not heard from on June 15; perhaps from an unavoidably incorrect address on account of the temporary duty on the Mexican border.

The replies of the one veterinarian stationed at Honolulu, and of the nine stationed in the Philippine Islands, cannot be expected to reach us before two to three months. However, the majority of these had beforehand assured us, that whatever measure would be approved by the veterinarians in the States, would be satisfactory to them. Thus the new bill is practically approved at this date.

The one disapproval came from one of our eldest members, and it is certain that as soon as the bill can be fully explained to him, he will withdraw his objection.

All approvals were promptly received, and some replies were effusive in praise of the new bill.

The brief to the bill is finished, and will be printed as soon as the necessary money can be raised to have this done, which will cost about \$35 to \$40. This brief is absolutely necessary to explain the provisions of the bill to Congressmen, particularly to the two who shall introduce and defend the bill. Its distribution broadcast will materially aid the prospect of the passage of the bill.

ARMY VETERINARY PERSONALS.

In the last issue we reported the resignation from the service of Dr. McKibbin, Fourth Cavalry, and now we must chronicle the resignation of Dr. Thomas H. Edwards, Fifth United States Cavalry. The doctor was appointed to the army on November 23, 1909, and has, therefore, been only a short time in the service. We have no knowledge of the reason of the doctor's resignation, but as he is a young man, he has a future before him in civil life, and we wish him prosperity in his new field of labor.

CORRESPONDENCE.

TORONTO.

It is only about sixty days before the Toronto meeting and only thirty days more in which to get in applications for membership.

Resident State Secretaries, have you gotten in touch with all of the eligible veterinarians in your state? It is now or never, for this year.

I am pleased to report that arrangements are being perfected in every department, the committees are all at work, and everything points to success for the meeting.

A certain veterinarian traveling for a biological supply house, called on me yesterday and reported that he has never seen so much interest manifest in the A. V. M. A. as this year. He predicts the largest and best meeting in the history of the association.

A report of what is being done by the Local Committee, headed by Dr. E. A. A. Grange, will be found elsewhere in this issue of the REVIEW.

I wish to urge that the officers as well as every member of the association redouble their efforts from this time on. If you have assumed a responsibility in this connection, look after it yourself, and do it now, for the meeting time is drawing near.

GEO. M. GLOVER,

President A. M. V. A.

Editors AMERICAN VETERINARY REVIEW:

Permit me to occupy a little more of your valuable space to give publicity to two letters recently issued, believing, by so doing, some preparation will be made for their discussion.

FORT COLLINS, COLORADO, JUNE 16, 1911.

DEAR DOCTOR:

At the last meeting of "The Association of Veterinary Faculties and Examining Boards," the following action was taken:

"Moved by Dr. Stewart, seconded and carried, that this association recommends that the American Veterinary Medical

Association appoint a committee of three to investigate the violations of federal law by veterinary correspondence schools, and that they enlist as far as possible the several state examining boards in securing and filing violations, and that the committee be given power to act" (carried).

I will confess that I overlooked this matter, but it is not too late to accomplish something and at least report progress at the Toronto meeting. You will remember that it was decided to hold a meeting of the two branches conjointly in the future.

We are going to have some good papers and a lively discussion on things of much importance to the profession. As the time is short I have taken the liberty of appointing you on this committee without consulting your wishes in the matter, and I trust that you will accept this added work and responsibility.

The committee are as follows: S. Stewart, chairman; C. H. Stange, Chas. H. Higgins.

Very respectfully,

GEO. H. GLOVER,
President A. M. V. A.

FORT COLLINS, COL., June 16, 1911.

DEAR DOCTOR:

At the last meeting of the Association of Veterinary Faculties and Examining Boards of America, the following action was taken:

"Moved by Dr. Hoskins, seconded by Dr. Morrison, that this association recommend to the American Veterinary Medical Association that a committee of five of that association be appointed to examine into the feasibility of a federal license, or certificate, that will be of such character as to be acceptable by any or all of the several states, in lieu of a state examination" (carried).

The appointment of this committee has been overlooked until this time, but it is not too late to accomplish something and report at the Toronto meeting.

It was decided to have the two branches of the association meet conjointly in the future. We are expecting to have a very

interesting session; several papers calculated to bring out discussion have been promised.

The following men have been appointed to serve on this committee, without taking time to consult their wishes in the matter. It is hoped that each member will consent to serve even at this late date, and that some progress may be reported at the August meeting.

W. Horace Hoskins, chairman; A. D. Melvin, W. H. Lytle, W. W. Yard, Wm. Herbert Lowe.

Very respectfully,

GEO. H. GLOVER,
President.

MICHIGAN AGRICULTURAL COLLEGE LABORATORY
OF BACTERIOLOGY AND HYGIENE,
EAST LANSING. }

Editors AMERICAN VETERINARY REVIEW, New York City:

In the May and June, 1911, numbers of the REVIEW, there appeared a very interesting article by Dr. Meyer on "Sero-Diagnosis of Glanders." He states that attention will be called to one method of Sero-diagnosis, namely "Deviation of Complement." The article then gives a very good description of an entirely distinct, though it is true, analogous phenomenon, "Fixation of Complement." Moreover, the references containing the German words, refer to "Complementbindung" for the stem refer to "Complement Fixation," and not to "Complement Deviation."

Your attention is called to this matter, not in a petty critical spirit, but because it is desired to maintain accuracy in scientific work, especially of this nature. Veterinary literature bearing on infectious diseases has, in the past, suffered on account of failure to observe and record scientific data with technical accuracy. Serum therapy and diagnosis are subjects involving a new vocabulary and many phrases made to order.

Let us seek to use as far as possible only words and phrases having a recognized value and application to a specific idea, with the result that we understand each other the world over as we now may all read a Latin prescription.

Respectfully yours,

WARD GILTNER.

To the Editors of the AMERICAN VETERINARY REVIEW:

DEAR SIRS—I wish to express my thanks through the pages of the REVIEW to the twenty-one colleagues in civil life who have taken the time and trouble to write me letters of appreciation on my article on the problem of a uniform veterinary degree. I can assure them, that the preparation of the article was no hard work, but a pleasure and recreation, and I shall rejoice if it shall in any way contribute toward a practical solution of this old and bothersome problem. It is gratifying to know, that this question has aroused widespread interest, and I hope with all those interested that the times are favorable for a final settlement.

It is utterly impossible for me to reply again to the several writers who desire further light on the question, as I am just now overworked with correspondence on our new army veterinary bill. If, in the near future, I shall be unburdened from letter writing, it will be a pleasure for me to reply to these gentlemen before the Toronto meeting, which, I trust, will be strong enough to make a proper choice of a uniform veterinary degree.

OLAF SCHWARZKOPF.

DR. W. H. DALRYMPLE, of Baton Rouge, was recently elected president of the Louisiana Society of Naturalists, succeeding Dr. Gustav Mann, a physician. You can't keep a good man down.

THE tragic death of Mr. Wilfred Jay, editor of *Bit and Spur*, which occurred at Westbury, L. I., on the afternoon of June 17, was a great shock to readers of that high-class monthly, who had fresh before them at the time the beautifully illustrated June number that he had recently given them. At the moment when he met his sudden and untimely death, he was hurrying with Mr. Charles J. Ross, an expert photographer (who was also killed), to a polo game at the Meadow Brook Hunt Club, to obtain pictures of the ponies in action, as Mr. Jay intended writing a story about it for the July number of *Bit and Spur*. The two gentlemen had just alighted from a train at the Westbury station and jumped into an automobile, requesting the chauffeur to hurry them to the club, when, in crossing the tracks, they were struck by an express and hurled many feet away. Mr. Jay was killed instantly and Mr. Ross died at the hospital a few minutes after his arrival there.

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

PROGRAM TO DATE FOR THE FORTY-EIGHTH ANNUAL MEETING
AT TORONTO, AUGUST 22, 23, 24, 25.

Division No. 1. Pharmacy and Materia Medica. Dr. Hans Jensen.

"Newer Therapeutic Agents," by Dr. P. A. Fish, Ithaca, N. Y.

"Biologic Therapeutics," by Dr. G. W. Dunphy, Detroit, Mich.

"Pharmaceutical Items of Interest to Veterinarians," by Dr. Ferd. Mueller, Indianapolis, Ind.

"Selective Vaso-constrictors and Vaso-dilators," by Dr. H. Jensen, Kansas City, Mo.

"Practical Therapeutics," by Dr. E. L. Quitman, Chicago, Ill.

Also an exhibition consisting of a complete collection of organic and inorganic drugs and rare chemicals.

Division No. 2. Surgery. Dr. L. A. Merillat.

"Observations on the Merits and the Practicability of Bayer's Operation for Quittor and of Williams' Operation for Abscess of the Navicular Sheath," by George H. Berns, D.V.S., Brooklyn, N. Y. Discussion to be opened by Joseph Hughes, M.R.C.V.S., Chicago, Ill.

"The Merits of Williams' Operation for Roaring," by F. Hobday, F.R.C.V.S., London, England. Discussion to be opened by W. L. Williams, D.V.S., Ithaca, N. Y.

"Poll Evil; Its Etiology and Treatment," by R. C. Moore, D.V.S., Kansas City, Mo. Discussion to be opened by L. A. Merillat, V.S., Chicago, Ill.

"Observations on the Bacterin Treatment of Suppurative Processes," by Chas. H. Jewell, D.V.M., Fort Riley, Kansas. Discussion to be opened by A. T. Kinsley, Kansas City, Mo.

"My Experience with Ovariectomy in Mares," by H. Fultow, V.S., Norwalk, Ohio. Discussion to be opened by J. H. McNeil, V.M.D., Columbus, Ohio.

"Surgical Pedagogy in Our Veterinary Schools," by J. H. McNeil, V.M.D., Columbus, Ohio.

"Stringhalt, With Special Reference to Its Surgical Treatment," by C. C. Lyford, D.V.S., Minneapolis, Minn. Discussion to be opened by J. H. Blattenberg, Lima, Ohio.

CLINIC PROGRAM.

Roaring. Drs. Hobday and Williams.

Lavage of the Stomach. Drs. Blattenberg and Merillat.

Poll Evil. Drs. Moore and Kelly.

Plastic Surgery of the Ear. Dr. Williams.

Gastro-Hysterectomy in the Bitch. Dr. Chas. A. White, Chicago, Ill.

Methods of Suturing Adaptable to Animal Patients. Drs. Blattenburg and Merillat.

Other surgical and medical cases and pathological exhibits which may be presented by the Local Committee of Arrangements.

Division No. 3. Practice. Dr. George H. Roberts.

"The Cause and Treatment of Pulmonary Emphysema," by Dr. W. G. Hollingworth, Utica, N. Y.; "Hog Cholera Serum," by Dr. F. A. Bolser, New Castle, Ind.; "Gastro-Intestinal Catarrh," by Dr. D. H. Udall, Ithaca, N. Y.; "Traumatic Pericarditis," by Dr. George H. Roberts; "Strangles," by Dr. John F. Devine, Goshen, N. Y.; "The Treatment of Pneumonia and Pleurisy," by Dr. H. Preston Hoskins, Philadelphia, Pa.; "Azoturia," by Dr. S. Brenton, Detroit, Mich.

Division No. 4. Pathology and Bacteriology. Dr. John R. Mohler.

"Observations on the Pathology of Roup and Epithelioma Contagiosum," by Drs. C. M. Haring and C. A. Kofoid; "The Pathology of Nephritic Affections in Domesticated Animals,"

by Karl F. Meyer, Philadelphia, Pa.; "An Undescribed Pathogenic Bacterium in Milk," by Dr. E. C. Schroeder and W. E. Cotton, Bureau Experiment Station, Department of Agriculture; "Immune Bodies and Biological Reactions," by Dr. Adolph Eichorn, Pathological Division, B. A. I., Department of Agriculture; "Preventive Treatment of Rabies in Animals," by John Reichel, Glenolden, Pa.; "The Etiology of Infectious Abortion in Live-stock," by Prof. E. S. Good, Kentucky Agricultural Experiment Station, Lexington, Ky.; "The Results Obtained in the Eradication of Tuberculosis from a Herd by the Use of Tuberculosis Vaccine and the Bang System," by S. H. Gilliland, V.M.D., M.D., Marietta, Pa.

Division No. 5. Veterinary Sanitary Police Measures. Dr. J. G. Rutherford.

Papers by the following: "Some of the Features of Sanitary Police Work as Applied in the Federal Quarantine Service," by Dr. R. G. Hickman, Washington, D. C.; "The Tuberculin Testing of Cattle," by Dr. Paul Fischer, Columbus, Ohio; "Anthrax and Tick Fever," by Dr. W. H. Dalrymple, Baton Rouge, La.; Dr. C. D. McGilvray, Winnipeg, Man., Canada (subject not announced).

Division No. 6. Meat and Milk Hygiene. Dr. Louis A. Klein.

"Municipal Meat Inspection of Paris, Texas," by Dr. F. G. Cook, City Meat and Milk Inspector, Paris, Texas; "State Dairy Inspection," by Dr. M. E. Knowles, State Veterinarian of Montana, Helena, Mont.; "Dairy Farm Inspection in Pennsylvania," by Wm. S. Gimper, Philadelphia, Pa.

ADVANCE REPORT OF LOCAL COMMITTEE.

The Local Committee of the A. V. M. A. are having a busy time of it just now in getting ready for the coming meeting of the association, 22d to 25th of August, and while all of the details are not completed, yet sufficient seems to have been accomplished to warrant a report of progress at this time.

A word or two relative to the place where the various meetings are to be held may be of some interest to those who con-

template a trip here. The auditorium of the Convocation Hall at the University of Toronto, which has been selected for the meeting of the parent body, has been eulogized by each and every visitor who has seen it, as being an ideal place for our meeting, not only on account of the acoustic properties of the room itself, but the arrangement of the horseshoe amphitheatre with its redwood opera chairs and classic decorations, which make it comfortable and restful; especially as it is of sufficient distance from street-car noises to prevent any annoyance from that source. It seats eighteen hundred people, and the rostrum is modern and convenient in every respect.

In the adjoining building, known as the Physics Building, are two large lecture rooms fitted with lantern attachments and other appliances for illustrative purposes. Both of these rooms are also arranged on the raised horseshoe amphitheatre plan and are up-to-date in various respects. They have a seating capacity of three hundred and five hundred, respectively. A most attractive feature of this building is its situation, for, being situated in the centre of this large city, within half a minute of excellent street-car service, yet like the other building is far enough from the main thoroughfares to prevent the slightest annoyance from passing traffic or street noises of any kind.

Turning once more to the Convocation Hall, it is circular in outline and is surrounded by a wide foyer, jutting out from which are several alcoves that always serve a useful purpose on occasions of this kind. The upper galleries of the amphitheatre have also jutting from them quite large alcoves with seating capacity of from fifty to one hundred and fifty if necessary. These are sometimes used for committee rooms or impromptu meetings of any kind in connection with the association.

It is now the intention of the Local Committee to use the foyer of the hall for the display of exhibits in the shape of veterinary instruments, veterinary books, veterinary medicines and such articles as are intended for the comfort and care of the lower animals and the convenience of the veterinarian. The demand for exhibitors' space in the radius of the foyer indicates that the exhibits of special firms will be a truly educational as well as pleasing feature of our meeting, and the space will be so conveniently arranged that a full view of everything may be obtained at a glance. The demand for frontage looks as if it might be necessary for the Local Committee to increase the space, which can be done at a two days' notice, if necessary, as we have a very large room 100 by 60, beautifully lighted, just

across the foyer. This exhibition is under the management of Mr. H. J. P. Good, whose lengthy experience with liberal arts exhibits of various kinds assures success in every respect.

The Local Committee has recently been represented by request at some most important meetings of other organizations, notably the Entertainment Committee of the City Council, where it was decided by resolution to extend to our association an invitation to a moonlight excursion on Wednesday evening, August 23, to be held on one of the large, elegant steamers of the Marine Service of Lake Ontario. This delightful excursion is to be accompanied with music, dancing, and other social features.

The other meeting was that of the Eastern Passenger Association, where full explanation was made as to the magnitude and importance of the anticipated gathering of the A. V. M. A., and the writer has just been informed that most liberal concessions have been made with regard to reduced fares on the certificate plan.

Arrangements are in progress relative to the holding of a banquet on Thursday evening, August 24. The committee who are in charge of the entertainment for ladies are making progress towards excursions around the city, and other enjoyments. The committee who are looking after the local transportation are in conference with the street-car company and lake marine companies for extra accommodation which will be needed on their lines. The marine companies promise most liberal terms for scenic excursions in every direction. The committee on hotel accommodation are preparing a diagram relative to the situation of the various houses, together with their prices and capacity. This will be sent to each member of the association in good time to enable him to make his arrangements before coming to the city if he so desires.

The Mayor of the city, the Minister of Agriculture of the Province of Ontario and other distinguished gentlemen have accepted invitations to address our gathering at appropriate times. The literary part of the program is still in the hands of the heads of the various committees who have that work in charge, and will be fully published by the Local Committee as soon as it comes into their possession.

Altogether, things look as if we would have one of the largest, if not the largest, gathering in the history of the organization, and a strenuous effort is being made to have it the most valuable from the educational standpoint.

MICHIGAN STATE VETERINARY MEDICAL ASSOCIATION.

The twenty-ninth annual meeting of this association was called to order in the lecture room, Veterinary Building, M. A. C., East Lansing, at 2 o'clock p. m., February 7, 1911, by President J. W. Brodie. Roll call showed about sixty members present, and the following visitors: Dr. James Harrison, Dr. Richard P. Lyman, J. E. Teller, Marlette; Frank W. Chamberlain, Dr. D. C. Bell, H. L. Schuh, A. W. Moore, E. M. Joslin, M. J. Smeal, O. J. Howard, A. L. Haggerty and John Franklin Hackett.

PRESIDENT'S ADDRESS.

GENTLEMEN—On the 31st of July, 1883, there met in the city of Detroit about fifteen veterinarians and organized the Michigan State Veterinary Medical Association. In 1892 this association was incorporated. Our annual meeting that year was held in Owosso. Dr. Ferguson (deceased), of Bay City, was president, and, I remember, was complimented by the members present as being the first president to read a typewritten address. I believe the presiding officers since that time have copied after Ferguson by making their addresses as short as possible, some not making any at all.

Our association financially is in a prosperous condition. We have now a membership of about 115 members, which must be pleasing to those veterinarians who founded the association twenty-nine years ago, and it is pleasing to note that we have some of those veterinarians still with us and who continue to take great interest in the association. While the purpose of this association is for mutual improvement, for the reading of papers on diseases and treatment, its great object is to secure proper legislation for the veterinary profession. Last year we appointed a prosecuting committee. The association is not back of the committee further than to pay for postage and stationery. I do not think it a good policy to use the association money for the purpose of prosecuting illegal practitioners. I am told in one instance where an illegal practitioner received a threatening letter from a member of this committee and died from fright two days afterward (the committee have my sympathy). I believe our practice law is a good one and will work out all right in time. Now that humane societies are being organized in cities and villages in this state, it will be up to the officers of

these societies to look after the prosecution of these cases. The only bad feature of this act is the neighbor and castrating clause, which we hope will be remedied this year. It is only too true our former state legislatures have been loath to grant little, if any, legislation to the veterinary profession, and when they did at one term, they took part of it away at the next; but they were a shining example of stand-patism until a few months ago. They are progressive now and are going to give the people a show, and possibly what little legislation we are asking for this year will be granted. Any legislation to the veterinary profession is a protection to the agriculturist against the fakir and incompetent. I believe our state legislature should create an office of scientific veterinarian. This office should be filled by a veterinary surgeon, a bacteriologist capable of investigating infectious and contagious diseases common to domestic animals in this state, and that veterinary surgeons could submit to him pathological specimens or any question of vital importance.

The science of veterinary medicine has made great advancement in the past few years; in some respects surpassing that of the medical profession. Of late we have the bacterins in the treatment of poll evil fistulas and all cases where septic trouble is observed; to any who have not used them it might be well to investigate for yourselves.

Automobile manufacturers are predicting "the horseless age." To some extent in large cities this is being realized. In the downtown or business district of Detroit the horse is becoming a rarity. However, horses have increased 6,000,000 head, and we now have 31,000,000 farm and city horses with a \$3,500,000,000 valuation and higher prices than ever before. Up till now the mechanical traction has neither helped nor hurt the horse; new fields are opening to the veterinary profession, one of which I will mention, viz.: dairy inspection. By the great outbreak of typhoid fever in Detroit last year the need of dairy inspection was demonstrated. This outbreak was caused by infected milk, and its source was traced by the veterinary dairy inspector to farms where typhoid patients were being treated; this should be a warning to cities and villages—the necessity of dairy inspection—and I believe it will be done by veterinary surgeons. It is true an electrical engineer or a cigarmaker can inspect buildings as to sanitation, but it is a mental impossibility that they can detect diseased cows whose milk is not fit for consumption.

In the matter of testing cows with tuberculin, foreign countries are using the intradermal method, claiming just as good results as by the subcutaneous. This is really the Von Pirquet method as practiced by the human physician to-day. They apply to the skin by vaccination while we inject interdermal; the results are the same in the bovine as in the human. By the interdermal method all cows furnishing milk to the cities and villages of this state could be tested by the veterinary surgeons of this state within the next ninety days and would dispose of the theory that it is a physical impossibility for the veterinary surgeons to do this work. In the city of Pontiac we have an ordinance calling for the tuberculin test of all cows furnishing milk and cream to the city; this ordinance is rigidly enforced by our health officer, Dr. Orton, who has signified his willingness to accept the intradermal method, believing it to be equally as good as the subcutaneous, and he has given the subject of testing cows with tuberculin considerable attention. It might be well for this association in the near future to take some notice as to what method shall be adopted in the testing of cows with tuberculin in this state.

The officers of the association have endeavored to make this meeting as beneficial to you as those of the past, and I take this opportunity of thanking you for the honor you conferred on me the past year at Saginaw.

Minutes of Saginaw meeting and regular annual meeting at the M. A. C. read, and upon motion were approved as read.

Prof. Marshall in a few appropriate words introduced Prof. Lyman, Dean of the Veterinary Division of the Agricultural College, to the members of the M. S. V. M. A. that were present. Prof. Lyman said he was pleased to meet the members and hoped he would have their hearty co-operation in the task he had undertaken in the instituting of the Veterinary College. From the reception accorded Dr. Lyman, there is no doubt but that he starts in with the best wishes of all the members.

The following gentlemen made application for membership:

Dr. Richard P. Lyman (degree), B.S., M.D.V.; 1894 Harvard Uni. Vet. Dep't; East Lansing; vouchers, G. W. Dumphy, S. Brenton. Dr. John Franklin Hackett; V.S., B.V.Sc. (O.V.C.), 1910; Breckenridge; vouchers, R. F. Erwin, H. M. Gohn. Dr. R. H. Wilson, D.V.M., Vet. Dep't, Kansas Agricultural College, 1909; Detroit; vouchers, Geo. W. Dumphy, S. Brenton. Dr. A. L. Haggerty, V.S. (O.V.C.), 1905; Coldwater; vouchers, C. C. Mix, H. M. Armour; Dr. O. J. Howard, D.V.M., Ind. Vet. Coll., 1910; Coloma; vouchers, J. Black, J. W. Brodie. Dr. M. J. Smead, V.S., B.V.Sc. (O.V.C.), 1910; Yale; vouchers, J. B. Stevens, J. Black. Dr. E. M. Joslin, V.S., B.V.Sc.

(O.V.C.), 1908-10; Morrice; vouchers, A. McKercher, R. F. Erwin. Dr. A. W. Moore, V.S. (O.V.C.), 1893; Kalamazoo; vouchers, A. McKercher, Jas. Harrison. Dr. L. M. Schuh, D.V.M.; Ohio State Uni., 1906; Grand Rapids; vouchers, S. Brenton, G. W. Dumphy. Dr. D. C. Bell, V.S. (O.V.C.), 1904; Detroit; vouchers, S. Brenton, J. Black. Dr. P. Harrison, V.S. (O.V.C.), 1893; Minden City; vouchers, C. C. Stevens, T. H. Attridge. Dr. Frank W. Chamberlain, B.S., D.V.M., N. Y. State V. C., 1906; East Lansing; vouchers, Ward Giltner, H. M. Gohn. Dr. F. L. Harrison, V.S. (O.V.C.), 1907; Fairgrove; vouchers, W. A. Ewalt, J. E. Wurm.

The above applications (except the last named) were referred to the Executive Committee. The association adjourned to witness a demonstration of tuberculin injection. Upon reconvening, the Executive Committee reported that they had investigated with care the applications for membership referred to them and would recommend the admission of the entire list of those making application for membership into the association. They were regularly elected as members of the association.

Correspondence was read from Dr. H. M. Reynolds, Gov. Osborn and Ex-Gov. Warner, Miss Lela M. Duff, Dr. J. J. Joy, Mrs. Hamilton (Dr. Hughson's daughter) H. H. Hinds and others.

Dr. W. Giltner, chairman of Committee on Diseases, suggested that members report infectious diseases encountered in their vicinity to the chairman of committee, and thus enable the committee to make a more comprehensive report. He reported an outbreak of tuberculosis in a flock of chickens, which may have been caused by infection from some human tuberculous patient, one or two of whom were in the family.

Hog cholera: While it may be under control somewhat, there are as many points of infection as ever.

Infectious abortion is a serious menace. Granular vaginitis is very widespread, it having been found in several places in the state. At service a discharge is started that is very hard to control. Most effective treatment is the use of antiseptics, such as lysol, 7 to 10 per cent. solution. It takes four or five months to control. Vesicles appear upon labia of vulva when opened. Streptococcus has been found in these vesicles. We have numerous outbreaks of infectious anæmia and lumpy jaw, and blackhead in turkeys has made its appearance in this state.

New test for glanders. It is known as Konew's method, and is described in the AMERICAN VETERINARY REVIEW, Jan-

uary, 1911, page 518. This method is better, because it is much easier for the veterinarian to apply than the agglutination.

Prof. Marshall in his talk warned against pitfalls that may be encountered in making the tuberculin test. Continued testing may allow errors to creep in, and reaction fail where there are lesions. There is a possibility of reaction in public feeling if testing is pushed too far.

Take normal temperature as long as possible before making injection. Do not draw conclusions unless temperatures are taken up to 17 hours after injection. Be exceedingly careful in taking temperatures after injection, as we cannot afford to make mistakes.

Hog cholera serum is a preventive, not a curative remedy. Do not treat animals that have a rise in temperature. Again I urge that farmers should take the responsibility. It is up to the veterinarians to state the matter candidly to them.

Study how to use serum. Always be sure that your syringe measures correctly.

Dr. Harrison and Dr. Brodie discussed tuberculosis, the latter favoring the intradermal method of testing.

Prof. Lyman said that none of the methods were as reliable as the subcutaneous. Application of dual test sometimes advisable.

The legislative committee report was made at this time by Dr. Hurt, chairman. Nothing new was anticipated, except possibly the question of the abolishment of the Live-Stock Sanitary Commission, which move was recommended by Governor Osborn. Should such a step be instituted, our Committee on Legislation will look after the interests of the veterinarian in the matter.

Dr. C. C. Mix reported for Prosecuting Committee. He said there were several classes of illegal practitioners. Those who have correspondence diplomas, students, traveling quacks, and those who failed to register. It is thought on the whole that the committee did good work, as many cases were brought to their notice, many of whom quit after notice from the committee. Dr. Mix's report was very full of interest, and it was thought advisable to continue along the lines. It was moved and seconded that the report be received and adopted and that the committee be extended a vote of thanks. Carried.

Dr. Frank Duncan spoke in a very feeling manner of our late fellow, Dr. T. G. Duff. Dr. Hawkins spoke of the late Dr. F. G. Gilbank.

Election of officers for coming year resulted as follows:

President—C. C. Mix.

First Vice-President—R. F. Erwin.

Second Vice-President—E. B. Cavell.

Third Vice-President—J. E. Wurm.

Secretary-Treasurer—Judson Black.

Directors—Drs. Wm. A. Ewalt, H. M. Armour, G. D. Gibson, J. E. Ward, A. McKercher, J. J. Joy.

The names of Drs. Jas. Harrison, L. M. Burt and Judson Black were selected to submit to the governor from which to choose one as state veterinarian.

Dr. J. E. Ward was selected as the choice of the association for member of the State Veterinary Board, his name to be sent to the governor with the request that he appoint him.

Papers and Discussions—Mr. Gilbert George gave a very interesting talk on "Bacterins in Their Relation to Veterinary Practice," which was very much appreciated by the members. He gave a history of bacterins, their preparation, the precaution to be observed as to their use, indication and dosage. Discussed by Drs. Harrison, Farmer and Giltner (who advised the autogenous bacterins).

Dr. H. M. Gohn's talk upon "Bacterins in the Treatment of Joint-ill," brought out that the doctor had only used it in one case which was doing well under the treatment, but succumbed to an attack of bowel trouble. He had used the bacterins in synovitis. So far he felt quite encouraged by the success he has had.

Drs. Stevens' and Smead's paper upon "Septic Arthritis in Foals" was read in the absence of Dr. Smead by Dr. Hurt. This vital topic was handled in an interesting and able manner.

Dr. J. E. Wurm's subject of "Influenza or What?" was of particular interest; the cases that the doctor described were endemic, as the district in which he saw all of his cases was in a circumscribed locality.

The special symptoms began in many cases with extreme diarrhœa, and in most cases with very painful and persistent colic that would not respond to treatment, but would cease after twenty-four hours or so, after which the patient would be abso-

lutely quiet either until the case started toward recovery or died. The patient would fix his eyes at some object and, ears forward, would gaze steadily in some cases for hours. In the worst affected cases nothing would be eaten or even looked at during the whole progress of the disease. A person looking into the stall would not think the animal was very sick. They would stand sometimes for days in one spot without moving. Temperature, 103° - 107° ; pulse in many instances not much disturbed, but usually about 75-80. One constant condition found on post mortem was hæmorrhagic spots on spleen ranging in size from minute spots to areas as large as the palm of the hand. The doctor said it was a very unsatisfactory disease to treat, nothing seeming to relieve the conditions, as they seemed to run their course. The death rate was, however, low, only about 3 per cent. dying. There were about 1,200 cases seen altogether by Dr. Wurm. Drs. Brenton of Detroit, Hurt of Lansing, and Black of Richmond had been called in consultation; only one of whom (Dr. Brenton) had ever seen anything like this disease before. Dr. Brenton called it a hepatic form of influenza.

This case was listened to with much interest by members of the association, and further reports upon the disease will be anticipated.

Dr. S. Brenton spoke upon their most recent treatment of azoturia. They use a normal saline injection into the jugular in all cases that are down, and they used quinine, salol and santal comp. as indicated. Their per cent. of recoveries are much higher under this treatment than any other they had used.

Dr. Hal. L. Bellinger, in speaking of "Treatment for Cough," recommended Am. carb., 1 ounce, to 1 pint of glycerine; tablespoonful three times daily in drinking water only.

Dr. E. B. Cavell, spoke of the internal administration of biniodide of mercury in the treatment of sore throat and was very enthusiastic in regard to its results. He uses half-grain tablets.

Dr. Schuh spoke advising the construction of an entire new veterinary practice law in which the status of the veterinarian is fixed.

It was moved and supported that this association recommend for appointment on the Live-Stock Sanitary Commission, Mr. E. K. Illendon, of Adrian, to the position made vacant by the expiration of the term of C. A. Tyler, July, 1911. Carried.

Prof. Lyman extended an invitation to the association to meet at Michigan Agricultural College again next year. The invitation was accepted.

Committee on Resolutions submitted the following and moved its adoption:

Whereas, It has pleased Almighty God in His infinite mercy to remove from among us during the past year two of our professional brethren, Dr. T. G. Duff, who passed away April 28, and Dr. F. G. Gilbank on December 27, 1910; be it therefore

Resolved, That the members of this association extend to Mrs. Duff and family and Mrs. Gilbank and relatives its most sincere and heartfelt sympathy in their sad bereavement, with the assurance that He who tempers the wind to the shorn lamb will fold His protecting arms about them in their hour of trouble; be it further

Resolved, That these resolutions be spread upon our records and a copy be sent to each of the bereaved families. F. A. Scott, H. T. Creagan, T. M. Blatchford, Committee. Resolution adopted.

Dr. T. G. Duff graduated in the O. V. C. in 1883; was made a member of this association in 1891.

Dr. F. G. Gilbank graduated from the O. V. C. in 1888; made a member of this association first in 1890 and again in 1908.

Dr. Otto H. Gebhardt, in an interesting communication to the association, described a case in which he took a bone about six inches long from the region anterior to the scapula (looked like a rudimentary rib) from a colt just put to work but had to lay up because of a swelling on the shoulders; specimen shown.

Interesting specimens were also shown by Drs. Farmer and McDonald; the former showing a mass that passed from his driving horse. It looked like a frayed cloth; was evidently animal tissue. Dr. McDonald exhibited a number of calculi varying in size from a bean to a goose egg which he removed from the lower flexure of the large colon in a gelding that succumbed to enteritis.

Dr. E. B. Cavell exhibited some very interesting photographs of views taken of a recent outbreak of infectious anæmia in his locality.

The business of the session being concluded the retiring president called President-elect Mix to the rostrum and handed

him the gavel. Dr. Mix in a few remarks thanked the association for the honor they had conferred upon him and named his standing committees.

A banquet at the Hotel Wentworth followed adjournment, at which over sixty members were present. The following gentlemen responded to toasts: Dr. Ward Giltner, "The Veterinarian" and the "Bacteriological Laboratory at the M. A. C." Prof. C. E. Marshall, "The New Veterinary College." Dr. L. M. Hurt, "The Proposed Abolishing of the Live-Stock Sanitary Commission." Dr. G. W. Dumphy, "Our Officers." Dr. S. Brenton, "Our Association." Dr. Jos. Hawkins, "Outlook of Our Association." Prof. R. P. Lyman presided in a very pleasing and able manner. Every one had a good time and the verdict was unanimous that we have a banquet at our next annual meeting.

J. BLACK, *Secretary.*

PHILIPPINE VETERINARY MEDICAL ASSOCIATION.

The annual conference of this association was held at the Y. M. C. A. Building, Manila, commencing at 10 a. m. on Saturday, February 25, 1911.

The meeting was called to order by the president, Dr. W. P. Hill, who reviewed the work which had already been accomplished by the veterinarians in the Philippines, and emphasized the importance of co-operation and organization, and suggested that measures be taken to regulate the practice of veterinary medicine and surgery in the Philippine Islands.

It was proposed by the president that Dr. G. E. Nesom, Director of the Bureau of Agriculture, suggest appropriate subjects for discussion by the association pending the arrival of his Excellency the Governor-General. In accordance therewith, Dr. Nesom proposed that the titles of the papers to be read be given to the secretary; also that the names of all the attending veterinarians be obtained, all of which was done.

In a few appropriate words the president introduced his Excellency, Governor-General Forbes, as the first speaker. Mr. Forbes addressed the meeting, reminding the veterinarians of the importance of their work, and the necessity of the elimination of dangerous communicable animal diseases, in order that the agricultural industry in these islands might be developed,

all of which is so vital to the prosperity of the Filipinos. Mr. Forbes is taking a keen personal interest in the ultimate success of the veterinarians in the archipelago, thereby greatly encouraging them to greater, if possible, or at least renewed efforts with a firmer determination to conquer, in the face of almost insurmountable difficulties, the dangerous animal diseases existing in these islands.

In response to the governor-general's address, Dr. Nesom enumerated some of the difficulties that had been encountered in the past by the Bureau of Agriculture in its efforts to suppress and eventually eliminate diseases among the animals in the islands, and pointed out some of the essential requisites necessary to carry on successfully the work already started and to terminate the campaign at the earliest possible moment. Dr. Nesom expressed to the governor-general the gratification he and the other members of the association felt, due to the encouraging remarks with which the association had been favored by his Excellency.

Dr. W. H. Boynton, Pathologist, Bureau of Agriculture, gave an interesting and instructive discourse on the subject of pleuro-pneumonia, illustrating in a practical manner in his lecture by means of diagrams, photographs and pathological specimens the various phases of the disease.

Dr. Boynton was followed in his remarks by Dr. David McKibben, who read a paper on osteo-porosis, citing certain cases that came under his personal observation at the Trinidad Stock Farm, near Baguio, Sub-Province of Benguet, which are probably the first authentic cases that have been reported in the Philippine Islands.

An interesting and exhaustive discourse was given by Dr. Archibald R. Ward, Chief Veterinarian of the Bureau of Agriculture, on appropriate and practical methods in dealing with rinderpest, with a view to eliminating eventually the dread scourge which has demoralized the agricultural industry of the islands. Dr. Ward dwelt at length upon the results obtained by the use of the simultaneous method of inoculations as compared with the anti-rinderpest serum inoculations alone, and enumerated some of the insurmountable obstacles in attempting to carry out the former method of inoculations in the islands. Dr. Ward advocates the destruction of all animals sick with rinderpest, and, in certain instances, susceptible animals that have been exposed to the disease, together with rigid quarantine,

isolation and thorough disinfection, as being the only measures known at present which are practical in dealing with rinderpest in the Philippine Islands; conclusions concurred in by a majority, if not all, of the veterinarians present, which methods were successfully practiced in Europe one hundred and fifty years ago.

After some discussion on the subject, it was unanimously decided to give a banquet at the Hotel de Francia the following evening at 6.30 o'clock, Sunday, February 26, 1911.

In view of there being many other important subjects to be discussed, and owing to the lateness of the hour, it was moved by Dr. Nesom, and seconded by Dr. Hungerford, that the meeting adjourn to meet at 10 a. m. on Monday, February 27, 1911.

The following evening at the hour agreed upon about thirty members of the association, as well as several distinguished visitors, met at the Hotel de Francia, where, after a bountiful luncheon, the following speakers, in the order named below, were introduced in a few appropriate and well-chosen words by the toastmaster, Dr. Nesom.

The president of the association, Dr. W. P. Hill, Veterinarian First Field Artillery, U. S. Army, stated that at the present time the veterinarians in the military branch of the service are not receiving the proper recognition by the Federal Government, and that all former efforts to have this branch of the service properly recognized had been defeated, and pleaded that each member of the association exercise his personal influence toward securing the necessary legislation, to the end that veterinarians of the United States Army be given the rank that they deserve.

Dr. Archibald R. Ward, Chief Veterinarian, Bureau of Agriculture, dwelt particularly upon the necessity of rigid measures being adopted in order to suppress and eliminate rinderpest in the archipelago; that it would be advantageous to obtain the aid of the military authorities by utilizing scout soldiers in maintaining an effective quarantine in those areas where rinderpest exists; that certain legislative and financial co-operation was urgently needed; and that the Insular Government assume the responsibilities in dealing with dangerous communicable animal diseases in the archipelago, thereby relieving the provincial and municipal governments as much as possible of such authority, citing instances of failures of the local governments to cope successfully with such diseases; he also recommended that the

owners of diseased animals be reimbursed when it is necessary that said animals be killed in the interest of the public welfare.

Prof. C. V. Piper, Agrostologist, United States Department of Agriculture, at present in the islands in the interest of the Federal Government, spoke entertainingly of his first impressions of the islands, and dwelt at some length upon the wonderful possibilities of the agricultural prospects in the tropics.

The association was next favored with an address by his Excellency, Governor-General Forbes, who enumerated some of the difficulties that might be encountered in obtaining for the Bureau of Agriculture the desired financial and legislative assistance, but stated that he would do all in his power to aid the bureau to suppress and eliminate the dangerous animal diseases in the islands. Such assurance, coming as it did from the Chief Executive, was very gratifying to the association; and, as a result, every veterinarian present will return to his station with a firmer determination than ever to eradicate rinderpest in the Philippine Islands.

After each speaker had concluded his remarks, the toastmaster, Dr. Nesom, appropriately expressed the thanks of the association for the interesting talk with which it had been favored. In reply to the address of his Excellency the Governor-General, Dr. Nesom assured Mr. Forbes of the appreciation felt by him for the personal interest displayed in the work of the bureau.

On the following day at 10.30 a. m., Monday, February 27, 1911, the meeting reconvened.

M. B. Mitzmain, Veterinary Entomologist, Bureau of Agriculture, read a well-prepared and interesting paper on the various methods by which certain diseases are disseminated by different varieties of insects, with special reference to the methods of conveying trypanosomes. At the conclusion, Drs. Ward and Hill availed themselves of the opportunity to question the speaker in regard to some points about which they were in doubt.

Dr. Alvin Broerman, Instructor in Anatomy in the Philippine College of Veterinary Science, University of the Philippines, which has recently been established in Manila, stated that said institution is giving a course of study extending over a period of five years; the requirements for admission being a high-school degree.

Dr. W. P. Hill, president of the association, gave an interesting talk on practical surgery, referring particularly to surgery of the horse's foot.

Dr. Stanton Youngberg, Traveling Veterinary Inspector, Bureau of Agriculture, gave an interesting talk on his personal observations of rinderpest in the provinces, citing cases he had seen where hogs had contracted rinderpest and then conveyed the disease to cattle, and stated that apparently rinderpest infection remains virulent for an indefinite period. The remarks brought out a discussion by Drs. Ward, Boynton, Hill, McKibben and Decker.

Dr. Frank C. Gearhart, Chief of the Division of Animal Husbandry, formerly Acting Chief Veterinarian, Bureau of Agriculture, stated that during his tenure of office as acting chief veterinarian the anti-rinderpest serum treatment was about the only measure that could be practiced at that time; that the more satisfactory measures in vogue to-day were not regarded favorably at that time owing to conditions over which he had no control; and that it was his opinion then, as it is now, that the only practical means by which rinderpest may be eliminated is the one now advocated by Dr. Ward, and practiced as far as possible by the Bureau of Agriculture.

It was moved by Dr. Gearhart, and seconded, that the secretary of the association be directed to address a letter to the secretary of the Y. M. C. A., expressing the thanks of the association for the use of the Y. M. C. A. building.

It was moved by Dr. Ward, and seconded, that Drs. Nesom and Gearhart be appointed a committee to express formally, by means of a communication to his Excellency the Governor-General, the appreciation felt by the association for the interest displayed by the governor by his personal attendance and his encouraging remarks.

Dr. Gearhart suggested that the veterinarians in the provinces exercise their influence with the representatives of the people in their various districts, urging that the necessary legislation be enacted and appropriations be made, with which to reimburse the owners of animals which it is found necessary to kill in the interest of the public welfare. The suggestions of Dr. Gearhart was well received by the members of the association.

The election of officers took place and resulted as follows: President, Archibald R. Ward, B.S.A., D.V.M.; vice-president,

Jos. Jefferes, Veterinarian, Seventh Cavalry, United States Army; secretary-treasurer, David C. Kretzer, D.V.S., M.D., M.D.V.

The secretary of the association was instructed to notify Dr. Jos. Jefferes of his appointment, upon his arrival in the islands on the next United States Army transport.

As there was no more business to come before the association, it was moved and seconded that the meeting adjourn, to meet at the call of the president.

Members present were: W. P. Hill, Veterinarian, First Field Artillery; H. W. Peters, Veterinarian, Fourteenth Cavalry; Harry S. Steel, Veterinarian, Eighth Cavalry; W. Fraser, Veterinarian, Thirteenth Cavalry; E. P. O'Connell and H. H. Ladson, Veterinarians, Quartermaster's Department, United States Army.

Drs. G. E. Nesom, Archibald R. Ward, Frank C. Gearhart, Ralph F. Knight, Stanton Youngberg, J. A. Thompson, A. J. Nance, F. W. Wood, R. O. Porter, Thos. T. Hartman, David McKibben, Jas. Love, H. J. Hungerford, Alvin Broerman, A. H. Julien, C. H. Decker, A. G. Fraser, W. E. Stribling, W. J. Palmer, T. I. Miller, A. D. Miller, P. E. Burnett, J. B. Bell, W. H. Boynton, H. K. Howard and D. C. Kretzer, Bureau of Agriculture.

Visitors present were: His Excellency, Cameron W. Forbes, Governor-General of the Philippine Islands; Prof. C. V. Piper, Agrostologist, United States Department of Agriculture, and Mr. Francis Connor, West Australia.

DAVID C. KRETZER,
Secretary-Treasurer.

Manila, P. I., February 27, 1911.

THE ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The twenty-eighth annual meeting of this association was held November 30 and December 1, 1910, at the Lexington Hotel, Chicago, Ill.

The meeting was called to order at 10 o'clock a. m. with President Glendenning in the chair. Routine business being disposed of the following interesting program was proceeded with:

“Influenza, or Shipping Fever,” by A. C. Amman, Maroa.—The writer was of the opinion that the disease was contracted in a large measure through the alimentary tract; and has had indifferent results with antitoxins. In the discussion Dr. W. H. Welch said that he had had good results from the use of antitoxins, and that it was a preventive in 90 per cent. of cases, and in the other 10 per cent. they had a light attack. The consensus of opinion was that antitoxin was a very valuable aid in the prevention and treatment of this disease.

“Veterinary Evolution,” by A. M. Rockwell, Alexis.—This was a very commendable paper, and complimented the present veterinarians on the valuable work that they were doing along the line of preventive medicine and the control of contagious diseases; and paid a compliment to the veterinary institutions on the progress they had made in the teaching of veterinary science.

“Lightning Shock,” by C. A. Barnes, Forrest City.—This was an exceedingly interesting paper; owing to the absence of literature on the subject, it was very hard to determine the exact cause of death, and as a great deal of the live stock was insured, and unless the cause of death determined, the insurance companies did not care to settle. The question also arose as to when a horse was a horse, that is at what age the colt became a horse; this had a direct bearing on the insurance of such animals.

Adjourned for luncheon.

RECONVENED AT 2 O’CLOCK P. M.

Address by Dr. John Dill Robertson. This consisted of a review of the art of healing from the time of Moses to the present, and quoted the Bible frequently to make his points; he also stated that in some respects that the practice of medicine was moving in circles. The address was thoroughly enjoyed, and a vote of thanks was voted the Doctor for the address.

“The Relation of Water and Disease,” by James M. Cooper.—This was a comprehensive thesis on the water supply of large cities, the pollution of the same, and advocated a more rigid inspection of its source, and the enactment of laws to better control contagious diseases.

“The Professional Man,” by W. J. Martin, Kankakee.—This paper dealt with the problem of higher education, the upbuilding of local, state and national associations, and in this way to give the veterinarian an opportunity to better acquaint himself

with his profession, and advised the young graduates to establish offices elsewhere than in livery stables, to be ethical and gain the respect and confidence of his community.

"Teratoma and Actinomycosis," by H. A. Greer, Danville.—This paper consisted of a résumé of the history of actinomycosis, its pathology and treatment, and recited several cases. A specimen of a teratoma was passed around, and the doctor explained that it was taken from the abdomen of a cryptorchid on post-mortem.

"Immunity," by H. F. Palmer, Chicago.—This was a very able paper on this subject, and was thoroughly enjoyed by all present. Dr. Palmer is well grounded on the subject.

At this point Dr. Walker explained that as there was to be a clinic on the afternoon of the last day of the meeting, and as a large number of the members usually left for home before the election of officers, which was held at that time, and as a large number was then present he thought it advisable that the election be held immediately.

It was then moved by E. L. Quitman and seconded by A. W. Smith, that the by-laws be suspended for the purpose of election of officers; motion carried.

The following officers were then elected by unanimous ballot:

J. H. Crawford, President.

James Smellie, Vice-President.

L. A. Merillat, Secretary.

R. G. Walker, Treasurer.

Board of Censors.—J. T. Nattress, N. P. Whitmore, and W. H. Welch.

Dr. L. A. Merillat then invited the association on behalf of the Chicago Veterinary College to hold a clinic at that institution the following afternoon at 1 o'clock p. m.

The meeting then adjourned to meet at 8 o'clock in the banquet room.

A company of sixty-five veterinarians assembled promptly at 8 o'clock, and sat down to an elaborate banquet, provided by the management of the Lexington Hotel, the cigars were then passed, and the president announced the selection of Dr. J. M. Wright as toastmaster, who opened the speaking program with a few remarks on the history of the association and a recount of the old familiar faces. A number of those present were called

on for remarks, and all responded. Dr. Beckley entertained the company with a number of witty songs rendered as only he can.

At 12 o'clock the company broke up and all declared they spent a very enjoyable evening.

December 1, meeting reconvened at 10 a. m.

"Serum Therapy," by C. C. Mills, Decatur.—This paper gave a thorough review of the subject from the viewpoint of the practitioner who had used the serum products; it was well received, and brought out a very lively discussion, which was very interesting.

"A Few Cases from the Note Book of a Country Practitioner," by H. D. Chamberlain, Belvidere.—A review of a number of interesting cases as met with in a country practice. This paper brought out a good discussion, and was well defended.

Dr. A. T. Peters was called on to tell the association of the progress of the State Bacteriological Laboratory; he stated that the hog cholera serum was very successful, and that the only trouble was that they could not make enough of it as the appropriation would not allow it, and urged the members to try and interest their legislators to be more liberal.

"Veterinary Literature," by D. M. Campbell, Chicago.—A very interesting talk on recent veterinary literature, and advised the reading of the same by all practitioners, and so keep in touch with the more recent developments in veterinary medicine.

On motion the rules were suspended for the admission of new members. A number of petitions were then read and being O.K.d by the board of censors were on motion elected by unanimous ballot.

The rules were then reinstated.

The meeting then adjourned to meet at the Chicago Veterinary College at 1 o'clock p. m.

Promptly at 1 p. m. the meeting reassembled in the operating room, and a number of cases were presented as follows:

Tonsillotomy on a dog, by Dr. Elnor McGrath.

Cunean Tenotomy, by L. A. Merillat.

Removal of a fibrous tumor, in the region of the parotid gland.

Also a number of minor operations: taken all together the clinic was a decided success.

The question box was then opened, and this proved to be not only instructive, but also entertaining.

The committee on resolutions being ready to report as follows: Committee on resolutions of the Illinois State Veterinary Medical Association, twenty-eighth annual convention assembled:

Do hereby recommend to the forty-seventh general assembly of the state of Illinois, to make an adequate appropriation for the State Biological Laboratory at Springfield, Ill., in order to carry the scientific researches and investigations, and the production of standardized serums and vaccines, so much desired by the agricultural and livestock interests of the state of Illinois.

They further recommend that this association pass a resolution indorsing the reliability of the tuberculin test, and that said resolution be signed by the president and secretary of the association, and a copy of the same be forwarded to the Shurtleiff Commission.

Further, that in conformity with the recommendation made in the president's address, we also recommend that the members of the legislative committee be authorized to draw on the funds of the association for all legislative expenses incurred in the discharge of their duty.

Furthermore, this committee would urgently recommend to each and every member of our profession in the state of Illinois, to use their utmost endeavors to persuade the members of the incoming legislature to pass adequate laws preventing the importation into the state of Illinois, of any breeding or dairy cattle unless the same have been submitted to the tuberculin test by national or state authorities.

This committee would further recommend that the dues of the Illinois State Veterinary Medical Association be increased from one to two dollars per annum, and we therefore recommend that at this meeting an amendment to the by-laws be made in writing, to that effect.

Signed: W. J. Martin, C. G. Glendenning, J. H. Crawford, R. C. Walker, Jas. Smellie, J. T. Nattress. In conformity with the last recommendation the following resolution was introduced, to wit:

We hereby move that article four, section one of the by-laws be changed to read, two dollars instead of one.

(Signed) W. J. MARTIN.

The motion being duly seconded the amendment was accepted to be acted on at the next meeting.

The reports of the auditing committee and the treasurer were then read, and on motion were adopted.

J. H. Crawford, Jas. Smellie, L. A. Merillat and R. G. Walker were then duly installed into office.

The president appointed the committee on legislation as follows: Dr. J. M. Wright, W. J. Martin, A. F. Peters.

A vote of thanks was then extended to college authorities for the use of the building, and for their many courtesies; also to Dr. L. A. Merillat for the grand clinic he furnished. A reading of the register shows 108 were present. Moved to adjourn subject to the call of the president.

J. H. CRAWFORD, Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

APRIL MEETING.

The regular monthly meeting of the Veterinary Medical Association of New York City was held in the lecture room of the New York American Veterinary College Wednesday evening, April 5, 1911.

The minutes of the March meeting were read and approved.

Dr. Theo. A. Keller made a report of an interesting case of lameness in a horse. The animal suddenly showed extreme lameness of a hind limb, which was almost indicative of a fracture. The animal was placed in slings, but at the end of two weeks, it was deemed best to destroy him. Post-mortem examination revealed the articular cartilages of the hip joint to be badly necrosed. Dr. Keller exhibited the bones affected.

Dr. Frank Miller presented an interesting case of infectious granuloma of the penis in a dog, explaining that there was no history of the case, and the exact nature of the growth is not known. The doctor expected to operate in this case.

Dr. W. G. Hollingworth, of Utica, N. Y., president of the Central New York Veterinary Medical Association, was introduced by Dr. Blair and read an interesting and instructive paper on the "Duties of the Veterinarian and the Authorities."

Dr. Wm. McKinney then read a very interesting and practical paper on "Mechanical Lameness," which created quite a discussion by the members.

A unanimous vote of thanks was extended to the contributors to the program of the evening.

An interesting program was promised for the May meeting. Meeting adjourned.

R. S. MACKELLAR, *Secretary*.

MAY MEETING.

The regular monthly meeting of the Veterinary Medical Association of New York City was called to order by the president, Dr. W. Reid Blair, in the lecture room of the New York American Veterinary College, Wednesday evening, May 3, 1911. Minutes of the April meeting were read and approved.

Dr. Gill reported that the obnoxious McEllicott bill had been defeated.

Dr. Chas. Jamieson, of Brooklyn, read an interesting paper on a remarkable case of "Paralysis of the Anterior Extremities" of a horse, the cause of which was very obscure.

Discussed by Drs. Berns, McKinney, Gill and others.

Dr. John A. McLaughlin, of New York City, read a paper entitled, "Dumb Rabies, or Is It Rabies?" in which he advanced some new theories and ideas regarding this dreaded disease. On motion by Dr. Gill, seconded by Dr. Berns, and carried, it was decided that the discussion of this subject be deferred until the June meeting.

Dr. Blair then introduced Dr. J. G. Wills, chief veterinarian of the Department of Agriculture, of New York state, who expressed his pleasure at being able to attend this meeting and meet so many members of the profession personally. The doctor also made some interesting remarks regarding the work of the Bureau of Veterinary Service of the Department of Agriculture.

Dr. Robt. Dickson, of Fair Haven, N. J., gave an interesting case report of a large fibrous growth weighing five and one-half pounds, which he removed from the knee of a mule with good results. The animal before the operation had not laid down for a long period, but now assumes the recumbent position without any difficulty.

Dr. Dickson exhibited the growth and photographs of the same before removal.

Dr. J. E. Ryder made an interesting case report of a black saddle mare nineteen years old, which had foaled her seventh colt about two weeks previous to the time he was called to attend

her. She then showed a difficulty and stiffness of gait with all other conditions normal. After the tenth day could move back or forward, and at end of two weeks down and unable to rise. Down ten days, was raised and stood for two and one-half hours. Next day was raised but could not move, squealed and went down. The urinary analysis, which was made frequently during the progress of the case, showed the urine to be normal except on the twenty-first day, when pus was present which could be detected by the eye. The mare was destroyed and post-mortem examination showed the capsule of the left kidney to be nineteen inches in width by ten inches in length, filled with a blood clot measuring two gallons, three-quarters of which was of recent origin, and the remainder in the center proved to be an old clot. The question in this case is where did the pus originate from on the twenty-first day, as the careful post-mortem failed to reveal any pus.

Dr. Blair reported the case of a colt having paralysis of the masseter muscles, left eyelid drooping and knuckled in three ankles. This case has been under treatment for eleven days to date with little or no change of conditions. The treatment given consisted of strychnine, nux vomica and iodide of potash.

Dr. Darke reported a similar case, which he ascribed as being due to the use of an ice pack applied to the head in treatment of heat prostration. Six months elapsed before the animal fully recovered. The treatment used was iodide of potash and strychnine.

Dr. Blair then gave a concise explanation and practical demonstration of the "Konev Reaction" for the diagnosis of glanders.

Drs. Durner, Cavazzi, Rohrer and Weaver were elected members of the association. Unanimous vote of thanks was extended to the essayists of the evening.

Fifty members and guests were present. Meeting adjourned.

R. S. MACKELLAR, *Secretary*.

JUNE MEETING.

The regular monthly meeting of this association was called to order by the president, Dr. W. Reid Blair, in the lecture room of the New York American Veterinary College.

Dr. H. D. Gill reported that the College bill had been passed by the senate, and urged every veterinarian to write the governor, requesting him to sign the same, thereby making it a law.

Dr. DeVine also spoke in support of this bill, urging every one present to do their best to have the bill signed by Governor Dix.

Dr. Greissman then read an interesting paper, entitled "Some Experiments with the X-Ray." The doctor also exhibited photos and plates.

Dr. Berns, of Brooklyn, made an interesting case report of probable rupture of the flexors in a horse, causing the leg to be flexed backward to an extreme degree. The doctor also related the history of some interesting cases of rupture of the gastrocnemius muscle, and also mentioned some cases of osteoporosis that he had met in his practice.

Dr. Gill reported having had a case of osteomalacia, which exhibited similar symptoms to those found in rupture of the gastrocnemius.

Dr. John A. McLaughlin very kindly re-read his paper on Rabies for the benefit of those who were not present at the May meeting, and to facilitate discussion of the same.

The doctor stated in his paper that the disease, known as "Black Tongue," in Providence, R. I., and which shows similar symptoms to "Dumb Rabies," was, in his opinion, not Rabies, but an inflammatory infection of the tongue, throat and adjacent tissues, probably due to some bacteria.

Dr. Rambaud, of the Pasteur Institute, was requested by Dr. Blair to open the discussion, and made some very interesting and instructive remarks on Rabies. The doctor stated that an emulsion of the brain of a rabid animal injected into other animals may produce either the dumb or furious form of Rabies. Also stated that an animal affected with Dumb Rabies may transmit the disease at least three days before the pronounced symptoms are noticeable. Never had a case in which the Negri bodies were present, which did not prove to be a positive case of Rabies. Still in from five to ten per cent. of rabid animals the Negri bodies are not found.

The doctor stated that in nearly 2,300 cases treated at the institute there had been but ten failures. These cases he divided into three classes, viz.: First, those bitten by animals proved to have been rabid, 1,279; second, those bitten by animals diagnosed by a veterinarian as being rabid, 270, and third, doubtful cases in which the history was not complete, 720.

The greatest number of deaths of course occur in those cases of the first class.

Dr. Wheeler, also a colleague of Dr. Rambaud, at the Pasteur Institute, made some very interesting statements regarding Rabies. The doctor said that a rabid dog has been known to bite fifteen other dogs, and as high as 50 per cent. of those bitten have developed Rabies.

Dr. Talley, of the New York City Department of Health, expressed his pleasure at being present, and was much interested in the discussion.

Dr. DeVine, late chief veterinarian of the State Department of Agriculture, gave some interesting accounts of cases which had come to his notice.

Dr. H. D. Gill discussed the subject at some length, and said that invariably it had been his experience that a dog with Rabies would die in three or four days.

Dr. D. J. Mangan also discussed the subject as well as Dr. E. B. Ackerman, who gave his personal experience in being bitten by a rabid dog last year.

Dr. Rambaud supplemented his former remarks, supported by Dr. Wheeler, by stating that valuable dogs bitten by rabid animals are now treated by being injected with an emulsion of a rabid brain, combined with a serum obtained from sheep. The first injection should be made within two days of the time the animal is bitten.

Dr. McLaughlin then closed the discussion, saying that he had gained much valuable information and thanked the member and guests for the same.

The report of the Board of Censors being favorable, Dr. C. E. Shaw, of Brooklyn, was unanimously elected a member of this association.

Dr. E. B. Ackerman, president of the New York State Veterinary Medical Society, made announcement of the annual meeting to be held in Brooklyn September 12, 13 and 14, 1911, and requested the members to contribute papers and clinical material.

The following resolution was offered by Dr. Robt. W. Ellis and received the unanimous indorsement of the association:

"Be it Resolved, That this association favors a uniform degree in the veterinary schools of North America; and

"Be it Further Resolved, That we indorse the movement inaugurated by President Glover, of the American Veterinary Medical Association, toward that end, and that the president of this association instruct the delegates to the American Veterinary

Medical Association to convey the action taken by this association to that body.”

It was unanimously decided to address a resolution to Governor Dix, urging him to sign the College bill.

Dr. H. D. Gill was appointed chairman of a committee to draft this resolution.

Dr. Blair announced that he would appoint delegates to the American Veterinary Medical Association and the New York State Veterinary Medical Society meetings in the near future.

A unanimous vote of thanks was extended to the visitors and members who had contributed to the program of the evening.

There were over fifty members and visitors present.

Meeting adjourned at 1 a. m. to meet again the first Wednesday in October.

R. S. MACKELLAR, *Secretary.*

PRESIDENT NIEMAN'S ADDRESS.

IOWA VETERINARY ASSOCIATION.*

Brother Members of the Association: It is with great pleasure that I greet you to this the twenty-third meeting of the Iowa State Veterinary Medical Association.

I appreciate very keenly the honor conferred upon me by this association at the last annual convention which convened in Des Moines one year ago; I take this occasion to extend to you my thanks and I hope your visit to our city will be both pleasant and profitable; we want you to feel at home, and I assure you that the committee on local arrangements will do everything in their power to make it so. Now a word relative to the benefits of the association, and a suggestion as to the conditions that may be improved by proper legislation would be appropriate. Veterinary education is on a very much higher plane to-day than it was a few years ago. Private and public institutions demand the services of scientific and professional men, and the profession is moving forward with great rapidity, presenting a field that calls for the highest talent, and only through conventions and organizations can we keep pace with the onward march of the profession, promote the dissemination

*Report of meeting printed in June issue.

of practical ideas gathered from a wide field of experience, influence proper legislation for the control and eradication of infectious diseases, and last, but not least, it is a means of good fellowship and enables congenial spirits to meet in a business and social way.

We have a large number of applicants with us to-day asking for membership in this association, and I hope the Executive Committee will find all of them eligible, for in numbers, with unity, there is strength.

Now a word relative to breeding conditions. It would seem desirable to have a law enacted to eliminate as far as possible animals from the stud affected with hereditary unsoundness, or at least require a certificate of soundness issued by competent veterinarians, this certificate to be attached to or incorporated with each bill or poster. Another thing that seems absurd to me is to know that we have no law of any kind to protect ourselves against the importation of live-stock for dairy and breeding purposes, unless it be pure-bred cattle, so you can see at a glance that we are the dumping ground for diseased stock. If we consider an economic, politic and public sentiment sufficient reason for dairy and milk inspection, why have we these existing conditions? Dairy inspection, speaking locally, and I understand we are not alone, had ceased to be observed, due, no doubt, in part at least to lack of understanding by the public at large of the liabilities of becoming infected through this source. Our dairy commissioners with their field forces are going from town to town explaining to the dairymen and the general public what a vast amount of good they are doing in testing milk for butter fat, and invariably leave the impression with the public that when they have applied such test, said milk is free from disease, which you all know is absolutely wrong.

I will admit that a cow yielding a small amount of butter fat in her milk is not a paying proposition, yet the milk from a cow having had the tuberculin test properly applied, with sanitary conditions equally as good; clean, wholesome and free from the bacterium of tuberculosis, that the public can well afford to take the chances even if her milk is half water.

But due to the stress that is being brought to bear by the dairymen upon the authorities should their herds be subjected to the tuberculin test might suffer losses, therefore it suggests the idea that if the eradication of infectious diseases liable to be transmitted to the human family through the agency of milk,

or by any other means, be a benefit to the public, the state should at least pay a portion of the appraised value of condemned animals.

And now, in closing, allow me to express to you my sincere and heartfelt appreciations for the hearty co-operation of the different officers and committees that it has been my pleasure to meet during the past year. The energy and untiring efforts of all the members are also worthy of commendation, and I trust that during your short stay in our city that an everlasting impression will be formed in the minds of each and every one of you, so that in future years to come, in casting about for a desirable location for our meetings you will not forget Marshalltown.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The annual meeting of March 7, 8, 1911, of the above association was called to order by President Jacob Helmer at 2 o'clock March 7 in the Hotel Windsor, Philadelphia, Pa.

Following the able address of the president, the choice of officers for the ensuing year resulted in the election of F. H. Schneider, president; Harry B. Cox, T. Edward Munce and A. W. Weir, vice-presidents; Francis Bridge, treasurer; E. H. Yunker, recording secretary; John Reichel, corresponding secretary; C. J. Marshall, chairman; W. Horace Hoskins, Otto G. Noack, S. E. Weber, Louis A. Klein, trustees.

The following applicants were voted upon and elected to membership: S. F. Griesemer, Robert W. McKibbin, Harvey W. Burd, Allen J. Keelor, J. P. Gerety, Philip M. Fox, Howard H. Custis, James A. McCloskey, Harry M. Farley, W. Howard Wilson, J. J. Kline, K. F. Meyer, W. J. Lentz, J. D. Foster, Wm. H. Ivens, H. D. Fry, Raymond A. Devlin, E. J. Booth, Walter G. White, Thos. D. James, G. M. Graybill, Joseph J. Corkhill, Albert W. Pfarr, Wm. G. Shively.

Late in the afternoon Prof. Allen J. Smith, dean of the medical school of the University of Pennsylvania, addressed the association on Trichinosis, which resulted in an extended and interesting discussion.

In the evening of March 7 the Keystone Veterinary Medical Association and the Pennsylvania State Veterinary Medical As-

sociation tendered a banquet in Leonard Pearson Hall of the veterinary school, University of Pennsylvania, to C. J. Marshall, the newly appointed state veterinarian.

The following day was entirely taken up with reports of the county secretaries, standing committees and the reading and discussion of papers, presented by John P. Turner—"Dairy and Farm Inspection," Howard B. Felton—"Municipal Milk Inspection," K. F. Meyers—"Sero Diagnosis of Glanders."

At the close of the session, after the installation of the newly elected officers, the outgoing president, Jacob Helmer, extended an invitation to the association, for it to hold the September semi-annual meeting in Scranton, Pa.

JOHN REICHEL, *Corresponding Secretary.*

SOCIETY OF COMPARATIVE MEDICINE, NEW YORK STATE VETERINARY COLLEGE.

The last regular meeting for the school year of 1910 and 1911 was held at the college May 19. The semi-annual election of officers took place, the following men being elected: President, O. B. Webber; vice-president, A. H. McClelland; secretary, Archibald Freer; treasurer, J. R. Beach; corresponding secretary, R. R. Bolton.

R. RAY BOLTON, *Corresponding Secretary.*

THE Legislature of the State of Utah passed an act March 6 last, providing for a state board of veterinary examiners in that commonwealth regulating the practice of veterinary medicine, and protecting the title or degree conferred upon those engaged in the practice of the same. Also providing penalties for the violation of the act. We congratulate the veterinarians of Utah whose efforts are responsible for this great accomplishment, which is another link in the chain which is eventually to encircle and protect our profession from invasion by charlatans and pretenders.

NEWS AND ITEMS.

PERMANENT COMMITTEE OF INTERNATIONAL CONGRESSES OF VETERINARY MEDICINE.

(Translation.)

Baden-Baden, Leyden, May 4, 1911.

To the Government of the United States of North America at Washington:

Mr. SECRETARY—The Permanent Committee of International Congresses of Veterinary Medicine has the honor to acquaint Your Excellency with the names of its members:

Dr. A. Lydtin, Confidential Head Clerk of the Government Board at Baden-Baden (Germany)—*President*. Dr. F. Hutyra, Councillor, Rector of the Superior Veterinary School at Budapest (Hungary)—*Vice-President*. G. Barrier, Professor and Director of the Veterinary School and Member of the Academy at Alfort (France)—*Vice-President*. Dr. E. de Ratz, Professor at the Superior Veterinary School of Budapest (Hungary)—*Secretary and Assistant-Treasurer*. Dr. D. A. de Jong, General Professor at the University of Leyden, Professor at the Veterinary School of the State of Utrecht, at Leyden (Netherlands)—*Secretary*. Dr. B. Bang, Professor at the Superior Veterinary School at Copenhagen (Denmark). Chief Clerk A. Binder, Veterinary to the Ministry of Agriculture at Vienna (Austria). A. Degive, Director Emeritus of the Veterinary School Cureghem at Brussels (Belgium). Dr. L. Van Es, Professor at the School of Agriculture at Fargo, North Dakota (United States). Dr. C. Happich, Professor of the Veterinary Institute at Dorpat (Russia). Dr. E. Hess, Professor of the University at Berne (Switzerland). Medical Councillor G. Kjerrulf, Member of the Royal Committee of Medicine at Stockholm (Sweden). A. J. Locustesnu, Professor at the Superior Veterinary School, head of the Zootechnique Service at the Ministry of Agriculture at Buenos Aires (Argentina). J. Lignieres, Director of the National Institute of Bacteriology of the Ministry of Agriculture at Buenos Aires (Argentina). Dr. Sir John McFadyean, Dean and Professor at the Veterinary School at London (Great Britain). Dr. O. Malm, General Director of the Veterinary Administration at Christiania (Norway). Dr. E. Perroncito, Professor at the University and at the Superior Veterinary School at Turin (Italy). Piot-Bey, Director of the Veterinary Service of the Administration of Domains of the Egyptian State at Cairo (Egypt). A. Popovits, Director of the Veterinary Service in the Ministry of Agriculture and Commerce at Belgrade (Servia). Dr. J. G. Rutherford, Veterinary Director-General and Live Stock Commissioner at Ottawa (Canada). E. C. Schimmel, Director of the Veterinary School of the State of Utrecht (Netherlands). Dr. S. Stockman, Chief Veterinarian at Middlesex (England). Dr. A. Theiler, Veterinary Bacteriologist of the Government at Pretoria (Transvaal). I. Tuleff, Director of the Veterinary Service and of the Studs at Sofia (Bulgaria).

Be pleased to accept, Mr. Secretary, the respectful expression of my very distinguished consideration.

For the President of the Permanent Committee.

(Signed) D. A. DE JONG.



OFFICERS OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION, 1910-1911.

1—President **GEORGE H. GLOVER**, Fort Collins, Colo.

2—First Vice-President **R. W. ELLIS**,
New York, N. Y.
3—Second Vice-President **W. F. EGAN**,
San Francisco, Cal.
4—Third Vice-President **A. S. COOLEY**,
Cleveland, Ohio.
5—Fourth Vice-President **A. T. KINSLEY**,
Kansas, Mo.

6—Fifth Vice-President **CHARLES D. MCGILVRAY**,
Winnipeg, Man.
7—Secretary **C. J. MARSHALL**,
Philadelphia, Pa.
8—Treasurer **GEORGE R. WHITE**,
Nashville, Tenn.
9—Librarian **W. L. WILLIAMS**,
Ithaca, N. Y.

AMERICAN VETERINARY REVIEW.

AUGUST, 1911.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, June 15, 1911.

RADIO-ACTIVITY IN VETERINARY PRACTICE.—In my last chronicle I presented the readers of the REVIEW some rather interesting facts relating to actiniferous radio-activity in the industrial muds; known under that name on account of the rich proportion of Actinium which they contain. How much benefit veterinarians will derive in the use of those products remains to be learned. To-day I will relate the results of experiments that have been tried with radium, which the *Veterinary Record* reproduces from the annual report of the Army Veterinary Service in England. These experiments are the results obtained in the application of radium, from the emanations of which, advantages would follow or be useful. The first tests were made in the treatment of navicular disease. After finding out that the radiation would pass through the hoof and reach such a deeply situated part as the navicular bone, and then ascertaining to what length of time the foot could be safely exposed, six cases of navicular disease were treated by exposure to the emanations of radium, in placing the salt of radium in the frog

and exposing the parts to the emanations for varying periods, from a few hours to a few days. The results were as follows:

Case No. 1.—Exposed for four periods each of 90 hours. Immediate relief and soundness. Horse lost sight of and ultimate results unknown.

Case No. 2.—Exposed four periods of 90 hours. Immediate relief. Worked two months, lameness returned.

Case No. 3.—Exposure of two periods each of 138 hours and one period of 120 hours. One month of rest allowed between the second and third exposure. Immediate improvement. Horse worked for a month, lame again. Received another period, became sound and remained so for six months.

Case No. 4.—One exposure of 168 hours. Immediate relief. Lameness returned with work. Horse destroyed.

Case No. 5.—Two exposures of 138 hours and one of 72, with seven days interval. Same result as in preceding case.

Case No. 6.—Exposed for a period of 72 hours and one of 96, with five days between. Marked improvement followed the application. Lameness recurred. After a second exposure remained sound and is now doing light work.

The six cases were of long standing.

The most remarkable feature of these experiments is the removal of the lameness under the emanations. Although not definite nor positive, these results are encouraging.

Two benignant tumors were also treated with radium. One of the shoulder, having failed to yield to treatment, has a tube of radium introduced into the centre of the growth, where it was left for eight consecutive days. The neoplasm, which measured eight inches in diameter, required two months to disappear entirely. Another growth, old standing tumor on the elbow and as big as a cocoanut, was treated in the same way and the radium left in the centre of the growth for four consecutive days. In six weeks it had disappeared entirely.

All these records are very encouraging and deserve the attention of practitioners.

PRESENCE OF ALBUMEN IN SPUTA AN ELEMENT FOR DIAGNOSIS OF TUBERCULOSIS.—In all the series of recent serious studies which have been made of the products of waste of the organism, no room seems to have been occupied for the chemical analysis of sputa. While in the analysis of urine its chemical examination plays an important part, and while recently the chemical analysis of feces began to occupy an advanced place, expectoration, which gives such valuable information upon the nature of respiratory affections, has yet been analyzed only to the bacteriologic and sometimes cytologic point of view. This neglect is surprising, as no doubt important data could be obtained from the chemical composition of sputa, as, indeed, some *are* often obtained from their appearance or their quantity.

This question has recently been agitated in human medicine, and from the history relating to it, it appears that already more than fifty years ago it had been the object of many investigations which were recorded by many writers.

Among the principal points relating to the chemical analysis, the presence of albumen seems to be the one which was the most important, as, indeed, some of the facts laid out by previous authors needed to be controlled.

Those were taken up lately and recorded in the following conclusions:

1. The reaction of albumen in sputa, simple in its execution and its realization, must without doubt be accepted as one of the many auxiliary analyses made near a patient.
2. The albuminous reaction can be considered to a certain extent as a specific reaction, as it reveals the existence of an inflammatory process, or, again, pulmonary edema.
3. Bronchial sputa does not give albuminous reaction.
4. Pulmonary tuberculosis in its initial or in more advanced stage, except, perhaps, in the fibrous form, gives an albuminous reaction more or less pronounced.
5. Pneumonia and emboly gives positive albuminous reaction.

6. Pulmonary edema, even in a weak degree, gives a manifest albuminous reaction.

Possibly of all those conclusions there is nothing positive that we veterinarians can take practical advantage of. But there are other facts related with the albuminous reaction which to the hesitating practitioner, in a doubtful case of tuberculosis, will be of great value.

For instance, from the researches made by Doctor Rogers, it has been proved that the presence of albumen in sputa of tuberculous patients is a constant phenomena and that the albumen reaction is even detected in cases where the discovery of the germ of Koch is negative. If positive reaction gives disputable indications, the absence of albumen in the sputa, established by several examinations, justifies a diagnosis of tuberculosis not present.

Roulet adds, if the chemical analysis demonstrates the absence of albumen, the diagnosis of tuberculosis must be laid aside.

In an article which I find in a medical journal, Dr. Ferreira gives the detailed record of 30 cases where he has applied the albumen reaction as a semiologic element for early diagnosis of pulmonary tuberculosis. Of the 30 cases, 19 had albumen reaction and proved tuberculous; the other 11 had no reaction and had other pulmonary affections not of tuberculous nature.

If resorting to the method of Nocard, advocated by Oster-tag, Siedamgrotzky, McFadyean and others, sufficient quantity of sputa from animals suspected of tuberculosis could be obtained and analyzed; perhaps the test of the albumen reaction would prove of great advantage to arrive to a positive and early diagnosis.

* * *

RELATING TO THE INCUBATION OF RABIES.—The *Revue de Toulouse* relates a peculiar case of long and slow evolution in rabies which deserves attention.

A dog bit his owner. Aged about three years, this animal was sly, although an excellent watch dog. He has never shown his ugly disposition towards his master. Put on observation, the following day he seems to be stiff behind, yet he is not aggressive even if excited with a stick. He eats and drinks freely, with perhaps a little difficulty in swallowing. No change occurs during the three following days that he was carefully observed; there is no change in his condition; he barks less frequently and the tonicity of the voice is perhaps a little modified. Is it a case of rabies? Important question to answer so as to give advice to the owner in relation to himself and his wound. Fortunately he was advised to go to the Pasteur Institute, where he is treated. The dog is in the meantime always kept under a close watch and without showing any change in his condition. Finally one morning he was found dead. The bite to the owner was inflicted on the 17th of January and the dog died the 14th of February, from rabies; as, although the post mortem that was made proved negative, yet inoculations made on two guinea pigs killed them both with rabies.

With this dog the attack took twenty-nine days to kill him. It was a fortunate measure and good advice that was suggested to the owner to be immediately treated.

In relation with such a case, Dr. Remlinger's remarks are of great value, as, indeed, the cases are numerous where a practitioner may be asked to give advice in relation to the conduct to follow in the presence of a bite inflicted by a dog suspected of rabies. The table that the learned specialist, Dr. Remlinger, has established must always be borne in mind, as in it, the conduct of the person that has been bitten is laid out in a clear precision. As remarks the *Semaine Veterinaire*, to appreciate the value of the law laid down by the doctor, one must remember (1) that the advice to be given depends entirely on what is known of the dog that did the biting, and (2) that to-day the necessity is acknowledged by all to keep the dog for *ten* days in observation before giving a positive diagnosis. Ten days which would have proved insufficient in the case related above.

The Remlinger's table is resumed as follows:

"Antirabic treatment is to be recommended: When the dog that did biting dies in less than ten days after the accident; when he is killed in less than ten days after the bite; when he has disappeared (run away) less than ten days after the bite; when he is unknown to the person bitten.

"If the dog is alive, to be kept in observation for ten days; during that time, whether the dog takes rabies or dies suspected of rabies or even with another disease, the antirabic treatment ought to be recommended.

"If the dog in observation gets sick, but is not dead on the tenth day, keep him in observation and advise treatment if he dies.

Finally, no treatment is to be advised if the dog is alive and in good health after ten days."

In this table all the cases that occur find their solution, and veterinarians will do well to know it thoroughly, as they are the very first ones from whom advice will be looked for. In such cases there is no doubt that their advice, based on Dr. Remlinger's table, will carry the strength of a scientific authority.

* * *

OPERATIVE DISINFECTION.—At the meeting in April last of the Surgical German Society, one of the principal questions to be discussed was that of the "Disinfection of the Hands of the Surgeon and that of the Operative Field." Prof. Kuttner, from Breslau, was the reporter, and first recalled the fact that it was at present fully recognized that perfect asepsy of the skin was almost impossible to realize; principally because of the constant presence of micro-organisms in the depth of the glands. Anyhow, even *in vitro* antiseptics used in surgery kill microbes only after a lapse of time much too long for general practice, and to this point of view it would be better to resort to disinfectants such as thymol or lysol than to sublimate, whose reputation is established, because old researches rested on the action of drugs

towards anthrax and not towards the microbes, which surgeons had to guard against.

Several methods have been advocated to obtain the disinfection of the hands: The fixation of the microbes, the mechanic disinfection, the protection of the skin by isolation.

1. For the fixation of the microbes, a series of chemical products can be found and recommended as having antiseptic action superior to that of sublimate—the oxycyanure of mercury, sublimine, afrivol, formaline, permanganate of potash, chloric compounds, oxygenated water—but none have any superiority to the point of view now under consideration. By opposition, it seems as if the halogenous derived of phenic acid would gain better appreciation, principally the chlor-meta-cresol of Bechhold and Erlich, which is reported as very efficacious and little toxic.

2. The mechanic disinfection means the washings and energetic free use of soaps. They are not to be recommended. They unnecessarily injure the skin and bring out of the depth of the skin the microbes which are contained in it. Skin disinfection with hot air is too irritating. In advising the addition of alcohol to the process of hand disinfection, Fuhrbringer did well. It is true that it does realize only an imperfect disinfection, but yet it prevents the pullulation of the microbes. Ether, acetone or formol do not increase the disinfecting value of alcohol; iodo-benzine is too irritating and dangerous.

3. For the protection of the hands by isolation, rubber gloves are an undoubtful progress. That easy and sure sterilization excludes from the wounds all dangerous microbes, and it is probable that if still some are found in the field of operation, they come only from the surrounding air. The only difficulty in their being more generally used is their high price. German surgeons resort to various kinds of gloves; the great majority have gloves made entirely of rubber; a number use thread gloves; some use either one or the other, and a limited number have recourse to only thread gloves. The disinfection of the gloves is made by boiling, with chemical processes or with steam.

But of all the latest methods advocated for the field of operation, the best is that of Grossich; it is simple and certain, with or without previous alcohol or ether washing, with fresh solution and only one single application on the cutaneous surface.

Alcohol, rubber gloves and tincture of iodine are the best means to-day at the disposal of the surgeon, says the German reporter, Doctor Kuttner, in his conclusions.

* * *

UPON THE TREATMENT OF ACTINOMYCOTIC GROWTHS.—In our contemporary from Switzerland, the *Schweizer Archives*, Dr. Salvisberg has published an article on this subject where, while iodide of potassium holds an important part, there are added other indications which the doctor considers of great practical importance. First, a concise consideration of the treatment advocated by some, as Immiger, Belli, Dorn and others, who believe that actinomycosis cannot be treated successfully except by surgical interference; then allusion is made to the treatment used by some veterinarians who prefer to introduce in the mass of the actinomycotic tumor, trochiscus of arsenic, and having the wound left by the subsequent slough to be coated over with tincture of iodine. And, again, some other practitioners resort to an ointment of arsenic and cantharides so as to promote the softening of the growth.

Salvisberg has seen many cases of this disease among bovines of all ages, oftener in winter or the end of the fall, and he has observed cases where the tongue was affected with swelling of the sub-glossal and retro-pharyngeal glands. And he has also seen cases where the size of the tumor varied between that of a hen's egg and that of a man's head.

At first his treatment consisted in (1) the removal of the neoplasm with the application of pads of wadding dipped in tincture of iodine; (2) injections of the tincture in the thickness of the tumor and in the surrounding tissues; (3) the deep cauterization and also injection of iodine.

Notwithstanding the good results that he has obtained, he was obliged to give up that way of treatment for obvious reasons. A surgical operation was objected to by the owner, who did not like to have their animals, cows, for instance, advanced in pregnancy, cast; and, again, the attention that the cases required afterwards were difficult to carry out and the intraorganic injections of iodine were in some instances difficult to perform.

For all those reasons Salvisberg has modified his treatment as follows: The tumor is thoroughly washed and all external previous applications carefully removed. The parts being free from scabs and crusts, the hair is clipped very closely and an embrocation is made with an ointment made of lard 100 parts, iodide of potassium 20, and sublimated iodine 1. These applications are made twice a day for fifteen minutes each time and then stopped every five days, when the skin is thoroughly washed with soap and soda and afterwards with benzine. After twenty-four hours the treatment is started anew.

Instead of fresh lard to make the ointment, vasogen can be used and camphorated alcohol added to the mixture. These applications have no irritating action on the skin. When the lesions of the maxillary bone extend in the mouth, these are coated over twice a day with glycerine and iodine at 50 per cent.

Besides all this, the author recommends also an internal treatment of iodide of potassium administered twice a day. This must be kept up for one week at least, even if there remains not the slightest lesion.

The question that may be asked now is whether, after all, this last internal treatment would not be entirely sufficient without the necessity of the external manipulations, excellent as they have, however, proved to be.

* * *

DO NEEDLES TRAVEL IN THE BODY?—That is a question for which there is no doubt among people, and even to-day with some serious medical periodicals; observations are yet to be found

similar to "that of a needle which, having penetrated in the hand on the level with the left thumb, made its exit one year after through the right index." But, even leaving aside such fabulous records, the fact of sharp needles traveling through the body is admitted by numerous authors, while, again, on the contrary, it is ignored and denied by others. In the bulletin of the surgical clinic of Prof. Oppel, of St. Petersburg, the question was agitated and discussed before its readers.

To solve this doubtful question, Prof. Samborsky made a series of experiments on rabbits. First of all, he established the fact that if needles did travel through the tissues, it was always by their point that they would progress.

Introduced under the skin, needles remain where they are unless they are put in motion by an external influence. Likewise, when introduced in a parenchymatous organ, such as the liver, lung or heart, they remain in place. Needles that are introduced in empty space, spaces of the body such as tendinous sheaths or intermuscular spaces, do not move either. They change their position, their place, only in one condition—when they have entered in two organs moving reciprocally on each other; for instance, two muscles, and yet even on the condition that one of these is not likely to contract adherences with other surrounding tissues. But this motion has not the characters of a journey; it is simply a rotation taking place, which has for its object to place the needle either in an intermediate space or in a direction parallel to the fibres of the muscle. This rotation takes place more or less rapidly after the introduction of the needle, but once it has reached its proper position it moves no more.

The conclusions of Prof. Oppel are that needles do not travel in the human body.

Perhaps this is correct, theoretically speaking, in human patients at least, but what of it in animals? What can be said of those knitting needles which from some part of the digestive apparatus find their way in the heart and give rise to fatal trouble? What of the smaller threaded needles that the surgeon

has to extract round the anus of some kittens or puppies? Or of the lady's long hatpin that one has found in various parts of the body? Is it that the nature of the needle has an influence on its traveling tendency?

* * *

GRAFTINGS AND TRANSPLANTATIONS.—From the "Proceedings of the Fortieth Congress of the German Society of Surgery" I extract this concise report from Dr. Lexer, who considers, first, the growth of this subject during forty years. It is, indeed, in that year that the foundation of this German society took place that Thiersch described his method of epidermic graftings so extensively practiced to-day. The grafts of Thiersch are now used daily to hasten the cicatrization of granulating or of recent wounds. Their value is no longer contested. When the cutaneous grafts are taken from another subject, the operation succeeds only surely if it is from a fœtus. Attempts to heteroplastic and hemoplastic graftings must be accepted with scepticism. But if epidermic graftings succeed well with the skin, it is not so with the mucous membranes, where failures are the rule. The attempts to implant a rectal mucous on a vesical wound, or an appendix in an urethral, or a vaginal in a urethral, have all failed or given doubtful results.

The transplanting of fatty tissue, on the contrary, gives excellent results. Lexer has resorted to it to fill the orbit after enucleation of the eye; also for repairs on the face or after amputation of the breast, etc.

Muscles and nerves are poor material for transplantations. Blood vessels, thanks to the perfect realization of vascular sutures, have become excellent autoplasmic material; the saphena vein principally has been used to replace portions of arteries, urethra, or ureters. Whether a true grafting or a progressive substitution, the clinical result is satisfactory. The trials made by Payr of ventricular draining with pieces of the saphena vein in cases of hydrocephaly belong to that category.

Transplantations of aponeurosis, especially of that of the fascia lata, give excellent results and are frequently resorted to. Likewise are periosteal graftings.

Transplantations of tendons have also given good results. They are used to take the place of the patellar ligament when this is injured.

Attempts to transplant serous membranes have failed with Lexer. The coats of lining of hydrocele and hernial sac have been used in vain to fill dura mater wounds.

Epiptic transplantations have also failed.

Those with osteo-cartilaginous material form a rich collection. On account of the rapid regeneration of the bony tissue it has been possible to implant bones covered with periosteum even when taken from cadavers. Cartilages also are easily grafted.

However, the hopes of transplanting whole limbs remain chimerical on account of the difficulties to be met with the skin and some certain conditions of the muscles. It has been the same up to this day for the transplantation of internal organs; perhaps experimental parabiosis may succeed in making this more perfect. It is also to be hoped that a preventive immunization will bring a great improvement in all the questions of transplantations so as to render heteroplastic graftings possible.

* * *

CUTANEOUS GRAFTINGS.—Under the name of “Method of Krause,” the *Revue de Chirurgie* describes a mode of cutaneous graftings by the total transplantation of a piece of skin; that is, in its whole thickness, entirely and without peduncular attachment for its nutrition. The transplantation must be made on a fresh wound, surgically clean, as, for instance, after the removal of a tumor or that of an ugly cicatrix. Hæmostasis must be perfect so as to avoid ligatures as much as possible. The piece of skin to cut off shall be as near as possible to form, shape and size of the wound to cover. A little larger will be an advantage in

preparing the piece to be grafted; it will be manipulated with fingers, spread over a moist compress and all the fat removed from the deep surface of the dermis, when it will be rapidly put in place and secured with stitches made with very fine needles, care being well taken to have the edges of both skins well in contact with each other. Dry dressing is better to be put over in preference to a moist one. After four or five days the superficial layers of the dressing are carefully removed and changed. Sutures are taken off the ninth day. After one month all dressing can be dispensed with. Among the complications to be looked for, there are the total necrosis of the graft, although it is seldom observed; suppuration, and, more commonly, partial necrosis more or less deep may also be met with.

This method of transplantation is indicated principally to replace a wide, fresh loss of substance and therefore finds its application only after severe surgical operation.

* * *

COMPARATIVE EXPERIMENTAL PATHOLOGY.—Meetings of the *Société de Biologie* are always interesting. At one of the last seatings reports were made relating to experiments of valuable scientific importance.

First, there were those made with the variolization of monkeys, carried out by Drs. Teissier, Duvoir and Stivenin. They variolized fourteen monkeys in various ways. Those that were infected by internal infection had no eruption; of seven from them, which were inoculated through the skin, only five had a cutaneous eruption. All the animals but one recovered from the variolic inoculation. After some time a number of them were submitted to a second variolic inoculation; they all were vaccinated. The reinoculation remained negative and the eruption of the vaccine was limited and slow. These results differ from those obtained by other experimentors, who failed in their trials with variolo-vaccine. But in their own experiments fresh virus was more active than the old one kept in the frigorific, and the hyaline lymph more than the scabs. Therefore, con-

trary to the classic opinion and according to that of several investigators, a first variolic inoculation immunized monkeys completely against variola and irregularly against vaccine. The immunity towards the vaccine does not depend on the apparent local reaction.

In inoculating chimpanzees in the throat and under the skin with products taken from children suffering with scarlatina, such as the mucus of the amygdals or the blood, Drs. Landsteiner and Levaditi have given to these animals a febrile infection, characterized first by a sore throat analogous to that of human scarlatina and afterwards by a generalized eruption. The animal which showed that eruption died, and at the post mortem he presented lesions of the kidneys and of the skin resembling those of the scarlatinous infection, and also a swelling of the lymphatic glands. The streptococcus does not seem to have an important part in the genesis of the experimental disease; indeed, controlling researches have shown that the inoculation of cocci in chain (the scarlatinous streptococcus) does not in chimpanzees reproduce the symptoms and lesions of the disease developed with the products taken from subjects affected with scarlatina.

* * *

METALLIC SPLINTS AS IMMOBILIZING APPARATUS.—Dr. R. Danis, in the *Presse Médicale*, calls the attention to the use of moulded metallic gauze or wire to immobilize regions which are the seat of injuries. This method, which has rendered to him and in human practice great service, may prove similar to veterinarians.

It consists in using thin metallic wire gauze surrounded with a thin layer of celluloid or collodion. These gauzes are very pliable and with slight pressure will adapt themselves to the exact form of the parts upon which they are applied. And to render them less subject to take bad shape, they are enveloped with a substance which hardens them. Collodion or celluloid dissolved in proper liquid, such as acetone, is used by the author. A sili-

cated varnish is applied over the bandage to prevent its inflammability.

In practice the gauze is made of fine galvanized wire having one-fifth millimetre in thickness and a space of one and one-fourth millimetres between the threads of wire.

For its application a square piece of the gauze is cut, the region to immobilize is well wrapped up with it, both inside faces are well made to oppose each other, and a good model of the region is obtained after trimming with scissors the excess of gauze. It is then taken off and the inside and outside faces are coated over with two or three layers of celluloid, then it is ready for use. To increase the stiffness, a covering of muslin, cambric or chamois can be used. The apparatus is applied on the diseased region by opening it. It closes by itself.

These bandages have the advantages of being easily removed; they form a kind of hard carapace elastic and resisting, which yet permits the examination of surfaces underneath, as openings or fenestra can be cut in their length. They can be modified in shape with no difficulty and patients are never disturbed by wearing them. Besides these qualities, their extreme thin condition and their light weight make them far superior to apparatus made of plaster, pasteboard, starch, wood or metal. They may not be of great advantage for large animals; in the surgery of small individuals they may; and yet can they be superior to the splints made of gutta percha, which have proven their value?

A. L.

GET READY FOR TORONTO NOW.

We are taking this last opportunity of reminding our readers of the rapidly approaching dates of the A. V. M. A. convention at Toronto. The 22d, 23d, 24th and 25th of this very month sees the greatest veterinary congress that has ever taken

place under the auspices of the American Veterinary Medical Association. This fact has now become assured, and no veterinarian in America can afford to be absent from it. Every veterinarian owes it as a duty to himself and to his profession—yes, and to his client—to take an active part in the coming national convention. It is the client that is the most potent factor in keeping veterinarians (particularly those engaged in general practice) away from association meetings. In view of that fact we would urge veterinarians to point out to their clients that it is to *their* advantage as well as that of the veterinarian, that they attend these conferences, and explain to them that they will be more than repaid for any little inconveniences that they may suffer in their brief absence by the new ideas that they will bring back, that will enable them the better to serve them in the capacity of veterinarian and advisor. Begin now to prepare your client for your absence. Write for hotel accommodations and arrange to be present at Toronto; you will never regret it. Aside from CONVENTION HEADQUARTERS, PRINCE GEORGE HOTEL, 91 York street, American plan, 225 rooms, \$3 per day; with bath, \$3.50 per day, the local committee offer the following additional list of hotels to select from:

Walker House, York and Front streets, American plan, 200 rooms, \$2.50 per day; with bath, \$3 per day. The New Somerset, 436 Church street, American plan, 15 rooms, \$2 per day. Hotel Mossop, 56 Yonge street, American plan, 55 rooms, \$1.50 and \$2 per day; with bath, \$2 and \$3 per day. Hotel Winchester, 537 Parliament street, European plan, 37 rooms, \$1 and \$1.50 per day; with bath, \$1.50 and \$2 per day. Kerby House, 196 Queen street, W., American and European plan, 28 rooms, \$2 and \$3 American, \$1 and \$1.50 European, per day. Gladstone House, 1214 Queen street, W., American plan, 66 rooms, \$2.50 per day. Gibson House, 140 Queen street, E., American and European plan, 22 rooms, \$1.50 American, \$1 European, per day. Elliott House, 117 Church street, American plan, 67 rooms, \$2.50 per day. Hotel Aberdeen, 114 Queen

street, W., American and European plan, 26 rooms, \$1.50 American, \$1 European, per day. Hotel Daly, 27 Simcoe street, American and European plan, 76 rooms, \$1.75 American, \$1 European, per day. Hotel Municipal, 67 Queen street, W., American plan, 23 rooms, \$2 per day. Queens Hotel, 78 Front street, American plan, 200 rooms, \$3 and \$3.50 per day; with bath, \$4 and \$4.50 per day. The Russell House, 215 Yonge street, American plan, 35 rooms, \$1.50 and \$2 per day. St. Charles, 70 Yonge street, European plan, 13 rooms, \$1.50 and \$2 per day. The Boulevard, 116 Queen street, E., American plan, 16 rooms, (no rate given). Hotel Hassard, 8 Terauley street, American plan, 27 rooms, \$1.50 and \$2 per day. Vendome, 283 Yonge street, American and European plan, 36 rooms, \$2 and \$3 American, \$1 and \$1.50 European, per day. Hotel Gerard, 399 Parliament street, American plan, 20 rooms (no rate given). King Edward Hotel, 37 King street, E., European plan, 400 rooms, \$3 per day up. Hotel Grosvenor, 493 Yonge street, American plan, 28 rooms, \$2 and \$3 per day. The Palmer, 146 King street, W., American and European plan, 130 rooms, \$2 and \$2.50 American, \$1 and \$1.50 European, per day. Empress Hotel, 339 Yonge street, European plan only, 59 rooms, 75 cents and \$1 per day. Tremont Hotel, 163 Yonge street, American plan, 73 rooms, \$1.50 and \$2 per day. Grand Union, 180 Front street, W., American and European plan, 160 rooms, \$2 and \$2.50 American, \$1 to \$2.50 European, per day.

Do not, however, permit this list of twenty-five hotels, representing two thousand and thirty-seven rooms, to deter you from writing for your reservation promptly, as the industrial fair that follows closely upon the dates of our meeting will fill the city with visitors from the surrounding cities and hamlets. Through the courtesy of the clinic committee we are enabled to publish an advance report on page 590 of this issue which promises much comfort to both audience and operators through the excellent facilities offered. In conclusion we will repeat—get ready for Toronto *now!*

THE SPECIAL TRAIN FROM NEW YORK.

In our July number under this heading we *outlined* a trip from New York which includes a most fascinating trip to Thousand Islands, shooting the rapids of the St. Lawrence, thence to Montreal, Quebec, side trips on the Saguenay River to Chiconimi, and other delightful experiences; and in the present issue we desire to make a slight change in one part of the trip outlined, add fuller details in others, and make one or two explanations that will facilitate the participants in completing their arrangements for the same. The change referred to has been the result of two things and applies to the time of leaving New York. At the solicitation of members who desire to go on the "special," we have changed the hour of starting from New York from 6.30 p. m., August 21, to 8.30 a. m. of that date, arriving in Toronto at 9.23 p. m. of the 21st, instead of 8.30 a. m. of the 22d. This arrangement was made possible through a different arrangement of the Boston party, and will permit of a bath and a good night's rest on arrival in Toronto, so that the members will be refreshed and ready for the opening of the convention the following morning. The fuller details for the post-convention part of the trip are as follows:

Leaving Toronto, we will say, on the day following the close of the convention, August 26, 3 p. m., on one of the palatial Richelieu and Ontario steamers, arriving at Alexandria Bay (Thousand Islands) at 8 a. m. of the 27th. Twenty-four hours of pleasure-seeking in this beautiful resort, leaving at 8 o'clock the following morning, August 28, arriving at Montreal at 6.30 p. m. of the same day. A long evening and the entire next day will be spent in that city, leaving it at 7 p. m., August 29, and arriving at Quebec at 6.30 the following morning. An entire day is spent in Quebec, leaving at 6 p. m. of the 30th, to arrive back in Montreal at 7 a. m. of the 31st, spending another day in that beautiful city, leaving it at 7 p. m. over the Grand Trunk Railway, arriving at Plattsburgh at 9.15 the same evening.

Here we go aboard a Champlain steamer, sleeping on it that night, as it sails at 7 a. m. the following day, arriving at Fort Ticonderoga at 12.35 (noon). Leave at 12.40 on the Delaware and Hudson Railway, arriving at Baldwin at 12.55. Leave Baldwin at 1.20 p. m. on a Lake George steamer, arriving at Lake George at 4.40 p. m. Leave Lake George at 5 p. m. over the Delaware and Hudson, arriving at Albany at 7.15 p. m. For those that are returning to New York, three options present themselves: A 7.30 p. m. train over the New York Central, arriving in New York at 10.50 p. m.; the night boat from Albany, arriving in New York on the morning of September 2; or, for those who prefer an evening in the State capital and a daylight sail down the picturesque Hudson, the day line from Albany on the morning of September 2, arriving in New York in the evening of that day. So it will be seen that this trip may be made to occupy just the amount of time one has at his command—from two days to a week, depending upon how far one goes.

We asked in our July number that those anticipating going reply promptly, and that if a sufficient number responded to warrant it, a letter would be issued and mailed to every veterinarian in the area from which our special would draw. Many are yet to be heard from, and yet the outlook at the time of this writing (July 20) is *very* encouraging, and we desire to announce at this time that a letter giving *full* details as to the cost of the trip, the hour of arriving and leaving each place along the line, instructions as to the point from which to purchase ticket and meet train in each particular district, etc., will be mailed about August 5 direct from the office of the General Eastern Passenger Agent of the New York Central Railroad, in New York City, at No. 1216 Broadway.

In the meantime, letters signifying your intention of going on the "special" should continue to be sent to this office, that we may know at the earliest possible date about how many are going.

The New York Central people have expressed their intention of placing their most elegant service at our command, and those who travel on that train, which will be a section of the Empire State Express, will be sure of traveling in as handsome a manner as it is possible to travel by rail. Immediately upon receiving your letter of instructions from the office, purchase your ticket and reserve your chair in the parlor car. If the office receives a hundred applications for reservations, they will put out a "special train," but in any case will give us a special car or cars.

* * *

TEXAS ENACTS A LAW REGULATING THE PRACTICE OF VETERINARY MEDICINE AND CREATING A STATE BOARD OF EXAMINERS.—Veterinarians throughout the country will be pleased to learn of the passage of an act creating a law regulating veterinary practice in Texas. This successful legislation is referred to in a correspondence from Dr. F. G. Cook, of Paris, Texas, on page 591 of this issue of the REVIEW. Dr. Cook also favored us with a copy of the act, entitled "An Act Regulating the Practice of Veterinary Medicine, Dentistry and Surgery in Texas"; but we preferred to publish Attorney General Walter C. Woodward's translation of it, which will give the reader at once the working value of the law. The Attorney General's construction of it will be found on page 611.

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FIFTIETH ANNIVERSARY OF THE A. V. M. A.—The following committee was appointed on the fiftieth anniversary of the American Veterinary Medical Association at its last meeting: A. Liautard, honorary chairman; J. F. Winchester, acting chairman; W. L. Williams, W. Horace Hoskins, and William Dougherty. It will be interesting to hear a report from this committee at the Toronto meeting.

The Golden Anniversary of the A. V. M. A. is one of the interesting and important matters under consideration.

ORIGINAL ARTICLES.

ARSENICAL POISONING FROM SMELTER SMOKE IN THE DEER LODGE VALLEY, MONTANA.

BY D. E. SALMON, D.V.M., MONTEVIDEO, URUGUAY.

III.

THE DIRECT EVIDENCE OF ARSENICAL POISONING.

The thorough investigation of a case of arsenical poisoning requires a considerable amount of time and favorable conditions for doing the work. It, also, requires the combined services of the pathologist and the chemist. Peterson and Haines¹ say, with reference to the investigation of poisoning in the human subject:

“No post-mortem investigation can be considered entirely complete without a careful microscopic examination by a competent pathologist of at least the heart, kidneys and liver, and also, if possible, of the brain and spinal cord. When practicable, a bacteriological examination of certain portions of the body, especially the liver, spleen, kidneys, lungs and the heart's blood, should be made to determine the presence or absence of bacteria, which we know may sometimes be the cause of fatal symptoms similar to those produced by some poisons. * * * These extended tests and examinations, however, while always desirable from a scientific standpoint, and, in case no poison is found in the body by chemical analysis, highly important, are rarely if ever essential to the investigation of a case when poison is discovered in well-marked quantities.

“Since it is only in exceptional instances that a case can be positively established as one of poisoning, either by the symptoms

or the post-mortem appearances, or even by both combined, a final decision in regard to the matter can generally be reached solely by the aid of a chemical analysis. It should not be understood, however, that in all instances a chemical analysis is indispensable to prove that death resulted from poison, or that, in event of an analysis, the finding of poison is essential, for outside circumstances may be of such a conclusive character and, in occasional instances, the symptoms and post-mortem appearances may be so characteristic, as to remove all doubt as to the nature of the disease."

In the investigations made by the writer in Montana, bacteriological examinations were not attempted owing to the lack of convenient laboratory facilities. It is true that this difficulty might have been overcome, but it was considered more important to study the condition of the animals on the ranches, the symptoms of those which appeared to be in bad health, the post-mortem appearances of a considerable number sacrificed for investigation, and to make a microscopic examination of the livers and kidneys in as many cases as possible. An examination carried to this extent, when combined with chemical analysis, was believed to be all that was necessary to establish an absolutely secure diagnosis.

In this series of articles, it is impossible for lack of space to give all the details in regard to the investigation of each individual case, but it is essential to fully describe the findings in a few typical cases. If poisoning is clearly proven in these few cases, the diagnosis logically can be extended to other animals living under similar conditions and presenting similar symptoms or post-mortem appearances.

THE BIELENBERG HORSE; CASE NO. 52.

This horse was brought from the Bielenberg ranch, about twelve miles from the smelter, to the Para ranch, four miles from the smelter, July 6, 1906, for purposes of experimentation. Although it had fed upon grass and hay containing variable amounts of arsenic for several years, it did not at this time

present any symptoms of poisoning. It was in good condition of flesh, with glossy coat, and a bright, alert expression indicative of vigor and health.

The experiments made with this horse were to determine as to whether the ulcer of the nostril, so frequent in Deer Lodge Valley horses at pasture, could be inoculated from animal to animal. For this purpose a suspension was made by rubbing scrapings of an ulcer with distilled water, and this suspension was inoculated in superficial scarifications in one nostril and by hypodermic injection in the other. The inoculation by means of scarifications produced no effect, the only result from these inoculations being the formation of a small abscess containing a few drops of pus at the point where the subcutaneous injection was made.

This horse was kept in the stable and fed upon hay brought from outside of the arsenic zone (Bozeman) until October 15, and was then put upon pasture. November 1 he was taken to the Lappin ranch, 1.5 miles from the smelter. Samples of grass from the Para ranch showed 34 parts of arsenic per million in September and 121 in November.² A sample of grass from the Lappin ranch taken November 4 gave 107 parts per million.³ This animal had, therefore, fed upon grass for about three weeks which probably averaged nearly 100 parts to the million, or 17.5 grains per 25 pounds of air-dry substance.

During the period on pasture the animal had rapidly lost in condition, and on November 4, when sacrificed for examination, his appearance was unthrifty, coat rough, and he was dull, almost somnolent, with puffy swellings under the eyes and twitching of the eyelids. Temperature 99.6°. Weight estimated at 1,050 pounds.

Post-mortem Notes.—There were slight erosions in both nostrils, simply a loss of epidermis, but probably the beginning of the ulcerative process.

Lungs showed slight mottling due to congestion. Inferior border of posterior lobe considerably discolored by the deposit of fine, dark-colored pigment. Anterior lobe atrophied and em-

physematous. Thickened pleura and deposit of pigment on mediastinal aspect of both lungs.

The pericardium contained about 4 ounces of yellowish serum. Endocardium on lower portion of left ventricle thickened.

On opening the abdominal cavity there escaped a considerable quantity of yellowish serum.

The stomach presented a chronic catarrhal condition of the dependent portion of the pyloric half, which was covered with a layer of thick mucus and varied in color from a dark brown to purple. Near the lesser curvature a more acute condition was indicated by a bright red color.

The small intestine had deep red areas one-half to one inch in diameter, and, also, similar patches two or three inches in width. The jejunum was especially catarrhal with deeply congested spots.

The cæcum had some reddened patches and contained about half a dozen sclerostomes.

The spleen was congested and much enlarged in its superior half. It weighed 2.75 pounds.

A careful examination of the anterior mesenteric artery and branches revealed a perfect condition, with no signs of sclerostomes, aneurism or thrombus.

The liver was slightly shaded with yellowish and greenish tints but apparently normal in size and weight.

The kidneys were more highly colored than normal, but were of normal weight. The mucous membrane of the bladder was considerably congested and the urethra near the bladder much reddened.

Before death the parotid glands appeared to be enlarged or distended with an exudate. On removal, the connective tissue surrounding them was found infiltrated with a colorless, transparent, edemic liquid.

On severing the head, there was an escape of a considerable quantity of cerebro-spinal liquid.

The brain was much congested on the surface, with adhesions between the membranes. The spinal membranes were also slightly congested.

The general condition of the animal as to flesh was good, with much fat in the abdominal cavity.

Microscopic Examination.

Lungs.—The alveolar walls in many places were very thin and often ruptured, forming emphysematous areas. In some regions there was a proliferation of connective tissue in the alveolar walls. The alveoli in general were free from deposits, but some contained desquamated epithelium and others a hyaline coagulum. The small bronchial tubes contained considerable exudate. .

Liver.—There was advanced fatty degeneration, especially marked at the centre of the lobules, but extending to the periphery. Some of the central veins of the lobules were greatly distended with blood and their walls were thickened by the proliferation of connective tissue; many others show a beginning of this thickening. There was much blood between the columns of cells. In certain biliary ducts there was marked desquamation of the epithelium.

Kidneys.—The most marked change consisted in great degeneration of the epithelial cells of the convoluted tubules, and in some tubules their almost complete disintegration. There was also much desquamation of the epithelium of these and other tubules, and the lumen of many of the tubules was filled with a coagulum. In some of the Malpighian corpuscles, there was desquamation of the epithelium of Bowman's capsule. In various areas there was considerable cellular infiltration.

*The Chemical Findings.*⁴

The dried contents of the stomach contained 398 parts of arsenic trioxid per million, equal to 69.6 grains per 25 pounds.

The urine contained 59 parts per million, or about 0.89 grain of arsenic per quart.

The various tissues of the body contained arsenic as shown by the following table:

Table Showing Distribution of Arsenic in the Tissue of Horse No. 52.

Tissue.	Arsenic (As_2O_3).		
	Parts Per Million (Milligrams Per Kilo.).	Grains Per Pound.	Milligrams Per Pound.
Liver	6.00	0.0420	2.72
Thyroid gland.....	6.00	0.0420	2.72
Stomach	4.70	0.0329	2.14
Spleen	4.60	0.0322	2.09
Pancreas	4.40	0.0308	2.01
Small intestines.....	4.00	0.0280	1.82
Braip	3.30	0.0231	1.50
Spinal cord.....	2.60	0.0182	1.18
Muscles	2.50	0.0175	1.13
Lungs	2.20	0.0154	1.00
Bones	2.20	0.0154	1.00
Heart	2.10	0.0147	0.95
Bladder	1.40	0.0098	0.43
Kidney	1.40	0.0098	0.43
Right parotid.....	0.80	0.0056	0.36
Fat	0.70	0.0049	0.32
Suprarenal	0.06	0.00042	0.027
Pericardial fluid.....	0.05	0.00035	0.022
Blood	0.03	0.00021	0.014

We have here the complete data in regard to this individual case. Was the animal suffering from arsenical poisoning? The writer answers this question with an emphatic "yes"; but it is well worth while to examine the data and specify the items which point to this conclusion.

We are first impressed with the rapidly appearing unthriftiness, rough coat, depression and semi-somnolent condition, with soft swellings about the eyes and parotids, which developed in two or three weeks after the animal was put upon grass which contained a relatively high percentage of arsenic. These are

symptoms entirely in accord with the theory of chronic arsenical poisoning.

The post-mortem appearances which are most significant are :

1. The redness and catarrhal condition of the stomach and intestines, an almost constant condition in arsenical poisoning.

2. The congestion of the mucous membrane of the bladder and urethra, indicating the local irritating action of the arsenic excreted with the urine.

3. The abnormal quantity of pericardial, peritoneal and cerebro-spinal fluid, and the edema about the parotids, such effusions and edemic swellings being very common in arsenical poisoning.

4. The congestion of the cerebral and spinal meninges, reflecting the action of arsenic upon these organs for which it is well known that this poison has a special affinity.

5. The fatty degeneration of the liver cells, which is the most constant abnormal condition found by microscopic examination of this organ in arsenical poisoning.

6. The degeneration, disintegration and desquamation of the epithelial cells of the renal tubules, which in the experience of the writer, not only with Deer Lodge Valley animals, but also with experimentally poisoned animals, are the most conspicuous and most constant of the microscopic changes in these organs. Desquamation of the epithelium of Bowman's capsule has also been frequently observed, as well as a moderate cellular infiltration.

7. With the post-mortem findings must be considered the quantity of arsenic found in the stomach and distributed throughout the body.

THE QUANTITY OF ARSENIC IN THE BODY.

The following table shows the quantity of arsenic trioxid existing in the soft tissues of this animal, so far as it can be determined from the data at hand:

Table Showing the Estimated Quantity of Arsenic Trioxid in the Soft Tissues of Horse No. 52.

Tissue.	Weight of Tissue, Pounds.	Arsenic Trioxid, Grains.
*Liver	12.00	0.504
*Spleen	2.75	0.088
†Pancreas	1.06	0.033
*Brain	1.13	0.026
†Skeletal muscles.....	472.50	8.269
*Lungs	10.50	0.162
*Heart	9.00	0.132
*Kidneys	3.50	0.034
†Blood	57.00	0.012
Total.....	569.44	9.260

* Actual weight.

† Weight estimated from the average given by Chauveau and Colin for animals of this size.

That is, the soft parts of this animal, excluding the digestive organs, skin, tendons, ligaments and certain other tissues the weight of which is not known, contained 9.26 grains of arsenic. The parts included in the calculation represented about 55 per cent. of the animal's weight; and it is therefore reasonable to suppose that there existed in the tissues of this animal from 12 to 15 grains of arsenic. It goes without saying that this represents dissolved arsenic which had been absorbed from the contents of the digestive organs and had been distributed throughout the body by the circulating liquids.

The writer is of the opinion that this is a sufficient dose to cause serious poisoning, basing this opinion especially on recent experiments in which he has caused marked symptoms of intoxication, viz., dullness, depression and slight diarrhoea in a horse weighing 760 pounds by the subcutaneous injection of 350 milligrams, or 5.4 grains of arsenic trioxid, which is equivalent to 7.5 grains for the 1,050-pound animal. Besides, in the Deer Lodge Valley horse it is to be remembered that the quantity of arsenic in the tissues was kept constantly at its maximum by

the continuous absorption of additional quantities from the digestive organs.

THE QUANTITY OF ARSENIC COMMONLY FOUND IN CASES OF
POISONING.

The quantity of arsenic found in the organs of the body after death from arsenical poisoning varies greatly. This variation depends upon the condition of the arsenic and the size of the dose which has been taken; upon the time which elapsed between the ingestion of the arsenic and the fatal result, with the consequent opportunity for elimination; upon the activity of the eliminating organs, and, probably, to a certain extent, upon other factors peculiar to the individual. The quantity of arsenic recovered, therefore, may or may not amount to a fatal dose.

With regard to the proof of poisoning in the human subject Peterson and Haines⁵ say:

“While it strengthens a case to prove that the corpse contains a fatal quantity, it is not essential for conviction, as shown in the trial of Mrs. Maybrick, when only one-third of a grain was found in the viscera analyzed. * * * Instances are known of undoubted poisoning in which no trace of the arsenic has been found in the parts usually examined.”

Notwithstanding the fact that in some cases of undoubted poisoning it has been difficult or impossible to recover any of the arsenic, and in other cases no more than a fraction of a fatal dose was obtained, it is usual to make a careful quantitative analysis and determine the quantity present in the liver and some other organs. This has been done so frequently that the quantity found must be regarded as in many cases constituting a strong indication as to whether a fatal dose had been ingested, and it is a factor which should always be considered in making a diagnosis if the data can be obtained. It was of especial importance in establishing the diagnosis in the Deer Lodge Valley, where the ingestion of some arsenic was admitted and where much depended upon showing whether this quantity was, or was not, sufficient to cause injurious effects.

In order to obtain data for comparison with the Deer Lodge Valley cases, Harkins and Swain experimented with three horses which were killed by arsenic. The first " was fed upon flue dust containing a total of 20.65 per cent. of arsenic calculated as trioxide, and 17.89 per cent. of soluble arsenic, also calculated as trioxide. Considering only the soluble arsenic, the horse was fed two grammes of arsenic trioxide for eighteen days in addition to hay containing about 0.0030 per cent. In the liver was found 3.5 parts, and in the kidneys 18.0 parts per million. * * * A second horse was given 2.8 grammes (0.1 oz.) of arsenic trioxide in two doses, on the first day mixed with bran, and on the second ingested as a drench. On the fourth day the animal died, and on analysis the liver was found to hold 8.7 parts per million. A third horse died on the third day after having been given two doses of 7.5 grammes each, one on the first and one on the second day. The liver contained 12.2 parts, while that of a sheep which had been fed arsenic for some weeks contained 11.9 parts to the million." ⁶

That is, of these four animals which received a fatal quantity of arsenic, the liver of one contained but 60 per cent. of the proportion found in Horse No. 52, that of a second contained nearly $1\frac{1}{2}$ times the proportion, while those of the two remaining contained twice as much.

In an experiment of Sonnenschein, referred to by Fröhner in his *Toxikologie* (p. 70), a cow was given $506\frac{1}{2}$ grammes of arsenic within half a year. This would be an average of 2.78 grammes or 42.9 grains daily. When slaughtered at the end of this period the liver contained but 0.12 part per million. An experiment by Spallanzani and Zappa is mentioned by Harkins and Swain in which a cow was fed from 0.4 to 0.5 gramme (6 to 8 grains) of arsenic trioxide daily for 44 days, and at the end of this time the liver contained 11 parts per million.⁷

In human pathology, there is the case of Jennie Cramer, who died from acute arsenical poisoning and from whose body 3.1192 grains of arsenic trioxide were recovered. The liver contained 0.218 grain, and assuming it to weigh 3 pounds, there were 10.3 parts per million.⁸

There is also the case of William McNulty, a victim in the epidemic of arsenical poisoning from beer which occurred in England some years ago. This man was admitted to the hospital suffering from bronchitis, dropped feet, absence of knee-jerk, pains in the feet, face and feet puffy, running at eyes and nose, heart dilated, irregular pulse, great weakness and general pigmentation of the skin of the trunk and extremities. He died at the end of four days and his liver contained 1.1 parts per million of arsenic.⁹

Another victim of this epidemic was Alice Booker, who died six days after ceasing to drink the poisonous beer. From 13½ oz. of her viscera, consisting of a portion of the liver, kidney, spleen, and 1 oz. of the brain, there was obtained 0.011 grain of arsenic, or the equivalent of 1.9 parts per million.¹⁰

These investigations indicate that in acute arsenical poisoning the liver may be expected to contain from 3.5 to 12.2 parts of arsenic trioxide per million, and that in chronic arsenical poisoning, while there is probably more variation, there may be nearly or quite as much. It is clear, therefore, that when the liver is found to contain more than 3 parts of arsenic trioxide per million, this fact constitutes very strong evidence of arsenical poisoning, but for reasons mentioned in this article animals may be poisoned and yet their livers, when analyzed, give a very much smaller proportion than this.

The existence of 6 parts per million in the liver of Horse No. 52 must, therefore, be considered as sufficient to warrant the diagnosis of chronic arsenical poisoning, when considered in connection with the symptoms, post-mortem findings, histological changes, the general distribution and comparatively large quantity of arsenic existing in the other tissues.

HISTORY AND CONDITION OF OTHER STOCK ON THE LAPPIN RANCH.

The stock of the Lappin ranch has suffered severely since the removal of the smelter to the present site. When the new smelter was started in 1902, Mr. Lappin states that he had 11

horses, and that all of these died. Since 1903 he has purchased 14 and raised 1; and of these 15 head, 7 had died previous to December 2, 1906. On that date the remaining horses were inspected and found to be dull, listless, drowsy, with bad ulcers in their nostrils and having an unthrifty appearance, resembling in general features No. 52, whose description has been given above.

Previous to 1902, Lappin was doing a profitable dairy business, and had on his ranch 125 head of cattle. Of these he sold 55 head and the remainder died during the years 1902 and 1903. Before the beginning of smelting operations at the present site of the works, he had only lost one cow which died of alfalfa bloat.

Since losing this stock he has purchased 8 cows and 3 calves, and has raised 3 calves, making 14 in all. Of these, 4 had died up to December 2, 1906. On that date the writer inspected on the ranch 2 cows which were in poor condition; 1 heifer in fair condition; 3 yearlings in very bad condition and one calf in fair condition. Two of the yearlings were evidently sick, and were so weak that their hindquarters swayed when they walked. All of these animals had an abundance of grass and hay to eat.

Lappin stated that he could not make stock do well on his ranch any longer. He was obliged to feed purchased grain and bran to keep them alive, and the returns were not sufficient to pay for the feed. The appearance of the animals confirmed his statements.

In order to obtain more definite data with regard to the nature of the morbid process affecting these cattle, one of the yearlings above mentioned was sacrificed for examination. The autopsy was made December 3, 1906, and was No. 57 in the writer's records. The subject, a red heifer about eighteen months old, was in an advanced condition of debility and emaciation. On removing the skin and shoulder from one side, all present detected a peculiar, disagreeable odor, such as was often observed in the expired air, and arising from the viscera of Deer Lodge Valley animals. This odor was described locally

as "garlicky," and was suggestive of the odor of garlic, though not identical with it.

The pericardium contained about 1 oz. of liquid in which a coagulum formed as it was being measured. The heart was soft and flabby with thickened endocardium. The lungs were small, atrophied and covered with a thickened pleura. The trachea was slightly congested. The internal fat was abnormally yellow.

The stomach was pale, but the mucous membrane near the pyloric opening was decidedly thickened. The duodenum and ileum were catarrhal with areas of congestion.

The kidneys were large, pale and mottled. The normal brown color of the external surface existed only in small patches or lines; the remainder of the surface was much lighter in color. On section, much connective tissue was visible and the organ had a yellowish shade. There were depressions in the surface of some of the lobules and a section through these revealed a great increase of connective tissue and shrinkage of the cortical substance. The medullary portion was congested.

The liver was large, very soft and was mottled with light-colored areas.

The "garlicky" odor arose from all of the organs which were exposed.

The microscopic examination of the kidneys showed advanced degeneration and desquamation of the epithelium, with nearly all the tubules blocked with cellular debris and coagulated material. There was interstitial nephritis with cellular infiltration and connective tissue proliferation, and, also, glomerulonephritis with thickening and desquamation of the capsules, and coagula between the glomeruli and the capsules. In other words, there were the lesions of generalized nephritis.

In the liver, the walls of many of the veins were thickened, there was much pigment in fine granules, and the columnar formation of the cells was almost completely destroyed.

From these data it was concluded that this animal was also suffering from chronic arsenical poisoning, and that the un-

thriftiness, loss of flesh and weakness were due directly to the catarrh of the intestines, the nephritis and the derangement of the liver, lesions which were caused by the passage of the arsenic through the body.

As already stated, the grass on this ranch was sampled November 4, 1906, and was found to contain 107 parts of arsenic trioxid per million. This animal was suffering so much from eating the grass that its owner put it up about October 15 and fed it on hay, turning it out but one or two hours each day for drink; but evidently its liver and kidneys were already too much affected to permit a recovery to take place. The unthriftiness and bad condition of all the live-stock which pastured on this ranch during the fall of 1906 confirmed the conclusion that this grass was very injurious. There is good reason for concluding, therefore, that when the arsenic content exceeded 100 parts per million, that is to say, 100 milligrammes per kilo, the grass might cause serious disease and was unfit for grazing. A glance at the table presented in the preceding article of this series will show, however, that samples of grass were obtained from a considerable number of ranches which yielded from 2 to 7 times this quantity!

How could animals pasture on grass carrying such a large quantity of arsenic and not die at once from acute poisoning? There are at least three factors which enter into the explanation:

First—There is a great difference in the solubility of the arsenic found on the grass. This was observed by Harkins and Swain,¹¹ who say:

“The arsenic in the smoke, as shown by the analyses, was, in the three cases, 91.8 per cent., 91.1 per cent. and 89.4 per cent. soluble in water; and the arsenic in two samples of grass was 92.6 per cent. and 83.6 per cent. soluble in the digestive fluids of the cow. As a rule, the arsenic in the grass is less soluble than in the smoke, since the rains wash away the more soluble portions.”

Haywood,¹² also, made extensive investigations of the solubility of the arsenic found on the grass, and from his results there has been constructed the following table:

Table Showing Percentage of Water-Soluble Arsenious Oxid on Samples of Deer Lodge Valley Grass.

Number of Sample.	Arsenious Oxid Per Gram of Dry Sample. Milligram.	Water-Soluble Arsenious Oxid Per Gram of Dry Sample. Milligram.	Proportion of the Arsenious Oxid Soluble in Water. Per Cent.
4114	0.103	0.083	80.6
4121	0.090	0.069	76.6
4110	0.055	0.041	74.5
4111	0.041	0.028	68.3
4117	0.054	0.034	63.0
4100	0.070	0.042	60.0
4106	0.069	0.041	59.4
4124	0.069	0.041	59.4
4118	0.054	0.028	51.8
4108	0.055	0.028	50.9
4123	0.055	0.028	50.9
4113	0.055	0.028	50.9
4125	0.055	0.028	50.9
4107	0.028	0.014	50.0
4116	0.041	0.020	48.8
4112	0.042	0.020	47.6
4115	0.069	0.028	40.5
4122	0.104	0.041	39.4
4120	0.054	0.020	37.0
4119	0.090	0.020	22.2

This table shows that there was a great difference in the solubility of the arsenic in water, and probably there is a corresponding difference in its solubility in the liquids of the digestive organs. In that case, it is possible that grass which contained 100 parts of arsenic per million might, under certain conditions, be as poisonous as other grass which contained 360 parts per million.

Second—When animals have taken food containing a sufficient quantity of arsenic to produce symptoms of poisoning,

their appetite is immediately diminished, they eat scarcely enough to maintain life, and they often show an especial aversion to the article of food which contains the poison. This fact was observed with animals to which arsenic was fed experimentally by the writer, as well as with those pasturing in the Deer Lodge Valley. The result is that as the arsenic increases on the pastures the animals eat less grass, until they really suffer from starvation although running in grass up to their knees.

A similar observation was made by Harkins and Swain,¹³ who say:

“In taking samples during the first few years of the case, the more emaciated animals were usually selected, but beginning with January, 1906, a larger number of those that were fat and in a seemingly good condition were chosen. The result of this change of policy is shown in the table, where the average content of arsenic for 1906 is much higher than for previous years.”

That is, the animals in seemingly good condition were not yet suffering sufficiently from the arsenic to noticeably affect their appetites; they were eating full rations and taking with these maximum quantities of arsenic. When the poison began to produce its toxic effect, however, they ate very little and ingested only small quantities of arsenic; and, as the poison was rapidly excreted, their organs after a few days contained a considerably smaller proportion than those of animals in good condition.

Third—Another factor in preventing the fatal poisoning of the animals was the vigilance of the owners. After the extensive poisonings of 1902, the farmers of the valley learned the cause of the disaster and the symptoms of arsenical poisoning, and in later years when the grass became so charged with arsenic as to affect the appetite and general condition, the animals were removed from the pastures and fed hay, bran and grain. In this way the stock was carried through the fall and winter months until the fresh and uncontaminated spring grass made its appearance. At best, this could not be made a profitable

method of raising stock in Montana, and, hence, the temptation to take the risk of leaving the stock on the pastures even after symptoms of poisoning were observed. Unfortunately, in such cases, many of the animals were seriously poisoned, and a considerable proportion was ruined; but, undoubtedly, the proportion of visibly poisoned animals would have been much greater except for the custom of feeding for a part of the year on hay and grain.

The quantity of arsenic trioxid found in the livers of Deer Lodge Valley animals by Harkins and Swain¹⁴ is shown by the following table:

Table Showing the Quantity of Arsenic Trioxid Found in the Livers of Deer Lodge Valley Animals in the Years 1902, 1903, 1905 and 1906.

Month and Year.	Animal.	Distance from Smelter, Miles.	Parts As_2O_3 Per Million.
1902.			
September	Horse	3 N.W.	4.7
September	Horse	2 S.S.E.	1.1
September	Horse	5 S.E.	2.8
September	Horse	5 S.E.	0.8
September	Cow	3 E.	11.3
September	Calf	3 S.	6.2
September	Calf	1.5 S.	0.4
September	Calf	1.5 S.	0.3
September	Steer	3 N.E.	8.6
1903.			
October	Horse	1.5 N.E.	13.0
1905.			
January	Filley	3 N.	0.01
January	Cow	6 S.E.	3.3
January	Gelding	4.5 N.N.E.	35.0
January	Colt	2 S.	2.6
January	Cow	3 S.W.	1.6
January	Cow	3 S.E.	2.1
January	Cow	5 N.E.	11.9
January	Cow	5 N.E.	10.3
May	Steer	13 N.N.E.	0.01

Month and Year.	Animal.	Distance from Smelter, Miles.	Parts As_2O_3 Per Million.
May	Cow	6 N.	0.01
November	Cow	13 N.N.E.	10.0
July	Cow	2 S.	7.4
January	Sheep	8 N.	0.01
January	Sheep	3 N.	6.8
January	Calf	2 S.	1.5
January	Calf	3 S.W.	6.5
February	Calf	2 S.	1.3
1906.			
November	Gelding	3 S.	6.0
October	Gelding	4 N.	3.4
August	Mare	4.5 N.E.	4.4
August	Gelding	1.7 S.S.W.	3.9
August	Horse	5 N.N.E.	16.1
August	Horse	5 N.N.E.	9.5
January	Mare	5 N.N.E.	1.3
September	Gelding	4.2 N.N.E.	14.8
January	Mare	15 N.	8.7
January	Gelding	10 N.N.E.	7.6
January	Gelding	3 N.	5.3
February	Filley	4.5 N.N.E.	3.1
February	Filley	5 N.	17.8
February	Mare	4.5 N.N.E.	8.7
March	Horse	1.5 S.	20.7
August	Mare	12 N.N.E.	4.99
September	Horse	4.5 N.N.E.	Trace.
September	Mare	6.5 S.E.	52.2
September	Gelding	4.5 N.N.E.	3.3
February	Colt	10 N.N.E.	Trace.
February	Colt	4.5 N.N.E.	25.5
July	Colt	3 N.N.E.	31.7
July	Colt	2 S.	4.4
November	Colt	9 N.N.E.	2.6
October	Colt	2 S.	4.7
August	Colt	8 N.E.	2.2
July	Colt	8 N.N.E.	1.1
February	Cow	10 N.	11.8
February	Cow	3 S.S.E.	33.8
November	Cow	13 N.N.E.	10.0
July	Cow	3 N.	14.2
July	Cow	3 N.	63.12
November	Cow	3 S.S.E.	9.2

Month and Year.	Animal.	Distance from Smelter, Miles.	Parts As ₂ O ₃ Per Million.
November	Cow	10 N.N.E.	1.2
November	Cow	4.2 N.N.E.	10.4
January	Steer	5 E.	5.4
October	Calf	1.7 S.W.	16.2
February	Calf	3 S.S.W.	6.3
January	Sheep	10 N.	8.9
August	Sheep	4.2 N.N.E.	5.0

In the above table is given the result of the analysis of the livers of 67 animals, and of these 46, or 68.6 per cent., revealed more than 3 parts of arsenic per million. That is, in two-thirds of the cases the quantity of arsenic found in the liver would of itself strongly indicate poisoning.

In 13 of the livers, or 19.4 per cent., there were found 13 or more parts of arsenic per million. That is, in about one-fifth of the livers the quantity of arsenic was greater than in those of animals experimentally poisoned and which died as the result of such poisoning. In some of the livers the quantity of arsenic found was enormous, reaching 20.7, 25.5, 31.7, 33.8, 35, 52.2, and 63.12 parts per million! If the results of chemical analysis are deserving of the confidence which is almost universally accorded to them as evidence of arsenical poisoning, the conclusion cannot be denied, from these analyses alone, that many of the animals from which these livers were derived were suffering from this form of intoxication.

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The ASSOCIATION OF VETERINARY FACULTIES AND EXAMINING BOARDS OF NORTH AMERICA, will meet at 10 a. m., August 21, 1911, Prince George Hotel, Toronto, Can.

A DETAILED account of the plan of the NEW YORK STATE VETERINARY MEDICAL SOCIETY, to be held in Brooklyn, September 12, 13 and 14, will be found on page 609 of this issue.

IN the *Ottawa Evening Journal* of June 12 we read the following extract from the *Canadian Courier*, entitled "Dr. Rutherford's Reminiscence," and without the good doctor's permission have reproduced it for our readers, his friends:

"Dr. Rutherford, Live-Stock Commissioner for Canada, who used to be in politics, got back neatly at a member of parliament a short time ago.

"The doctor was under examination in the agricultural committee, and in speaking of Canadian cattle he produced an old photograph which he stated he had obtained in the province of Quebec. He said that he had found it in the barn of a farmer, and he smilingly related how, by a little careful manipulation, he had managed to carry it away with him.

"H. H. Miller, the member for South Grey, thought he saw a chance to take a fall out of the doctor, so he interrupted with the comment, 'I hope you left the barn, doctor.'

"'Yes,' said Doctor Rutherford. 'You see, I've been out of politics for some years.'"

VETERINARY WORK IN RUSSIA.*

BY S. A. GRUENER, M.V.S., VETERINARY INSPECTOR, KAMTCHATKA, RUSSIA.

Within recent years in the United States of North America, the number of students enrolled in the veterinary colleges has grown remarkably as well as the number of colleges in which a veterinary department has been established.

Comparative statistics of the number of colleges, students and graduates in veterinary science, show the following growth:

	1890.	1900.	1903.	1908.	1909.
Colleges	7	13	13	15	19
Students	463	363	671	2,239	2,677
Graduates .....	...	100	...	510	592

This enormous growth in the number of colleges, students and graduates, indicates a great demand for veterinarians, in the following branches:

FIRST. *In general practice*—Since the value of live stock in the United States is estimated at some three thousand million dollars, many veterinarians are needed in general practice.

SECOND. *In the Bureau of Animal Industry*—For the inspection work in the Bureau of Animal Industry of the United States Department of Agriculture more than eight hundred veterinarians are employed.

THIRD. *In the United States Army.*

FOURTH. *As municipal meat inspectors and State veterinarians.*

FIFTH. *As veterinarians in experimental stations and instructors in veterinary colleges.*

*Read before the Veterinary Medical Association of the Colorado Agricultural College, April 24, 1911, Ft. Collins, Colo.

We find this same progress of the veterinary work during recent years also in Russia, and likewise notice the growth in the employment of veterinarians.

We have only four veterinary colleges in Russia, while you have nineteen such colleges in the United States. These four colleges in Russia are located at Charkov, in South Russia; Kasan, in East Russia; Jariev (formerly Dorpot), in Liveland, and Vasovie in Polen Russia.

All of these colleges were established fifty years ago, and the number of students was at that time small. For example, Dorpot, now Jariev, graduated only three students in 1880. But the growth of the number of students has been so great that now each college graduates more than one hundred each year. I have not the exact statistics of these colleges called in Russia "Veterinary Institutes," but I can remember the data in round numbers.

College.	Number of Students.	Number of Graduates.
Dorpot (Jariev).....	400	100
Charkov	500	120
Kasan	700	150
Varsovia	200	50
Total.....	1,800	420

Compared with the colleges in the United States of North America we can see that no American veterinary college has as many students as an institute has in Russia. In the United States the veterinary colleges and veterinary departments of the agriculture colleges show the following statistics in the year 1909.

Veterinary Colleges.	Number of Colleges.	Number of Students.
New York	2	115
Pennsylvania	1	150
District of Columbia.....	2	154
Alabama	1	44
Ohio	2	304
Illinois	2	723
Indiana	1	176

Veterinary Colleges.	Number of Colleges.	Number of Students.
Michigan	1	121
Iowa	1	126
Missouri	2	572
Kansas	1	43
Colorado	1	52
Washington	1	39
California	1	58
Total.....	19	2,677

These statistics show that the United States has many colleges in which veterinary science is taught, but that there are comparatively few veterinary students in each college. In Russia, however, we have few colleges teaching veterinary science and a large number of veterinary students in each college. Which system, you ask, gives the better results? I answer, that I believe the system in the United States is the better, because a great many students in one college cannot get enough practical work as well as receive the proper instruction in crowded laboratories and therefore gain only the theoretical knowledge.

The general average of students and graduates of veterinary science is greater in the United States than in Russia, and there are probably more veterinarians here than in Russia. The comparative statistics of population and total domestic animals in both countries show the different conditions as follows:

	Russia.	United States, N. A.
Square miles.....	8,647,657	3,756,884
Population	160,095,200	103,992,577
Domestic Animals—		
Cattle	43,586,900	71,059,573
Horses	29,285,700	24,048,532
Mules	Very few.	4,310,399
Burros	Very few.	100,012
Sheep	70,647,300	57,555,762
Swine	13,924,500	49,574,361
Domestic Reindeers (Rangifer Tarandus)	3,000,000	22,000
Camels (approximately).....	500,000	.....

In the United States there are more domestic animals than in Russia and also the population is denser here. The conditions in the United States are much better than in Russia. Here the roads are better and there are more railroads. The United States, therefore, requires more veterinarians than Russia.

In comparing the course of study in Russian and American veterinary colleges we find that in Russia the course of study is longer. In the United States the students learn veterinary science in three years in the majority of colleges, and graduate as Doctor of Veterinary Science. In Russian veterinary institutes the course of study requires four and one-half years to complete, and after passing the final examinations the students graduate only as "Veterinary Surgeons." If the students want to receive a higher degree they must take an examination again not earlier than one year after graduation and write on some topic and complete a thesis. They must defend their topic in the presence of the people, the laymen, the students and professors, "public defense." If their defense is accepted they will then receive the degree of "Magister (master) of Veterinary Sciences." The degree "Doctor" is not given to veterinarians in Russia. In other departments of the University (mathematics, language, history, zoology, botany, chemistry, etc.), the same order is maintained to receive the scientific degree. After finishing their course in the University some students take advance work, pass an examination, write on some topic and defend their work before the public. They then receive the degree of "Magister" (master) of Zoology, Chemistry, etc. To obtain the degree of Doctor, the Magister (master) must write on some chosen topic and defend it. The graduates in the medical department and medical colleges receive the degree of "Physician." If they desire a scientific degree they must take an examination again, write on some topic and defend their work. The "Physician" then receives the degree of "Doctor of Medicine" without the preceding degree of Magister (master).

For the veterinarians in Russia there is only the one degree of Magister (master).

In Russia you can be a Doctor of Mathematics, Astronomy, Greek, Literature and Medicine, but never of Veterinary Science. In Russia we have some veterinarians who have the degree of Doctor of Medicine, but after graduating with the degree of "Veterinarians" they have enrolled in the medical department of some university and received first the degree of Physician and then that of Doctor of Medicine.

In the Russian Veterinary Institute the four-and-one-half-year course is longer than in America. It is more extensive in the natural historical sciences (chemistry, zoology, comparative anatomy, mineralogy, etc., and has a complete course in physiology and (normal) histology. Thus we have a separate course in general pathology and a separate course in pathological anatomy taught by another professor. We have a course in general hygiene and a separate course in zootechnics and bacteriology.

In Dorpot we have a separate course in horse-breeding. All the courses are more theoretical and on account of the large number of students in each college it is impossible to arrange for the practical work of the clinic and the laboratory.

Although the graduates of the veterinary colleges find enough employment the positions obtained are not very good, and the salaries are not sufficiently large. Many graduates continue their education in the universities and in other colleges; for example, in the medical department of the University and in the agricultural colleges. Some take special work in chemistry and receive also the degree of Doctor of Medicine, Agronomist, or Engineer Chemist. Only within recent years have the positions held by veterinarians become better owing to the success of bacteriology and the establishment of experimental stations and bacteriological laboratories. Veterinary bacteriologists can now take good positions and receive better salaries than formerly. The position of director of a veterinarian experiment station or of a bacteriologist in one is the best to be had by a veterinarian. Only after several years of practice can a veterinarian hold such a position, but students, just after graduation, are ready for several kinds of work as follows:

1. They can be employed in the Russian Imperial Army as military veterinarians in the cavalry, artillery and Casakan Regiment. At the present time the position of Military Veterinarian is much better than it was formerly. Now every regiment has two veterinarians, while previously there was only one. The Military Veterinarian can take a higher position in the future, as corps veterinarian and as the Head Military Veterinarian of a separate province.

2. The municipalities, large cities in Russia, employ veterinarians as Meat Inspectors and as Sanitary Veterinarians.

3. The County Board in European Russia, "sensstvo," employ veterinarians almost exclusively for the control, examination and prevention of contagious diseases. Also many counties have Veterinary Hospitals for the cure of non-contagious diseases and the care of domestic animals and live stock.

4. The Russian Imperial Government employs veterinarians on the boundaries of Turkey, Persia and China to prevent the distribution or rinderpest.

5. The Russian Imperial Government needs many veterinarians also for the hard struggles with rinderpest which prevails in Caucasus, Turkistan and East Siberia.

6. The Russian Imperial Government needs veterinarians throughout all Russia for the inspection of cattle going from province to province or to large cities such as St. Petersburg, Charhow, Kiev, etc.

7. In Russia veterinarians are employed also in "the military guards" on the boundaries of Germany and Astro-Hungary and China.

8. The Russian Imperial Government employs some veterinarians in the Department of Agriculture for Animal Husbandry.

9. The Department of Horse-breeding employs about two hundred veterinarians, some of which hold the position of Director of Stallion Stock.

10. The agriculture and veterinary colleges need veterinarians as inspectors and professors.

11. Russian veterinarians are employed in many places in China for the inoculation of cattle against rinderpest and for the inspection of cattle in quarantine.

12. During last year the Government of Abyssinia, Africa, asked for Russian veterinarians in place of the French veterinarians as formerly. From the above you can see that there is plenty of work to be done by Russian veterinarians. In the first place they must struggle with rinderpest, for epizootic rinderpest still exists in Russia while it has been exterminated in almost all civilized countries of the world. It is still found in Turkey, China and Russia. The struggle with the rinderpest requires much money and many veterinarians. However, rinderpest is exterminated in all European Russia and remains only on the borders. The chief measures against rinderpest are inoculation, preventive and curative. For preventive inoculation immun-serum and defibrinated blood taken from sick cattle is given. For curative inoculation, only serum is given.

For the preparation of immun-serum we have two experimental stations. The largest and best "antipestic station" is located ten miles out from the city of Chita, in East Siberia. Two years ago I was employed there as assistant chief director of this station. After an absence of two years and just before coming here to the United States I visited this station and was astonished at what was accomplished in so short a time by so energetic and skillful a man as the director of this station, A. A. Dwdoo Kalof.

The station now has many beautiful buildings. It has a separate veterinary hospital, dairy farm and three special laboratories for dairy farming; it experiments also in the raising of wild animals and the domestication of them; it has a large farm for animals for experimental purposes—rabbits, Guinea pigs, arctomys; it has a special laboratory for the diagnostic investigation of glanders, and has about two hundred immunized cattle and has sent an entire carload of serum to different parts of Russia and China for the prevention of the rinderpest. This station is

located on the main Siberian Railroad and many people and laymen visit it and go away very well pleased.

There is another antipestic station located at Zurnabad (Caucasus). This station investigates pyroplasmosis of cattle and spirochetosis of fowls.

Unfortunately one assistant in the station, V. V. Avrorot, died from glanders inoculated by a glass test tube, containing a culture of glanders breaking and cutting his hand.

In European Russia many provinces have stations and laboratories for the preparation of antianthrax vaccine (Pasteur) for the diagnostic investigation and other lines of work; for example, Saratow, Samara, Simbusk, Novgorod, Voronege, Pensa Koosk, Poetava, Tovla, Oral, Ekateirnoslav, etc.

In the Cosakan province of Don there has been established a special experimental station for the investigation of glanders under the direction of Professor Koney.

In Siberia we have a small laboratory for the investigation of the diseases of domestic animals in Tobolsk, Vladivostok. In the farthest northern point of Siberia, in the city of Jakootsk, there was recently established an experimental station for the investigation of the diseases of the domestic reindeer (*Rangifer tarandus*). The reindeer is a very valuable domestic animal in the far northern European Russia and Siberia. The life of the people of these countries is sometimes dependent upon the reindeer exclusively. In such places the reindeer is priceless as a domestic animal because they alone with the dog can endure the hardships of the icy cold wild country. They also furnish the inhabitants of northern Russia with food, clothing, light and heat, and without them the people could not travel. Therefore the eradication of the contagious diseases of the reindeer is very important. Of the many contagious and parasitic diseases of the reindeer we know only one, anthrax. For the prevention of anthrax the Russian Imperial Government has established the experimental station for the preparation of serum and Pasteur vaccins against anthrax in the province of Afhangelsk. But the larger number of the diseases of the reindeer are not fully under-

stood, and at present the Russian veterinarians are investigating them at the experimental stations of Ashangelsk, in northern European Russia, and of Jakootsk, in Siberia.

In the capital of Russia, St. Petersburg, we have the large main laboratory. This laboratory is situated in a new building well equipped and costing about 200,000 rubles (\$100,000). It is divided into four departments, bacteriological, serotherapy, biological chemistry and physiology. Eight veterinarians are permanently employed there. Every year new equipment is added to the St. Petersburg Laboratory for special advanced post-graduate courses in bacteriology and the study of the diagnostic methods.

In recent years the Russian veterinarians have published many important and interesting articles concerning investigations in bacteriology, parasitology and serotherapy.

I can recall the following:

Mr. and Mrs. Doodookalof, "Trypanosoma in the Blood of Cattle" (Chita, Siberia).

Messrs. Djunkovsky and Loos, "Tropical Pyroplasmiasis of Cattle in Caucasus" (Zurnabad).

Messrs. Djunkovsky and Loos, "Spirochetsis of Fowls (Chicken and Goose)" (Zurnabad).

Mr. Belitzer, "Pyroplasmiasis of Horses" (Rjasan).

Mr. Vrooblevsky, "Trypanosoma in Blood of Buffalo" (Bjalovige).

Mr. Kerceli, "Pyroplasmiasis of the Reindeer" (Archangesk).

Mr. Jakimof and Mrs. Jakimof-Kohl, "Trypanosoma of Different Animals and of Fish" (St. Petersburg).

Mr. Bainorovitz, "Investigation of the Cattle Tick" (St. Petersburg).

Mr. Konev, "Investigation of Glanders Diagnosis" (Karkov).

Prof. Bol, "Investigations in Pathological Anatomy" (Kasan).

Mr. Shooroopof, "Investigations Concerning Serum Against Asiatic Cholera" (Fort Alexander III.).

Mr. P. N. Andreev, "Investigation Concerning Immun Agglutininen" (St. Petersburg).

Mr. Feders, "Wasserman Reaction for Glanders" (St. Petersburg).

Mr. Makorevsky, "Concerning Inoculation for Pleuro-Pneumonia Contagia" (Tobalsk, West Siberia).

Mr. Sisof, "Investigation Concerning Chicken Cholera" (St. Petersburg).

Mr. Pokshishevsky, "Investigation Concerning Serum for Anthrax" (Moskaw).

The above articles are translated wholly or in part into German and French. In German they are to be found in the "*Annual Review of Veterinary Medicine*" ("*Jahresbericht in dem Gebiete der Veterinar-Medezcin*").

THE following is the scheme of report of the committee on disease of the A. V. M. A.: General Report of Committee on Disease, by Dr. B. F. Kaupp, chairman. Sectional Reports—Section One, "The Recurrence of Dourine in the United States," by Dr. John R. Mohler. Section Two, "Foot Evil In Horses and Mules," "Sore Mouth in Dogs," by Dr. W. H. Dalrymple. Section Three, "Serums, Vaccines and Serum-Vaccine Therapy," by Dr. A. T. Kinsley. Section Four, "The Laboratory and the Practitioner," by Dr. Chas. H. Higgins. Section Five, "The Effects of Nuclein Upon the Blood," by Dr. B. F. Kaupp.

CHAIRMAN GRANGE, of the local committee on arrangements for the A. V. M. A. meeting, has expressed it as his desire to have the clinical part of the program stand out as a prominent feature of the Toronto convention; and Secretary Oille of that committee has been making strenuous efforts to have Prof. Grange's ambition become a realization. Under date of July 12th he issued a letter to his colleagues in and around the city of Toronto, requesting their co-operation in securing a generous collection of interesting subjects. We feel sure he will be successful in his undertaking and are looking forward to an exceptionally good clinic at Toronto.

THE METHOD OF SELECTION OF VETERINARY INSPECTORS IN PARIS.*

Veterinary Sanitary Service of the Seine. Announcement Concerning the Method of Admission, the Form and Means of Choosing Persons, According to Six Rules of Procedure, for the Position of Sanitary Veterinarian.

BY D. ARTHUR HUGHES, LITT.M., PH.D., D.V.M., CHICAGO VETERINARY COLLEGE.

The Prefect of Police, under an announcement of March 16, 1910, laid down a rule of procedure for the admission for employment of sanitary veterinarians for the veterinary sanitary service in Paris and the Department of the Seine. This has been done under the advisement of the Chief of the Division, the directing inspector of halls, markets and abattoirs. Hence, under the decree of the Secretary General, the announcement is made:

Article First—

The plan, covering six parts, for the admission of candidates for the position of sanitary veterinarians for the veterinary sanitary inspection in Paris and the Department of the Seine will be carried out, under the Prefecture of Police, June 19, 1911.

Registration of candidates for the positions in question is now open, but will finally close at four o'clock, May 20, 1911. No requests for examination will be accepted after that date.

Article Second—

Candidates must satisfy the conditions demanded as follows:

1. They must not be more than thirty years old.
2. They must have fulfilled the conditions of the military law. (That is, they must have finished their period of service in the army, as required by the French military law.)

* Free Translation from the French of *L'Hygiene de La Viande et du Lait*, issue of April, 1911, pp. 248-251.

3. They must be possessors of a veterinary diploma granted by either one of the three national veterinary schools of Alfort, Lyon or Toulouse.

At the same time they must deposit with the Secretary-General (of the Personal Service), written upon paper according to the proper form and legally sustained, the facts as to the following:

1. Time of birth and its record under the law.
2. The military papers, filled military forms; certificate of good conduct in the army, and honorable discharge from it.
3. The veterinary diploma, or in default of the veterinary diploma, certification that the diploma was granted, the statement of which shall be made by the Director of the school in which the candidate was trained.

The candidate must be examined by a medical doctor of the Government and a medical oculist of the Government Administration and his physical condition ascertained to determine his suitability for the position he seeks.

Article Third—

The plan of examination, which will be applied to candidates, as agreed upon by the Prefecture of Police, comprises six tests:

Test 1. The drawing up of a report, or of a memoir upon a subject related to the pathology of microbial and parasitic diseases of animals; upon the control of food products of animal origin; upon the sanitary police of animals; or upon the inspection of various classes of establishments.

Four hours will be allowed the candidate for writing this report.

Test 2. Microscopic examination of products of animal origin, meats and meat preparations from the various kinds of food animals, including birds of different kinds, fish, crustaceans (lobsters, crabs, etc.), and mollusks (oysters, etc.). Determination, anatomically, of the species, regions, organs. Justification of the conclusion either to seize or reject the same.

Three hours permitted for this examination.

Test 3. Clinical examination (in the Parisian abattoirs or under similar conditions) of animals either attacked or suspected of being attacked by contagious diseases.

Two hours permitted for this examination.

Test 4. Microscopic examination of unhealthy meats and of different organic products (milk, urine, excreta) and micro-biological analyses of animal cadavers attacked by or supposed to be attacked by contagious diseases.

Two hours permitted for this examination.

Test 5. Chemical analyses of unhealthy meats; of abnormal products; of different organic products (milk, urine, etc.).

One hour permitted for this examination.

Test 6. Oral exposition of one of the many questions relating to any of the following matters:

The administration and judicial organization of France.

The special administrative organization of the city of Paris and the Department of the Seine.

The safeguarding of the public health.

The inspection of various kinds of establishments.

The control of meats and meat food products of animal origin.

Special questions for oral examination will be asked upon the following:

The laws, decrees, ordinances, and rulings thereunder, from the Royal decree of October, 1810, and the Royal ordinance of January 14, 1815, to the present time.

Two hours will be permitted for this examination.

Article Fourth—

Every test will be marked and graded from 1 to 20. The candidates who do not obtain a minimum of 10 in the first test will not be admitted to the second test; and those who do not obtain a minimum mark of 10 in the second test and an average of 12 for the first two tests combined will not be admitted to the third. A mark of zero for any one of the tests means that the candidate is eliminated.

The points obtained by the candidates in the six tests will be totalled, in order to arrive at the final list, written according to merit of candidates judged to be admissible by the examining commissioners.

In the general classification account will be taken of the general fitness and experience of the candidates.

No candidate will be accepted if he has not obtained, upon the assembling of the test marks, at least two-thirds of the possible maximum number of points.

Nominations for the office of veterinarian will depend upon the occurrence of vacancies in the service, and appointments will be made according to the list of admissible candidates in accordance with the decision of the Prefecture of Police.

Article Fifth—

Incoming veterinarians receive an annual stipend of 3,500 francs (one franc equals \$.19418 American money; hence 3,500 francs equal \$679.63 American money). After two years of experience and after the passing of a new examination veterinarians are named "Sanitary Veterinarians" and receive an annual stipend of 4,000 francs (that is, \$776.72 American money).

Engaging in private practice, or any other professional work, by them is absolutely interdicted on account of their work.

Article Sixth—

The Secretary General is charged with the execution of this present order.

REMARKS BY THE TRANSLATOR.

The attention of the reader may be drawn to the following points:

I. The rigidity of the preliminary steps before a man may be permitted to become a candidate for the position of veterinary inspector under the national government in the French capital:

(a) He must be a young man, under thirty years old.

(b) He must have had the military training under the restriction required by law.

(c) He must pass a medical examination and a test for vision.

2. The professional preparation for the examination:

(a) Only men who have taken a full course and successfully passed all examinations at a national veterinary school can try the examination for veterinary inspector in Paris.

(b) The fact that though a man holds a diploma from one of the three national veterinary schools, he must, nevertheless, undergo the rigid examination of the French government before he can become a Parisian veterinary inspector. Alfort is in the vicinity of Paris. It is a national school almost in the very shadow of the legislative chambers of the French capital and its work is known in every detail to the Chief of the Veterinary Service of Paris; yet men from Alfort must go through all the rigors of the government examination if they wish to be appointed sanitary veterinarians, even though they have finished their course in so great a school as Alfort is. Evidently the object is to play fair, in the selection of sanitary inspectors, to men from the distant national veterinary schools at Lyon and Toulouse.

3. The length and severity of the examination itself is remarkable.

(a) Six oral, written and clinical tests of the candidate.

(b) The length of time consumed in the examination confined to professional subjects only—a total of fourteen hours.

4. The smallness of the stipends given to successful candidates—considerably less than a thousand dollars (American money) per annum.

I am of the opinion that there is much food for thought, on the part of American veterinary inspectors in the foregoing remarks. At the same time the information the translation contains should be encouraging to American veterinary inspectors who are so frequently down-hearted over the trials to which they are subjected.

OPERATIVE TECHNIQUE—THE VALUE OF HABIT.*

BY K. W. STOWDER, MANHATTAN, KANSAS.

Since the successful surgery of the abdomen in the horse seems difficult for some to perform it might be well to consider for a moment the principal causes of these failures and the means, if they exist, for their correction.

All agree that the greatest cause for failure is the great susceptibility of the peritoneal cavity of the horse to grow infection and his weak resistance to the consequence, peritonitis. This being true it would seem then that the prevention of this infection is the solution of this difficulty. Stating the matter in another way we might say that a perfect operative technique that is capable of practical application solves the problem.

The question is then how can we evolve this perfect and yet practical technique? Principally by forming habits of asepsis.

From the standpoint of the present discussion we will group all abdominal operations together without reference to anatomical variations for each individual one.

To properly discuss the subject of technique of preparation and procedure let us divide it for sake of clearness into a sort of synopsis, composed of four subdivisions arraigned as follows:

1. The sterilization of the instruments and dressings.
2. The disinfection of the operative area.
3. The disinfection of the operator's hands and arms.
4. The operative procedure.

The only discussion of the first division is a statement that no set of instruments should be considered safe that have not been boiled in a covered vessel for at least twenty minutes and kept submerged till ready for use. Other methods may be safe.

* Read at Missouri Veterinary Association Meeting, Kansas City, January 24, 25, 26, 1911.

but long experience leads me to place confidence in it and nothing else satisfies now. I am sure the failures of some can be traced to placing reliance in some inadequate means of sterilization of instruments. Get the habit and fix it firmly.

The disinfection of the operative area is not so simple, but can be performed in a very satisfactory manner as follows: Wash first with good soap and warm water and scrub with a stiff brush. Shave clean and wash again with an antiseptic; preferably lysol, cresol, creolin or some similar preparation that mixes intimately with water and does not form precipitates with the sediment found on the skin, next rub hard with a cotton pledget soaked well in chloroform, ether or alcohol, to dissolve grease and sebaceous matter from the skin and to open the pores and permit a later application of antiseptic to penetrate them. This last antiseptic is best applied hot to relax the skin and a pack allowed to lay over the area till ready to make the incision.

The most important disinfection is that of the hands and it is of supreme importance but probably the most difficult to perform. In this connection it is well to remember that it is almost useless to attempt to disinfect the hands sufficiently to perform abdominal surgery with success if within the last forty-eight hours they have been soiled with pus. Defer the operation if success is to be expected. To begin clip the nails short and with a smooth bone or orange wood stick clean the nails and nail folds so as not to cut and roughen the skin as steel would do. If running hot water is available use that, if not, frequently changed basins of hot water and plenty of good soap will answer. With a stiff brush previously sterilized begin and brush the hands vigorously but not in a haphazard manner. Have a definite place to begin on each hand and a procedure to follow which will insure the brushing of absolutely every spot, then repeat till they are brushed all over again and then once more for a safety factor. Personally I take the dorsal surface of the left thumb for a starting place, then the dorsal surface of each finger in turn, brushing each one back and forth many times, then the ulnar surface of the little finger, then the next and so on to the thumb, then the palmar

surface of thumb and each finger and finally to the right hand in the same manner; all the while remember to go over each hand three or more times.

If an antiseptic is in every water so much the better, but be sure to have some in the last basin. Rough, cut and abraded hands are most difficult and sometimes impossible to clean till sufficiently aseptic to be safe to introduce into the abdomen.

Some solvent for fats and oils should be rubbed well over the hand and arms and then an antiseptic applied for the same reasons cited in discussing the cleansing of the operative area. There is more or less destruction of the cuticle by this process and some hands after operating should have this oil replaced by an application of lanolin, vaseline or olive oil to prevent roughness and scaling of the skin; for soft hands are considerable of an asset to any one desiring to do good and aseptic surgery of any kind.

Once the hands are clean no habit is so valuable as that one well formed which makes one feel that the slightest suspicion of touching anything will cause him to again place his hands in the antiseptic bath and rub them thoroughly. Do not touch anything which is not sterilized, for right here in the careless touching of things presumed to be clean is a stumbling block to many. Some workers think that if a thing is clean, touching it can make no difference, but keep constantly in mind that nothing is clean for this work unless sterilized or as near sterile as careful technique can make it and touch nothing not especially prepared for this work. Touch nothing more often than is absolutely necessary.

The procedure of operating varies of course as to the operation to be performed, but here are some general rules to absolutely keep in mind if a uniform good result of all cases is to be expected.

Do not touch any surrounding parts not sterile.

Do not flush the area with an antiseptic. A drop or two is sure to flow on some part not clean and then back just where it should not be.

Do not place too much confidence in antiseptics and expect them to cover a multitude of your sins of either omission or commission.

Do not allow anyone else to touch instruments or dressings about to be used unless he has it as strongly impressed on his mind as has the operator that eternal vigilance of technique is the price of success.

Allow no fluid, not even blood to flow into the wound. If fluids accumulate about a part or in a depression stop and sponge them out and above all things do not allow perspiration from either patient or operator to flow into the wound, it carries much infection.

If you have been so unfortunate as to have had cases of post-operative peritonitis go back over your technique of preparation and operation in careful review to find the mistake. This habit is worth much to you, for it means progress and success.

Place your reliance in asepsis rather than depending upon antiseptics to check infection.

Act and work aseptically, even think asepsis, for it will be rewarded in quicker healing and better results in minor surgery and is essential to successful major surgery.

Aseptic surgery can be performed and is performed but only by eternal vigilance on the part of the operator in forming the habit so strong that it is next to impossible for him to proceed if he sees or feels that there has been the least cause to even suspect contamination with a suspicious article without correcting the fault.

Get the habit, then it is easy.

THE Semi-Annual Meeting of the Connecticut Veterinary Medical Association will be held in New Haven August 2, 1911. Arrangements have been made for a trip by boat to Mansfield's Grove for dinner. Party will leave for the boat, from Dr. Kelley's hospital, 11 Orange street, at 10 a. m., returning about 4 p. m.

SEPTIC ARTHRITIS IN FOALS.*

BY DRs. STEVENS AND SMEAD, YALE, MICH.

This disease is known by a number of synonyms: Joint ill, pyæmic arthritis, navel ill, pervious urachus, etc.

It is now, we believe, recognized to be due to an invasion of a streptococcus and usually makes its appearance from three to fifteen days after the birth of the foal. The infection is generally believed to occur through the umbilicus after birth and arises from the colt being quartered in a stall where there is a considerable quantity of old manure and filth; the manure, etc., being a veritable hotbed for the production of the germ.

From careful observation during the past three years, however, we are led to believe that the infection does not always occur by the animal being kept in filthy quarters, nor even after the birth of the animal. There have been two or three cases come under our observation in the past year of the most virulent form of septic arthritis, where the mare prior to foaling was allowed her freedom in a clean, grassy field; foaling in the same field, the colt never having seen the inside of a barn. Then, again, we have noted a few cases where the disease seemed to be congenital; the little foal at birth being weak and puny, with joints stiff and other symptoms following in close succession. One case especially that we remember, the foal was born with a fearfully enlarged and painful stifle, and it did not place that leg to the ground for some three weeks. There was the accompanying leakage from the urachus, etc.

It is entirely unnecessary to take up your time with the various symptoms that accompany the disease, for we are sure you are all familiar with them. Doubtless many of you have

* Presented at the 1911 meeting, Missouri Valley Veterinary Medical Association, Kansas City.

had stock owners call you over the 'phone and tell you that the reliable old brood mare has become careless and stepped on the foal and that its leg is so swollen that it can only rise with assistance. This is especially apt to be the case if the owner has never been troubled with the disease among his foals previously. so we always make haste to arrive at the scene to redeem the old mare's good name and render assistance to the suffering.

The treatment of septic arthritis resolves itself into two heads: prophylactic and curative; the former, we think, being of primary importance.

This consists in cleanliness of surroundings. If in the barn, see that mother and colt are placed in a bright, airy box stall or even barn floor. Avoid all dark, damp, underground or basement stalls. Lots of good bedding, which should be changed daily, and the stall sprinkled with some antiseptic solution, such as creolin, 1 in 100. The umbilical cord should be ligated with a sterilized catgut or silk suture within one-half inch of the belly, the stump of the cord trimmed with antiseptic scissors, and then thoroughly swabbed with a 2 or 3 per cent. nitrate of silver solution or dilute tincture of iodine or Lugol's solution. This swabbing should be done at least once daily until the stump falls off and a cicatrix is formed. We think were the umbilical cords of all foals treated in this manner that the percentage of cases would be reduced to a minimum.

In the treatment of the disease we must also be very particular in the cleansing of the navel. All purulent and necrotic tissues should be removed. The urachus should be syringed out with one of the solutions spoken of in the prophylactic treatment. Great care must be exercised in passing the nose of the syringe into the urachus and not pass it too far. As doubtless many of you are aware, the bladder in a foal is an elongated sac, the anterior extremity of it extending nearly to the floor of the abdomen or within an inch of it. Consequently, by passing our syringe canula too far, we are apt to inject the solution into the bladder and set up cystitis. This treatment should be followed daily and the stump of the cord well saturated with

the solution until the navel is completely healed down and a cicatrix formed. In our experience we have not found it advisable to ligate the umbilicus after the disease is once established, as unless the cord is absolutely aseptic we have no chance to maintain a proper drainage. I may say at this point that, with us, mare colts seem to respond to treatment far quicker and better than horse colts. We can account for this, perhaps, in the extra length of the urethra in the male.

As a constitutional treatment we have met with good success with the following formula:

℞ Elixir Saw Palmetto and Santal Compound	
(P. D. & Co.).....	36
Fl. Ex. Echinacea, ad., q. s.....	38

Sig. A tablespoonful every two hours in a little mother's milk.

The Elixir Palmetto acts as a vitalizing tonic to the ordinary organs, and as it is eliminated from the system almost entirely through the kidneys, it exerts a soothing and healing action upon the urinary tract and stops the frequent desire to urinate, so prominent a symptom in this disease. The Echinacea is a powerful alterative and exerts a beneficial action.

If pus is present in any of the joints it should be evacuated at once and the cavity cleansed with hydrogen peroxide. A solution of bichloride of mercury (1 in 1,000) may be used as a cleansing agent in such cavities as an after-treatment. All swollen joints where pus is not present should be bathed twice daily with warm water and a mild soothing liniment applied.

Antistreptococcic serum is of late proving of great value in the treatment of this trouble, combined with nuclein and normal saline solution. This should be given in doses of 10 c.c. of the serum intravenously, daily, and 4 c.c. each of nuclein and normal saline solution night and morning. Although our experience with this line of treatment has been rather limited, yet it appeals to me strongly as the proper way to combat the infection; the serum destroying the invading organisms and the

nuclein increasing the number of the phagocytic action of the white blood corpuscles.

Poly-bacterins (A. A. Co.'s) are also producing great results in cases of septic arthritis and other forms of suppuration. One ampule of 2 c.c. should be injected subcutaneously, not oftener than three to five days apart.

We have not given the antistreptococcic serum or poly-bacterins trials in enough and varied cases so that we would care to advance any positively definite opinion as to their curative properties. Suffice it to say that what we have observed has been so encouraging and gratifying that hereafter we shall consider them one of our chief armaments in combating this trouble. We also believe that in localities where the disease is most prevalent it would be productive of excellent results if either the serum or bacterins were used as immunizing agents, rather than to wait until symptoms begin to develop.

In conclusion, we will state that we think, if we as veterinarians are to protect the interests of the horse-breeding and raising industry of the country, it is up to us not to leave a stone unturned in our efforts to combat and control the ravages of this dread malady, which we believe is one of the most serious, if not entirely so, of anything that we have to contend with at the present time in the equine family.

LOU DILLON, 1.58½, foaled a bay colt June 6, sired by Bingen, 2.06¼. This is the fourth foal this noted mare has produced.—*Horn and Hoof*.

WEST VIRGINIA UNIVERSITY has recently discontinued its course of instruction leading to a veterinary degree, and hereafter Assistant Professor Lueder, D.V.M., a Cornell University graduate, will have charge of the veterinary courses to be delivered in the college of agriculture. This school was organized and established by James A. Waugh, who taught about forty students, and later resigned, the students finishing in various colleges. F. R. Whipple, M.D.V., was later elected Dean and conducted the course for several years and graduated four students as Doctors of Veterinary Science.

SANITATION.*

By J. W. BUNKER, M.D.C., WINTERSSET, IOWA.

Cleanliness and ventilation of dairy stables is important, if for nothing else than the dissipation of pathogenic bacteria, or undesirable odors.

In a large per cent. of cattle affected with tuberculosis the bacillus is constantly being passed with the faeces, and any of the many ways this may get into the milk offers an easy way of distributing the dreaded disease to both man and beast.

Probably the only way this condition can be eliminated is by cities and towns enacting and passing ordinances compelling all who sell or deliver milk in said cities and towns to comply with strict sanitary measures and inspection.

In a great many places a little education along this line in the form of lectures and demonstrations will be necessary, and a great deal of this is going to fall on the local veterinarian.

We may not be able to do much by ourselves, but with the aid of local physicians and boards of health a great amount of good can be accomplished.

It is often well to talk with the dairymen and advise them as to what kind of barns are best suited for their purposes, the care of their herds, etc., and by showing them we are interested in their work, very often they will become interested in sanitation and see that it is for their good as well as that of their patrons, and they themselves, help us in the great work.

Another subject that should interest the veterinarian is central and municipal abattoirs. We who live in the small cities where inspection of meats is not required know very little about what kind of meats we are eating, but take just what we are given.

The butcher's morals many times are not apt to overburden him, and if he should find a tuberculous animal, or one suffering

* Presented at the Iowa Veterinary Medical Association, Marshalltown, January, 1911.

from any other disease and its carcass should be in fit shape physically for the block, little would he care for us so he could get his money out of it.

Meat may be perfectly healthful and in the best of condition when first killed, but by being handled by filthy hands, by being allowed to hang in filthy slaughter houses and coolers, and in shops where dirt, dust and flies abound, it cannot remain in a fit condition for human consumption very long.

In the packing centres where inspection is maintained animals that show evidence of disease, are either sold subject to post mortem inspection, or else at so low a price that the producer will try to get rid of them at the local butchers, and by killing them on the farm and taking the dressed carcasses to the shop such meat can be worked off at good money to both producer and local butcher.

Since the small man gets his supply of butcher stuff from dairies and such as he can buy in small lots, he is more liable to get poorer and more inferior animals than the packer who gets his supply from the range and from our Iowa feed lots, and thus more liable to find diseased animals.

The per capita consumption of meat in this country is about 180 pounds, and these meat-producing animals are subject to diseases, which not only renders their flesh unfit for human food, but is also capable of transmitting disease through its consumption to man; hence the great importance of sanitary inspection.

Central abattoirs and inspection has made but little progress; inspection only being practiced in the packing centres. In our own state of Iowa to-day only a small per cent. of the people are eating inspected meats. A large per cent. of the meat killed under inspection is exported, so we get little benefit out of it at home. Does it seem right for the government to spend such large sums of money for federal inspection, when so few people are benefited by it? We have no meat inspection for what we consume, while federal laws require an inspection of meats shipped out of the state. Again in this, public education is neces-

sary, many people not realizing the danger they are in are contented to let things be just as they are. Should we not as veterinarians, take it upon themselves to see what we can do by giving talks before agriculture societies and other meetings, and by writing articles for publication in our county papers, take up these subjects, and I believe in a short time we can get legislation or at least city ordinances that will help us out of this great difficulty.

Now gentlemen, I have not taken up these subjects in full, but it may open up the matter for discussion.

In the discussion of sanitation we will briefly take up only a few points that come under this subject. Milk and dairy inspection seem to be one of the most needed reforms of the present day, especially in the small cities and towns where just anybody may sell and deliver milk to the people regardless of cleanliness or sanitary conditions. Milk is a most excellent media for the growth of bacteria, and under the ordinary care has many chances for becoming contaminated with dirt and filth from the barns, from the cows themselves, from containers, from the milker. It has been conclusively proved in a number of instances that the mortality among children from birth to one year of age can be greatly reduced by furnishing them with milk from healthy cattle and sanitary dairies. In the City of Washington, D. C., between the years 1895 and 1906, the infant mortality from intestinal diseases was reduced from 168 to 97 per 100,000 population. Numerous instances are found where typhoid outbreaks can be traced directly to dairymen's homes or those of their helpers, where typhoid has existed. (†)

Records show where 600 outbreaks of typhoid can be directly traced to having been carried by milk, where there are a number of other cases where the evidence is not quite conclusive. Of 878 cases of typhoid collected and studied, 38.5 per cent. were evidently milk borne, and usually the fault is either the producers' or the dealers'. This same report gives in detail 125 outbreaks of scarlet fever and 57 outbreaks of diphtheria, which can be directly traced to milk supplied by unsanitary dairymen.

† Bulletin No. 41, Public Health and Marine Hospital Service of the United States.

PARTURIENT PARESIS—PARTURIENT APOPLEXY—MILK FEVER.*

BY R. EBBITT, GRAND ISLAND, NEB.

When I look back over a period of thirty years and see that during the first twenty years I had some of the very best dairy cows die from parturient paresis, while I looked on helpless, I feel somewhat ashamed of myself.

Professor McCall, of the Glasgow Veterinary College, taught his students (and I was one of them), that it was apoplexy. His theory was that the blood that went to nourish the fœtus was thrown into the circulatory system after parturition, causing a congestion, and nearly always an effusion into the brain structure or cerebrum. This theory looks plausible, but will not bear much investigation.

Professor Williams, of Edinburgh, whose works were the standard ones in the English language, for years and years defined it as a parturient disease, characterized by suppression of the lacteal secretion congestion of the brain and apoplexy.

Do you wonder with such teaching that we English-speaking students were such numbskulls, or, as you call it in this country, bone-heads, for their treatment was worse than their theory.

After returning to Ireland and practicing there, I found that Mr. Dunlap, a veterinary surgeon in Belfast, was using chlorate of potash in 4-ounce drenches, and was having some success. I must say I followed the treatment I was taught at college, and with little or no success. It was bleed, stimulate by whiskey, and

* Presented at the January, 1911, meeting of the Missouri Valley Veterinary Medical Association.

if the animal could swallow, to give a large dose of Epsom salts. It is needless to say nearly all of them died.

I sometimes think that perhaps the amount of oxygen in the chlorate of potash was the reason why Dr. Dunlap was fairly successful; and by the way this was the gentleman who invented the pneumatic tire and has given his name to it.

I never saw a case occur at first calving, and very seldom at the second, but after that all good milch cows are liable to take it. I cannot recall having ever seen a poor milker subject to this disease. I do not know what theory to advance why this is so. Some say it is a toxine formed in the mammary gland, some say differently. Whether we are right or wrong in our theories, at all events we are now successful in the treatment of this condition. Floating around us in unlimited quantities was the very element to effect a cure, and yet how ignorant we were of the fact. Every veterinarian acquainted with me knows how little belief I have in medicines, and I must say the control of this condition is not due to medicines.

I do not want to deal in extravagant expressions regarding air, water and sunlight, but I will back them any time against the old stereotyped system of drugging.

I want you to understand I am no Christian Scientist as some have charged me with being, but I believe this and other fads have gained a foothold through the pretensions of the medical world, and the inability to make good a number of these pretensions. I do not discard the use of drugs, but the blind belief that some people have in them is ridiculous.

Treatment.—There is hardly any necessity in giving it for everyone knows what it is. Simply inflation of the udder with air and allowing it to remain at least 20 hours before milking out. I saw cows go down the second time when milked too soon. The faeces are always dry and covered with mucus, in fact, it looks strange this constipated condition could arise so quickly. To relieve this I give an injection of a gallon of tepid water, and as a rule the cow is on her feet in a few hours. No heart stimulant, no medicines by the mouth, simply air and water.

PNEUMONA IN CATTLE.*

BY S. H. GALLIER, NORMAN, OKLAHOMA.

Cause.—The bovine races are more subject than the horse to fibrous degeneration of the lungs, mainly because there is less tendency to suppuration and also because the excess of connective tissue in the organ makes a very favorable basis for the formation of fibrous tissue. It may succeed almost every form of pulmonary inflammation, fibrinous pneumonia, broncho-pneumonia, inhalation pneumonia, lung plague.

It was not noticeable in this locality until a week or so after the cattle had been put to the stalk fields. In a bunch of 20 or 30 head sometimes there would be 5 or 6 develop this disease. On examining the stalk fields one would find many faulty small, wormy and very dusty ears.

Symptoms.—A persistent cough, dry, rarely moist, roused by driving or pinching the back; hurried and labored breathing, wheezing or sibilant rales in the chest, a reduction of the percussion resonance over given areas, with increased or even drum-like resonance around it; dry withered hair sometimes erect on back, hidebound, dry muzzle, drooping ears, slight tympanitis, constipation in the first stage of the disease and in the light forms.

Post-mortem.—Shows only the lungs and mucous lining of the trachea affected. When the animal dies soon after it becomes affected, only a hemorrhagic condition is found throughout all the lung tissue, and if the disease has been in progress for 15 days, there will be found pus cavities here and there through all the lobules. The pus from these places is somewhat thinner and lighter in color than the common abscess pus.

Course.—Varies from 3 to 30 days, the first 5 or 6 days is the most dangerous period; after 9 days there is but little danger.

*Presented at the Semi-annual Meeting of the Missouri Valley Veterinary Association, Kansas City.

Treatment.—First place the animal in a well-ventilated warm stall and cover with blanket. To one quart of warm water, add 2 pounds of magnesium sulphate and 1 ounce of turpentine and give in form of drench, and if bowels do not move freely repeat in twelve hours.

Also give every hour nux vomica, 1 drachm.

Digitalis fluid extract, 10 minims.

Aconite fluid extract, 10 minims.

Until fever is reduced feed lightly of bran, oats and alfalfa hay.

JUST before closing our forms, the following is wafted to us from far-off Egypt, from the pen of Dr. Aghion, who is known to our readers through his contributions to our pages from time to time: "The REVIEW is a very welcome monthly periodical that I cannot possibly do without; so it gives me pleasure to enlist my hearty support in the renewal of my subscription for the current year; at the same time, congratulating you on the success the REVIEW has been making. Believe me, I am yours truly, etc."

CLASS OF 1901, NEW YORK AMERICAN VETERINARY COLLEGE HAVE A REUNION DINNER.—On the evening of June 7 the Class of 1901 celebrated the tenth anniversary of their graduation by holding a banquet at Healey's, in New York City. The entire class was present except one member who had died, and for whom a chair was placed at the table.

The members present were: Dr. W. C. Miller, New York, N. Y.; Dr. R. T. Bose, Troy, N. Y.; Dr. C. J. Jones, New York, N. Y.; Dr. F. Werner, New York, N. Y.; Dr. I. Wertheimer, Brooklyn, N. Y.; Dr. J. S. Morris, Pennsylvania, and Dr. J. Serling, New York, N. Y. The absent member who had passed the great divide, and for whom the chair was left vacant at the table, was the late Dr. D. J. Johnson, New York, N. Y. At the close of the dinner a resolution was passed to hold one each year.

INDUCED ABSCESSSES—BISMUTH PASTE.

BY CHAS. D. FOLSE, D.V.S., HOUSTON, TEXAS.

The use of the trocar and canula to relieve flatulence has become very unpopular among practitioners because of the possibility of abscess formation. The cases which most need the trocar are those in which it is impossible to observe the necessary precautions, and in many of those in which every precaution is taken an infection may result from infective material off the withdrawn trocar. These abscesses often become difficult to heal and at best create dissatisfaction on the part of the owner.

The employment of bismuth paste in the treatment of fistula suggested to us the probability of favorable results from that mixture in induced abscesses. Just as soon as there was evidence of pus formation, the nozzle of a syringe filled with bismuth paste was inserted into the opening and the paste forced into the cavity. In all those cases in which the external opening was small enough to retain the paste the results were favorable. In fact, if the paste was prevented from escaping, its introduction marked an immediate obstruction to the progress of the abscess.

The paste is made by mixing one part of subnitrate of bismuth with two parts of petrolatum. A large glass syringe is preferable for introducing the mixture into the opening. The piston being removed, the paste can be forced into the barrel with a spatula. Replacing the piston, the syringe is placed in warm water till the paste liquefies. The nozzle of the syringe is placed in the old trocar opening and as much of the paste forced in as is possible. The finger held over the opening of the wound for a minute after the syringe is withdrawn aids in the retention of the paste.

If this bit of information can be of benefit to any of our brother practitioners to lessen the objection to the use of the trocar, we feel there will be restored to them a valuable asset in the treatment of flatulence.

REPORTS OF CASES.

THE DIAGNOSIS OF GLANDERS BY THE PRECIPITATION REACTION OF KONEW.*

BY W. L. BOYD, KANSAS CITY, MO.

This method for the diagnosis of glanders was recently brought to the notice of the B. A. I. in a preliminary report submitted by Dr. D. Konew, director of the Bacteriological Laboratory in the Veterinary Institute of Charkow, Russia. It is based upon the fact that the precipitations are formed in the bodies of infected animals from the time the infection first occurs, and, probably at an earlier period than the other antibodies, such as agglutinin, opsonin, etc. Our knowledge of these antibodies is extremely meagre, due to the fact that they exist in minute quantities and are diffused throughout the body tissues.

Even when the smallest traces of these precipitins are present in the blood serum of glandered horses, Konew states that with a concentrated solution of glanders bacilli he is able to find even these slight traces and thereby obtain a positive reaction to his test.

The method by which mallein is prepared, young cultures of the *Bacterium mallei* of two-day-old growth on glycerine agar are dissolved by adding to each tube about 10 c.c. of an 8 per cent. solution of antiformin. Antiformin is a patented mixture made by adding sodium hydrate to a solution of sodium hypochloride. This solution will dissolve the bacterium mallei in two hours' time, at room temperature. If the culture dissolves quite rapidly Konew adds to this solution another washed culture of greater density in order to obtain a concentrated solution of glander bacilli. This solution is at first strongly alkaline, but is neutralized by adding a few drops of a 5 per cent. solution of H_2SO_4 . This solution is then filtered, first by ordinary filter paper, and then by the Berkefeld filter, in order that the fluid will be homogeneous without any undissolved bacilli being present. This fluid constitutes the most component part of the pre-

* Presented at the Missouri Valley Veterinary Medical Association, Kansas City, January, 1911.

precipitation reaction and to which Konew has applied the name mallease.

According to its discoverer the precipitation test is carried out in the following manner: The blood taken from the jugular to be examined is collected in a test tube and allowed to remain at room temperature. The separated serum which is obtained in this manner is the second necessary fluid to be used in this test. In order to produce the reaction one or two c.c. of mallease is poured into the bottom of a clear test tube; the amount of the mallease to be used must be determined by the size of the tube. The serum of suspected animal is then taken up by a pipette, which is introduced into the tube containing the mallease, in such a way that the two fluids will not be allowed to mix, when the pipette reaches the bottom of the tube, then the serum is allowed to escape slowly, and as it has the higher specific gravity the mallease is caused to float upwards; after the serum has escaped the finger is again placed over the pipette and withdrawn carefully, so that the fluids remain unmixed.

In case of a positive reaction, a white ring will develop at the point of contact of the two clear solutions, as a result of the precipitation formation, which is well marked in good daylight, when the tube is held before a window against some dark object. The ring usually appears immediately in severe and chronic cases of glanders; in less marked affections when the lesions are only slight, the precipitation reaction appears only in 5 to 15 or 20 minutes. In carrying out this method of diagnosis here I have followed Dr. Mohler's suggestion of using a few drops of methylene blue for color contrast, which makes the ring appear more distinct. This white, cloudy ring is somewhat suggestive of the white ring formed by the presence of albumen in the nitric acid test of urine.

The two important factors which make this test a practical one are (1) the very simple technique required, and, (2) the fluids used are without danger to the operator. Konew has applied this test to 100 horses which were simultaneously tested by the agglutination test and mallein, while in most cases the three tests corresponded, at the same time the precipitation test had the preference, in that it did not give doubtful results; that is, in the cases in which the agglutination appeared in col. 1 to 500, the precipitation test gave the positive reactions in certain cases of glanders in which the lungs and mediastinal glands or

lymph nodes showed involvement without other tissue changes. From these tests Konew draws the following conclusions:

I.—By using the concentrated solution of glanders bacilli (Mallease) the precipitation test can be applied as a diagnostic method even in the earliest stages of glanders.

II.—As a result of the simple technique and the short time required for examination (about one hour), the precipitation test should be preferred to any other method of diagnosis.

III.—Blood from the horses to be examined should be taken before the mallein is injected.

IV.—The solution of mallease must be titrated in accordance with other standard serums before they are given out in practice, and therefore they should be prepared in bacteriological laboratories.

DIAGNOSIS OF GLANDERS BY THE PRECIPITATION TEST.

Case No. 1. Animal bay gelding in a rather poor condition, rough coat, submaxillary lymph nodes indurated and hypertrophied, cutaneous nodules along the lymphatic channels inside of the hind legs. Precipitation test gave a positive reaction in about 10 minutes. Reacted to mallein test.

Case No. 2. Animal belonging to H. C. Walker, 3030 East 19th street, was noticed to be rapidly on the decline; besides the emaciated condition there was a sticky tenacious micopurulent discharge from both nostrils; was given precipitation test in which there was a positive reaction, was checked on by mallein which gave a typical reaction.

Case No. 3. Bay horse in seemingly fair condition. The nasal mucous membrane showed ulcerations and there was a slight discharge, which was sanious in character. Precipitation test given on December 31, 1910, which was followed later by mallein test. The precipitation test formed a white ring at the point of contact of the two fluids immediately. Mallease test also typical.

Case No. 4. Gray horse. A mate of the one just given. This case proved to be a very interesting one; clinically, it seemed to be the more severe case, the ulcers on the nasal mucous being more pronounced, yet, upon making a precipitation test, the white, cloudy ring was not very distinct and appeared in about 20 minutes. Perhaps this, a typical reaction, was due to faulty technique. I conducted partial autopsies upon both of these animals and found ulcers invading both the nasal mucosae and sub-

mucosae. Mallein test gave a rather typical reaction. This horse had a high preliminary temperature and would not have ordinarily been given the mallein test.

Case No. 5. Date, January 2, 1911. In this case the serum was sent in from out of town for diagnosis. The white ring appeared almost instantly, making the reaction a positive one.

Case No. 6. Serum from three horses sent in by Drs. Hoag and Swift, of Fort Worth, Texas.

No. 1. Black mare, Emma, gave a positive reaction to the precipitation test, also reacted to the agglutination test.

No. 2. Colt Patchen gave only a slight reaction to the precipitation test and did not react to the agglutination test.

No. 3. Brown horse gave a positive reaction to the precipitation test, also gave a reaction to the agglutination test.

I have also carried out this test on animals that were suffering from various diseases, such as fistulous withers, poll evil, cartilaginous quittor, exuberant granulations following wire cuts and horses that were apparently normal in every respect, and in no instance have I been able to find even the slightest trace of a white, cloudy ring at the point of contact of the two fluids.

TRYPANBLUE IN INFECTIOUS ANÆMIA.*

BY A. W. WHITEHOUSE, V.S., WALDEN, COLO.

Infectious anaemia of the horse clinically resembles a class of diseases which have been proved to be protozoan in origin; the virus is filterable in some stages, and so far the organism has not been identified. With these premises it was worth while experimenting with a remedy that is a specific cure in two undoubtedly protozoan diseases.

G. H. F. Nuttall, of Cambridge, England, reported over a year ago on the use of this remedy in the South African piroplasmiasis of cattle, and in the similar disease in dogs; the results were invariably successful where the patients were not in the last stages. These results were obtained from both natural and inoculated cases in South Africa, and from both imported and inoculated cases in England in both classes of animals.

I used Nuttall's technique in the first (successful) case and raised it slightly in two others—both failures.

* Presented to the 1911 meeting of the Missouri Valley Veterinary Medical Association at Kansas City.

Case No. 1 was presented in June, 1910, before the trypan-blue had reached me. She was a large dun mare, about 8 years old, with a foal by her side, and from the history had probably been infected for 7 or 8 months, one of last year's crop. She showed intense anæmia, swaying gait, a few petechiæ in the vulva, no œdema, good appetite, weak pulse about 65 to 70, moderate jugular pulse, and gradually increasing emaciation. I carried her along for about a month on my usual treatment, arsenic, calomel, tartar emetic, nux and cinchona; (she was getting about 15 grains of white arsenic daily) and she gradually went downhill. At the same time I put a brown mare in the same ownership, but not nearly so badly affected, on the same treatment.

About July 15 I gave her a dose of trypanblue, using Nuttall's technique for cattle. Three grains of the dye are dissolved in 200 c. c. of cold, sterilized water. The solution is brought up to body temperature and injected at one time in the jugular vein, minute aseptic precautions being observed.

The result was very alarming, the mare became uneasy and excited, lying down and rising, simulating abdominal pains. Micturated frequently, the urine being rose-colored, and showed a pulse about 100, hard and full, the temperature an hour later being 105. The staggering gait disappeared.

I had an opportunity to see her the next morning, when the same set of new symptoms prevailed in a lesser degree, but as she is very inaccessible I have not seen her since. The owner, however, reports that during the day following injection, typical swamp fever symptoms returned, and that for a week they were worse than ever before. After this she began to improve, and he considers that by October she had made a perfect recovery. Treatment of any kind was stopped on both mares, and the brown mare which had not received an injection died at the end of September.

Judging that the severe symptoms following administration of the drug were due to solid particles obstructing capillaries, I prepared some more as follows: I dissolved 3 grains of trypanblue in 200 c.c. normal salt solution, then filtered and finally sterilized in the bottle from which I injected it.

Case No. 2 was acute. I saw him on November 3, 1910, when he had been affected 10 days, and both the owner and I gave him only two or three days to live. A chestnut saddle gelding, 7 years old, mucous membranes intensely anæmic, without petechiæ œdema of prepuce and abdomen, could barely keep

his balance and had lost appetite. Temperature 104.5, very marked jugular pulse, and a thrilling pulse at the jaw about 90.

I gave him 125 c. c. of the filtered solution by the jugular and it did not seem to have the smallest effect of any kind. He died on the 6th.

No. 3 was a hyper-acute case. The owner has a number of horses running in a meadow without feed, and they have lost some flesh, but are strong. This gray ten-year-old gelding was noticed on December 31, 1910, to have lost more flesh than the others, was roped out of the bunch and led up to me for dental work. He came up on the trot and was bright and active, and I had finished filing his teeth (which needed the work), before I noticed anything amiss. His mouth was quite pale and so was the conjunctiva, the Schneiderian (as often occurs in these cases) being a pretty healthy red. Temperature 100.5, pulse 65, strong with a thrill. In the long hair forward of the prepuce I found a little œdema. I sent word to the owner that I suspected him and would like to take him on experimentally.

The owner did nothing on New Year's Day, but sent for me on the 2d, when the case had made astonishing progress. Temperature 104.2, pulse 88, respiration 18 and very labored. Staggered very badly. Peripheral blood examined gave hæmoglobin by Tallqvist 40 per cent., erythrocytes, 1,265,000; creatin, micro and myelocytes. Differential count: lymphocytes, 37; large mononuclears, 23; polymorphonuclears, 38; eosinophiles, 2.

Smears, etc. were taken with very great difficulty as we had a temperature of 20 to 40 F. during the rest of the animal's life. No petechiæ were observable now or during the disease.

The next day I gave 200 c. c. of the filtered trypanblue, the only effect good or bad being to run the pulse up from 94 to 98 and he died on the night of January 4, the fifth day after I had thought him well enough to file his teeth, and the third day of acute symptoms. I took some smears from the jugular at the time I injected the trypanblue, getting a differential count of lymphocytes 10.5, large mononuclears 14, polymorphonuclears 73, eosinophiles 1, marts 1.5, but would not risk my blood counter again in the cold. The horse also received nuclein sol. during the last two and arsenic during the last three days. The desperate cold must be my excuse for avoiding an autopsy.

The smears from this horse taken both days were sent to Dr. Kaupp for examination.

In summing up I feel tolerably certain that No. 1 pulled through solely owing to the trypanblue, as I have never before

seen recovery when arsenic failed. Whether the want of effect in Nos. 2 and 3 was because of the filtering, or because their cases were acute, and whether swamp fever is one disease or five or fifty, are questions that are too much for me.

CEREBRO-SPINAL MENINGITIS IN THE DEER.

By W. T. HUFNALL, V.M.D., Paris, Texas.

As far as I can ascertain there is no record of the disease being found in our fleet and light-footed little animal, the American deer, so in presenting this article with the accompanying photograph, I feel that it will be of some interest to the reader, not, however, from a practical standpoint, but mostly the peculi-



arity of finding the said disease in the deer family. I wish to state that my below mention of the cicatrix, contraction of masticatory muscles and other tetanus symptoms was to show the comparison of the symptoms of this disease at its onset with those of tetanus; the symptoms at the onset were typical with those of tetanus with the exception of the fixed condition of the membrane of nictatans; and, with great difficulty I eliminated tetanus in making my diagnosis. On May 13, this year, I was called to see a pet doe deer; on arriving found her in a recum-

bent position; pulse and respiration normal; temperature slightly elevated and congestion of membranes; grinding of teeth, marked hyperesthesia, and dullness. A cicatrix was found on right hind limb, but the wound was completely healed; she was unable to stand, the legs collapsing under her on being lifted to a standing position; there was no trismus and the mouth could be opened, although not so easily as normal; partial contraction of masticatory muscles and extremity muscles; complete contraction of neck muscles; the cervical region being fully incurved backwards; paroxysms with intervals and on touching. The appetite was normal from the beginning; diet consisted of bran mashes, lettuce and cabbage leaves; first improvements noted on sixth day after seeing patient; relaxation of neck muscles and usage of head and neck in upright position; and now being able to sit up on haunches on being placed in that position. Up till this period she had lain flat on side, having to be turned from side to side each day; she would sit up on haunches probably two hours and then would fall over flat again; no use of legs whatsoever. I have noticed several articles on this disease in the dog, where upon turning the head to left, the tail would reverse to right and vice versa, but this condition was not noted in the deer. My treatment consisted of putting patient in well-ventilated and clean box stall, removing to open air on cool of evenings; at onset gave magnesium sulphate in purgative doses and then lessened same to the laxative dose; bromide of potassium ʒii , iodine of potassium gr. xx, gave this as a drench three times a day. Cold applications to head and along heated portions of spine, stimulating liniment to feet and limbs and massaging of same. The deer is now in the stage of convalescence and now am confining my treatment to tonics alone and nourishing foods; she is rapidly regaining use of limbs and I now await a complete recovery.

VARICOSE VEIN.

By WM. P. FERGUSON, M.D.C., Grenada, Miss.

In this article I shall give an account of a case sent to my office for examination about March, 1909. Diagnosis was varicosis, though somewhat in doubt at that time. The owner was informed that treatment, in my opinion, would not be very satisfactory. The animal was returned to the farm and after about a year was sent back the second time, swelling very much enlarged. I lanced the swollen parts at several different places and

injected tr. of iodine in the openings. The patient was again sent back to the farm.

HISTORY.—Bay mare mule, 10 years old. Weight about 900 pounds. Raised on Mr. R. W. Jones' farm, about six miles from this city. Swelling when first seen by the writer showed to be



about the size of a man's fist doubled, on the right leg on the internal saphenic vein, half way between the stifle and tarsus joints.

The owner does not remember how long this trouble had been existing before he first sent the mule to my office, but thought about three or four months.

The mule seems to be in normal condition in every way except this limb and has been doing farm work up to about a month ago. Runs and plays in the pasture with the other mules and horses. This mule is to be offered free to the Chicago Veterinary College for clinical purposes.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

ADVENTITIOUS SEVENTH LOWER MOLAR—OZENA—EXTRACTION—DENTAL FISTULA [*H. C. Stewart, Lieut., A.V.C.*]—Chestnut Australian mare had a chronic stinking discharge on off nostril. As it continues, the mare is cast and mouth examined with electric torch. "There was found a seventh molar on the off side of the lower jaw, protruding about one to two inches above the wearing surface of the other molars and penetrating the gum and bone of the upper jaw behind the sixth molar of the same side. It had worn the posterior surface of this latter tooth like the table of a molar." Having no forceps to extract, an attempt was made to chip it off, but without other result than to get the tooth loose and make its drawing possible with an incisor forceps. The maxillary bone was explored and found free from pus. Wound dressed with solution permanganate of potash. Discharge kept up, and after one week the horse was cast again to have further examination. The maxillary sinuses were open both as well as the frontal, and thorough drainage established after removal of some diseased material. The wound of the upper jaw did well. Then an abscess came in the intermaxillary space. Open, it gave escape to stinking discharge, revealing disease of the bone of the lower jaw. A dental fistula was the result, which was treated with iodine solution. Diseased bone was removed from the sinus. After some time, however, the holes of the trephine healed, the cavity of the supplementary tooth, which had been cleaned daily, filled up, the discharge gradually subsided, the fistula closed and convalescence set in. Some short time after, the animal got a severe kick on the near hock; he had otitis, and on account of his age and condition was destroyed. Post mortem revealed lesions of severe purulent alveolar periostitis on the off side of the maxillary. There was rarefying otitis below the cavity. There were four abnormal foramina on the inside plate of the bone and

exostoses round them. There was also extensive necrosis of the superior maxillary sinus.—(*Veter. Record.*)

CARIES OF FOUR UPPER MOLARS—EXTRACTION—RECOVERY [*same author*].—A gelding had a punctured wound of the off foreleg. He is in a very poor condition and, as customary in similar cases, his mouth is examined. The third and fourth upper molars have caries. When instruments are ready the horse was cast, chloroformed and his mouth examined with acetylene and electric lamp. The crowns of the third molars were diseased. The process of caries extends to the roots, which are split lengthways. Very little of the crowns of the fourth molar remained, but what there is protruding above the gum is black and carious. The teeth are firm in their alveola and the tooth of the near side is more diseased than that of the off. The third molars were extracted with forceps; the fourth had to be punched out of the jaws. Treatment: Alum in drinking water, sloppy food, cavities syringed out and plugged. Food removed from the cavities after each meal and then irrigated afterwards. Bad smell of necrosed bone persisting, the horse was cast again and more pieces of necrosed bone removed. Strong antiseptics were prescribed. Finally the horse did well after this and in a month was in good condition. No one would suspect that he has had four molars extracted.—(*Ibidem.*)

• **AORTIC ANEURISM IN A HORSE** [*Wm. Hunting*].—A five-year-old light vanner took two months to recover from an attack of catarrhal affection. He was then sent out, did two days of easy work, and was returned to the stable weak and unfit to work. The next morning he showed distressed breathing, laboring hard and with some slight roaring noise. He died while preparations were being made to tracheotomize him. Post mortem disclosed an immensely enlarged heart and a great distension of the aorta. The posterior aorta for eleven inches from the main trunk is much dilated, and measures eight inches in diameter. The walls of the blood vessel are thickened and their smooth interior is replaced by a wrinkled, fibrous tissue resembling cicatricial tissue. There are large yellow clots of fibrin adherent to the coats of the vessel. The anterior aorta measures six inches in diameter and practically occluded by yellow and red clots. Its inner surface is like that of the posterior aorta. Walls of left ventricle are three inches thick. Valves, pulmonary veins and artery were normal.—(*Ibidem.*)

TEMPERATURE IN QUARTER EVIL [*R. Percy Jones*].—To answer inquiries made on the question, the author has sent a circular to stock inspectors requesting them to take the temperature of all animals suffering with this disease and to send smears of blood or easily accessible lymphatic glands near the muscles attacked.

The records obtained show that the temperature gathered from seven cases varied between 102° and 104.5° F. Two other isolated cases gave a temperature of 105° in one and of 106.2° in the other. In all those cases the true nature of the disease was confirmed by microscopic examination.—(*Veter. Record.*)

MELANOTIC CARCASS [*W. J. Young, M.R.C.V.S., D.V. S.M.*].—It was in that of a well-nourished red and white cow. The lungs were studded all through with large, blackish-blue areas. The liver had numerous black deposits in Glisson's capsule. The subcutaneous, fibrous and connective tissues of the back were infiltrated with black, pigmentary deposits and the spinal cord was as black as ink throughout its entire length. No coloration in the kidneys. The pleura and peritoneum had black streaks. The lymphatic glands were affected. The carcass was passed, and the butcher reported that he had received no complaint from his customers who had used it.—(*Ibidem.*)

SPLINTS FOR A HORSE'S NECK [*T. Salisbury Price, M.R. C.V.S.*].—These are recommended by the author in cases of torticollis in horses. The apparatus is described as follows: "There are two splints strapped to the neck and attached to each other above and below the neck, with two fairly long bolts on the thread of which are thumb-screws. Before applying the splints, the horse's neck is wrapped up with thick flannel round it. The head is held up and the splints applied by removing either the upper or lower bolts. They are then tightened up with the thumb screws, fairly tight, the flannel preventing under local pressure and any necrosis of the skin. The screws are slightly tightened from day to day. When properly applied, the head is held up automatically and œdema is prevented. It is better to place the animal in slings."

The author has had very good results in several cases, the apparatus being left in place about three weeks.—(*Veter. Journal.*)

FRACTURE OF THE FOURTH AND FIFTH SACRAL AND FOURTH, FIFTH AND SIXTH LUMBAR VERTEBRAE [*Capt. J. A. Nicholas, A.V.C.*].—Horse ridden in a race makes several mistakes and at last had to give it up. He is walked five miles to a railroad station; had one fall but got up, and when he gets home is very stiff and shows great tenderness on the loins. In the afternoon he drops down and is unable to rise, having complete paralysis of the hindquarters. He dies. Lesions found at the post mortem: Longitudinal fracture of the spine of the fourth sacral and body of the fifth sacral vertebrae; fracture of the spine of the fourth, fifth and sixth lumbar, of the transverse processes of the fifth and fourth lumbar on the near side, and of the neural arches of the fourth and fifth lumbar. Blood in the abdomen. Right kidney and posterior aorta ruptured. (*Veter. Journal.*)

FRACTURE OF THE FLOOR OF THE PELVIS [*Capt. G. Clive Webb, A.V.C.*].—Aged chestnut mare, while cantering, makes a misstep; is very lame on the near hind leg. After a short rest she is started home apparently sound again and suddenly the lameness returns, the animal being unable to bear any weight on the near hind leg. With great difficulty she is walked home and put in slings on her arrival. Examined, she shows a slight bloody discharge from the rectum; she is lying in the slings and puts no weight on her lame leg. There is a large swelling on the left ischial tuberosity which extends down to the vulva. The angles of the haunch are on a level. Crepitation is felt by forcible flexion of the leg. Rectal examination is negative. Fracture is diagnosed. Mare put on observation for a few days, but as no change for the best is manifested, she is destroyed. At the post mortem there was found an oblique fracture through the neck of the ischium not involving the acetabulum, also a fracture of the pubis. There was, besides, a triangular piece of bone broken off the brim of the pelvis, involving both pubic bones at the symphysis.—(*Veter. News.*)

A PECULIAR ACCIDENT [*Capt. R. Porteous, A.V.C.*].—Concise record of an officer's charger found dead in the stable having been badly cast. He had a dislocation of the atlanto-occipital articulation.—(*Vet. Rec.*)

TUBERCULAR MENINGITIS IN A HEIFER [*Ainsworth Wilson, F.R.C.V.S.*].—Tested with subcutaneous injection of tuberculin,

this heifer gave a negative reaction. Four months after she gave a doubtful reaction, which three days after is followed by a positive, with local ophthalmic test. One month after positive reaction is again obtained with ophthalmic method. A week later subcutaneous method is negative and a secondary conjunctival is negative also. Two weeks after all this, the cow has lost her appetite, carries her head sideways to backward angles, high, low, or on one side; she has periods of excitement. For about three weeks she shows a series of symptoms quite suggestive—widely dilated pupils, blindness, retinal blood vessels injected, moves frequently in circle in her stall, high stepping of her forelegs, difficulty in rising, staggering gait, convulsive motions when laying down, etc. She is bled to death. Autopsy: Extensive tuberculous lesions in the lungs, thoracic glands, pleura, diaphragm, peritoneum, liver, spleen, abdominal glands. Heart and urino-genital tract free from lesions. In the brain, miliary tubercles scattered over the pia mater, especially on the corpus callosum and on the cerebellum. There are some also on the crura cerebri. Large ante-mortem clots at the base of the brain, over the medulla and the pons. No fluid in the cranial cavity.—(*Veter. Record.*)

PAROTIDITIS [*James M. Richardson*].—Great Dane had a swelling on the neck diagnosed goitre. The next day it is a large unilateral swelling of the parotid; a plain case of parotiditis, or mumps. Loss of appetite, high fever, temperature $104.4/5^{\circ}$, respiration 24. After a few days the dog died. Treatment had consisted in hot fomentations, mild liniment; diet of meat juice, brandy and milk. Pilocarpine was given once. On the sixth day the swelling was emptied of a pint of thin, bloody, stinking discharge. At the autopsy the pericardium was found adherent to the pleura and diaphragm in several places.—(*Ibidem.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

SUTURE OF THE MAXILLARY BONE—RECOVERY [*George Petit*].—Valuable percheron colt of three years, in some way or another has a fracture of both branches of the lower maxillary just back of the neck of the bone, at equal distance of the first molar and corresponding corner incisive. The free extremity

of the bone hangs down and a large clot of blood fills the gap between the fragments of the fractured bone. The animal is very valuable and the owner very anxious for treatment. The animal was cast on the right side, the wound cleaned and disinfected. A small incision was made on each side and about two centimetres from the fracture, intersecting the skin, muscles under and the mucous membrane, so as to expose the bone. With a small gimlet the bone was perforated obliquely from downwards upwards, that is, from the inferior border of the maxillary towards its superior or buccal, thus making two tracts parallel to the fracture. Through the buccal opening of the front tract a piece of strong wire was introduced; it came out at the lower extremity; then, bending it, it was pushed into the lower opening of the other tract and passed out on its buccal end. With a strong pull, both ends of the wire were brought and twisted together in a solid loop. The animal was turned over and a similar suture applied on the opposite side. Diet of soft cooked food, mashes, etc., with washing of the mouth with boiled water and vinegar, brought the complete recovery in about forty-two days, when the sutures were removed. There was no important deformity left after.—(*Rev. Veter.*)

CASTRATION OF FISHES.—*La Semaine Vétérinaire* is responsible for the following, which was extracted from an old book written in 1817:

“As veterinarians cannot be ignorant of any surgical operation, no matter on what kind of animals such may have to be performed, a word may be said of the castration of fishes, so as to increase their fat and improve their meat.” It seems that it is an old Englishman by the name of Samuel Tull, who, in 1740, performed the operation first on a carp and after on trout, perch, pike, etc. The operation can be performed on males as well as on females in all seasons, but better at the time of spawning. The time is when the ovaries of females are full of eggs and the vessels of the males filled with seminal matter. The instrument required are a concave bistouri, sharp on both edges, two tenaculum bent on right angle, an ordinary or straight one, a spatula, a pair of scissors, a needle and thread.

“The fish is held in a wet piece of cloth by an assistant. The abdomen is opened with a small incision extending from the two fins forward to the anus. With a grooved bistouri or one of the bent tenaculum the opening is enlarged, the intestines pushed on one side with the spatula. The full ovary, under the

shape of a large vessel, is exposed, secured with the ordinary tenaculum and brought sufficiently out to be excised with the scissors. One ovary operated upon, the same manipulations are applied on the other. The skin is then sutured with closed sutures."

If one wishes to resort to a less severe operation for fattening carp, let them be hung outside of the water, so as to prevent the slightest motion of the fins, and envelope the fish with thick wet moss, frequently sprinkled with water. This method is used in Holland with great success.

FIBROLEIOMYOMA IN LIONESS'S UTERUS [*Dr. Annibale Malvicini*].—The result of a post mortem made on the cadaver of a lioness dead with enteritis. It consisted in a big, round mass situated between the peritoneal lamella of the broad ligament of the uterus. By its base it surrounded the uterine horn. The microscopic examination revealed a typical form of fibroleiomyoma. This form of uterine neoplasm is not as frequent in animals as it is in man. Out of the 30 cases of neoplasms of the uterus described, it is said that 17 were found in cows, 15 being fibroleiomyoma and 2 leiomyoma; 7 were in sows, 3 in sluts, 1 in mare, 1 in goat, 1 in rhinoceros, and the last one in this lioness. It is the first case described in animals of this family (*Felis Leo*).—*Journ. de Zootech.*)

APLASIA OF THE PANCREAS [*Dr. V. Ball*].—Dog of four years is in a cachectic condition. Suspected of tuberculosis, he is destroyed. At the post mortem the pancreas is found reduced to small, little masses arranged along a band of adipose tissue. These are rosy in color, rather firm in consistency, and like ordinary tubercular granules in size. They cover a space of some twelve centimetres in length, either isolated or in small groups. The liver is normal. The gall bladder is full of bile, and its mucous membrane is thick and covered with small, cystic projections, called by the author polycholecystodoma. The intestines and spleen are normal. The kidneys are brown in color and the pelvis of the right one contains a small quantity of green gravel. There is some of this also in the bladder. Chronic endocarditis is also present. The lungs are the seat of emphysema.—(*Ibidem.*)

FILARIOSE AND THROMBOSIS OF THE RAMIFICATIONS OF THE PULMONARY ARTERY IN DOG [*Mr. Roquet*].—Post-mortem dis-

covery of a big dog, aged eight years, that died with torsion of the stomach and which, in the cavity of the right heart, showed a big bundle of whitish, filiform worms, quite long and twisted together and filling more or less completely the cavity of the ventricle. These parasites were *Filaria immitis*, *Filaria canis cordis*. During its life this dog had dyspnoea, coughed, and symptoms of asphyxia manifested after a short run or some rapid exertions. One lung was dark, and when it was squeezed it left out a small quantity of blood in which embryos of filaria were readily made out among the red corpuscles. The ramifications of the pulmonary artery had blood containing embryos, which in some places formed regular thrombosis and closed more or less the calibre of the blood vessel. In the cases of animals where filarias will be found, it will always be wise to suspect the possibility of the existence of similar lesions in the ramifications of the large arteries.—(*Ibidem.*)

POST-PARTUM LIPOTHYMY IN A COW [*A. Dare*].—In an advanced state of pregnancy a cow presents all the symptoms of threatening delivery. The calf is in posterior presentation, the legs flexed at the hock. They are straightened out and the accouchement is completed with great facility. At that moment the cow seems to be taken with symptoms of great depression. She stands on her four legs; the head is stiff and extended; the ears are warm; the extremities become cold; the conjunctiva is pale; the skin is still with its normal temperature; the udder is full. Then the animal lays down, the eyes close and she is unwilling to get up no matter how coaxed. Half a litre of strong black coffee is given to her and dry frictions made all over her body. After half an hour she gets up, receives a good aromatic drench and she is all over her trouble. The case was evidently one of lipothymy following parturition.—(*Rec. de Medec. Veter.*)

SPUMY INDIGESTION IN A COW [*G. Menard*].—Such is scarcely mentioned in classical works. The affection, however, differs from the acute meteorization because the food and the gases resulting from its fermentation are intimately mixed in the rumen.

A little cow presents the following symptoms: Exaggerated fullness of the rumen; left flank bulging, with dullness when percussed; no noise of miction in the rumen; no rumination.

The animal is rather dull, has 35 respirations, 85 pulsations, and a temperature of 39.4° C. She is standing up with her forelegs apart. These manifestations have appeared after a good meal of cabbage and beets. Spumy indigestion is suspected. The rumen is tapped and a small quantity of gas with foaming food escapes. Yet the flank remains bulging. Peppermint tea, with liquid ammonia added to it, is prescribed, with soap rectal injections. Two hours later the symptoms are more serious and suffocation is threatening. To empty the rumen is necessary. After puncture an incision is made through the tissues that cover it and through its walls some gases are allowed to escape; the wound is kept open with spreaders and of a sudden the fermenting mass is thrown out with force by the contractions of the organ. Some twenty kilogrammes of food was evacuated. The animal had her wound disinfected and sewed up. The next day she was ruminating. Convalescence run its normal course. —(*Rec. de Mèdec. Vèter.*)

CONTRIBUTION TO THE STUDY OF EQUINE LYMPHANGITIS [*Drs. G. Finzy and L. Gillet, Army Veter.*].—Ten-year-old mare had large thoroughpins on both legs. She is slightly lame on one of her posterior extremities. Rest and firing were prescribed. Before this was applied, her right hind leg becomes swollen from the coronet to the stifle. The swelling is very large, hard, and very painful all over. The lymphatic cords are also very tender. There is a slight exudation of serosity in the coronet. The animal does not bear any weight on the leg, which is the seat of lancinating pains. It is a case of severe acute lymphangitis with rapid and severe development. Abscesses are forming in the fetlock region. Treatment: Clipping of the entire region, soap washing, very hot lotions of sublimate (1 in 2,000), dressing of the fetlock with same solution, laxatives. Soon the animal leaves herself drop on her bed and refuses to rise. Appetite is gone; temperature is 40.1° C. The next day there seems to be some improvement. The day after, cardiac manifestations are observed. On the third day the mare dies without struggles. Post mortem: Great subcutaneous inflammation; lymphatic vessels are thick and gorged with fluid. The great sesamoid sheath contains purulent liquid. No apparent lesions in the tarsus or fetlock joints. Muscular tissue is dark red, with small hæmorrhagic spots. Inguinal glands are much congested. Two litres of liquid are found in the abdomen.

Liver, spleen and kidneys are congested. Pericardium congested and full of serosity. Heart hypertrophied. Myocardium with hæmorrhagic suffusions. Unclotted blood in the vessels and cardiac cavities. Bacteriologic examination revealed the presence of two kinds of bacilli: a Preisz-Nocard avirulent and a coccostrepto-bacilli aerobio-anaerobic, which will be the subject of a future communication.—(*Rev. Génè. dé Mède. Vèter.*)

UTERINE TORSION IN A MARE [*Mr. Regnier*].—One evening a mare in advanced state of pregnancy is found lying down in a ditch in the field, and cannot get up on account of her position. When she is assisted and standing she is taken with violent colics. Although parturition has yet one month to run, the vulva is swollen and partly open. The foetus cannot be felt on either side of her abdomen. Vaginal and rectal examinations are made. The uterine os is well dilated. It admits the introduction of four fingers, when an obstacle is felt. Through the rectum the broad ligaments are made out as two spiral, twisted bands. The right forms a cord running above the left. Torsion of the uterus is diagnosed. On account of the hour, interference is postponed to the next day, when the animal was cast on a straw bed in an inclined position, with the anterior part of the body resting lower. The animal is then rolled over, as usually done in large animals, but notwithstanding several attempts and several turnings, no change seems to take place in the position of the uterus. The mare was left to herself and dies in a short time. Post mortem: On opening the abdomen, there was found a laceration through which the uterus and point of the cæcum were projecting. All the abdominal organs were found sound. The gravid uterus contained a colt of ten months in the right horn. The organ had twisted over to the left and made one and one-half turns. The ovaries and oviducts formed two large black masses. The uterine walls were very highly congested.—(*Rev. Génè. dé Mèdec. Vèter.*)

THE many friends of Dr. F. E. Anderson, veterinary practitioner and consultant, Findlay, Ohio, president of the Northwestern Ohio Veterinary Association, will be pleased to learn that he has been successfully treated against rabies by Dr. Longfellow, of the Toledo Clinical Laboratories.

ARMY VETERINARY DEPARTMENT.

THE RESPONSIBILITY OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION TOWARDS THE ARMY VETERINARY SERVICE.

The veterinary profession of America knows that the veterinary service in the United States Army is backward and neglected. The American Veterinary Medical Association, the representative body of the profession, has listened, annually, to army veterinary bills for thirty-five years, more or less. The association has always been favorably inclined, in sentiment, towards legislation tending to improve the army veterinary service, but it has never done much in actual aid of it by properly backing it up in Congress, that body politic that alone can grant such legislation.

The veterinary service of the United States Army was established in 1863. It is, therefore, the oldest veterinary institution in the public service of the United States. It may not be as important a veterinary body as is the younger Bureau of Animal Industry, United States Department of Agriculture, and it can never hope to be as large, ramified, and far-reaching in its effect and results to be obtained, because it will never reach so directly the interests of the people of the country as does this bureau. Yet, the army veterinary service controls, or should control, the health of more than 20,000 public animals, in peace, scattered over the various states of the Union and the dependencies. These animals mingle with those of all citizens during frequent transports and with those of rural communities during our annual maneuvers. It is, therefore, necessary that the army should apply the principles and rules of veterinary sanitary science, to protect its own animals and those of the communities with which it comes into contact, from the spread of communicable diseases. If this were alone the purpose of the army veterinary service, it would be sufficient to call for a proper army veterinary organization. But there are many other duties to be performed by the army veterinary service, each important in its

way, each necessary and most of them special to the particular needs of an army. It is, therefore, necessary that this branch of the military service be faultless, effective and generally up-to-date. Because this is not the case, it should be made so.

It is the duty of the army veterinarians, a duty which we owe to the government and to the profession, to keep on pointing the way for improvement of our work and duties. The new Army Veterinary Bill embodies recommendations, carefully weighed, which will end the half-hearted attempts at legislation of former times. It proposes the establishment of an Army Veterinary Corps, the only remedy for the ills under which we labor.

Very recently, a high army officer said: "The way to improve the veterinary service is to improve it." While this is a mere generality, it hits the nail on the head quite squarely. The army veterinarians themselves have been too bashful to propose real improvement, because it hitches on military rank and authority. Our friends in civil life, those in charge of the legislation, have been too modest to insist upon important points, and on several occasions were easily scared into subjugation by opponents. Furthermore, they had no proper means behind them to accomplish result, and they had no *weight* besides them to enforce their claims, for a certain amount of force is needed in legislative procedure.

Enough has been said to point out why we have failed in the past, in army veterinary legislation, and how to go about it in a different way, in the future, to insure success. The army veterinarians have finished their part by framing a new bill. This naturally had to be our work, because we understand the needs of the army and its spirit. Military discipline forbids us to do more. At the Toronto meeting we shall turn over this new bill, with the necessary documents, to the American Veterinary Medical Association, for action on its onward way. We feel quite sure, that the papers to be submitted, will arouse the feeling and awake the sense of responsibility of every member of the association. But what we particularly wish for, is substantial aid to the legislative committee by providing the necessary funds for work, and by backing up the legislative committee with the force of weight, now at the command of this association and its sister associations of the various states.

The dental profession *insisted upon* that Congress provide for a Dental Corps in the army, and making the dental surgeons

commissioned officers. They eminently succeeded, and left the army veterinary service shamefully behind. It is now good ethics for the American veterinary profession to insist likewise without further delay, to correct a wrong perpetrated upon the army veterinarian, and one which absolutely prevents any further improvement in the army veterinary service without a substantial change, by Congressional sanction of a new army veterinary law.

O. S.

ARMY VETERINARY PERSONALS.

Drs. Le May, 4th Field Artillery, and Glasson, 9th Cavalry, have left the Division Maneuver Camp at Fort Sam Houston, Texas, returning with their regiments to the home station. They were pleased to break camp to escape the Texas heat waves and dust and return to higher and healthier altitudes.

The bacteriological laboratory at Fort Riley, Kansas, under charge of Drs. Plummer and Jewell, has furnished the Division Field Veterinary Hospital, at Fort Sam Houston, with "bacterin," prepared at Riley. It was forwarded, as needed, in packages of fifty doses, in all amounting to 250 doses. The bacterin treatment, as applied here in camp, has been entirely satisfactory. A hole in the ground under a tent served as a substitute for an ice box to keep perishable articles, and worked satisfactory. We compliment the two army veterinarians mentioned on their ability to furnish the camp with bacterin in sufficient quantities for such a large field hospital, demonstrating thereby what might be expected in the future, if their plans to enlarge the laboratory and put it under charge of an expert, would be approved by the War Department.

Dr. ROBERT W. MCKIBBIN, late veterinarian to the Fourth Cavalry, U. S. A., stationed at Fort Meade, South Dakota, has resigned from the army to enter into general practice at Waynesboro, Pa. In his recent communication advising us of his change of address he says: "Of course, I do not want to miss getting the REVIEW."

CORRESPONDENCE.

AMERICAN VETERINARY MEDICAL ASSOCIATION,
TORONTO.

ADVANCE REPORT OF THE LOCAL COMMITTEE ON CLINICS.

TORONTO, July 11, 1911.

Editors AMERICAN VETERINARY REVIEW :

The local committee on clinics have been busy making arrangements in their department for the coming meeting of the A. V. M. A. in Toronto, August 22 to 25.

It has been arranged to hold the clinics in the operating room of the Ontario Veterinary College, which is situated in the rear of 153 Richmond street West. This building is very central, being less than five minutes' walk from the headquarters, Prince George Hotel, and is easily accessible by street car. This room, which is electrically lighted, is arranged in amphitheatre style with a seating capacity of 125. To add to this, a marquee with a seating capacity of 300 will be erected just outside the clinic room, connected by large double doors.

The situation is very quiet, being sufficiently remote from main thoroughfares to prevent any annoyance from street cars or passing traffic and at the same time not liable to be reached by the inquisitive idler.

Every effort is being made to secure material for a good clinic and despite the fact that subjects for operations are difficult to obtain so far in advance of the meeting, yet several have been already secured and we hope to have everything in perfect readiness by the date fixed for the meeting.

Yours,

W. J. R. FOWLER, V.S., B. V.Sc.,
Committee on Clinics.

PARIS, TEXAS, July 14, 1911.

Editors AMERICAN VETERINARY REVIEW:

I take pleasure this day in sending you herewith a copy of the act regulating the practice of veterinary medicine, dentistry and surgery in the State of Texas, and also the attorney-general's ruling of same. This law went into effect June 11, 1911, and to carry out its provisions the Governor has appointed the following gentlemen to constitute the Board of Examiners: President, Dr. T. W. Watson, of Corsicana; secretary and treasurer, Dr. F. G. Cook, of Paris; Dr. J. E. Wilkins, of Greenville; Dr. C. C. Parker, of San Angelo; Dr. W. A. Knight, of Houston, and Dr. S. J. Swift, of Austin, to date the seventh member of the board has not been appointed by the Governor. We have secured the passage of our new law practically as asked for and claim same one of the best laws in the states. Our struggle to secure this law dates back several years and final success was due to the persistence of the members of the profession, chief among whom were the members of aforesaid board. The board meets at Dallas, Texas, on the 25th day of July and will on that and following two days examine all applicants for license. I hope the pleasure of seeing this law, etc., in publication, as it will be of great interest to the profession to learn of Texas having a state law at last.

Very respectfully yours,

F. G. COOK, D.V.S.,
Secretary and Treasurer,
Paris, Texas.

It affords us much pleasure to welcome into the field of veterinary journalism *The Cornell Veterinarian*. This high-class veterinary periodical will appear semi-annually; and if we are to take the first number as a sample of those that are to follow, it will surely be looked forward to with pleasant anticipation, not only by the alumni of the Cornell school, but by the profession generally.

Number 1 of volume 1 is fittingly adorned with a frontispiece containing a speaking likeness of Professor James Law, the founder of the Cornell Veterinary School.

OBITUARY.

FREDERICK A. ILLSTRUP, M.D.V.

Dr. Frederick A. Illstrup, Willmar, Minn., died suddenly while engaged in his professional duties on June 5, in his forty-third year. He was stricken with heart failure and died before medical aid could reach him. The shock to his family was the more terrible because they were entirely unprepared, he having left his home smiling and happy in the morning. Dr. Illstrup was born at Buffalo, Wright Co., Minn., in 1868, and graduated from the Chicago Veterinary College in the early nineties. He had practiced at Willmar since 1895, the same year in which he was united in marriage to Miss Julia Pohl, of that place. He is survived by a widow and five children, three boys and two girls; also by a mother, five brothers and two sisters.

HENRY N. MAYER, V.M.D.

Dr. Henry N. Mayer died at the residence of his parents in Pittsburgh, Pa., April 24, 1911, after a brief illness of acute nephritis, in his thirty-third year. He studied two years at the Columbian University, Veterinary Department, at Washington, D. C., then two years in the University of Pennsylvania, Veterinary Department, where he graduated in June, 1900. He was an all-around athlete and clever student while at college, and later established a lucrative practice in his home city, where he was appointed assistant city veterinarian. He entered the Bureau of Animal Industry in the autumn of 1906, and was stationed at Baltimore, Md., until recently, when he was compelled to return home on account of failing health. Parents, a widow, two brothers, three sisters and a large circle of professional associates and many friends mourn his early demise.

HARRY R. SHERRICK, V.S.

Dr. Harry R. Sherrick, graduate of Ontario Veterinary College, 1889, died recently at his home in Charleroi, Pa.

J. OTIS JACOBS.

Dr. J. Otis Jacobs, of Reno, Nev., died July 5. He was a graduate of the University of California, a member of the American Veterinary Medical Association, Resident State Secretary for Nevada. For a number of years he was in federal service. He resigned about five years ago to enter practice in Reno and had built up a lucrative practice. To his efficient work as Secretary of the Nevada State Sheep Commission much of the success of their work in scabies eradication was due. His services as dairy inspector for the Reno Board of Health during the past year resulted in a material improvement in dairy conditions here.

Dr. Jacobs was a skillful veterinarian, a clean, straightforward man, a good citizen, a loyal friend. The city and state are better for his having lived and labored here. We who knew him best miss him the most keenly.

WINFRED B. MACK.

Reno, Nev., July 20, 1911.

A FEW EXPRESSIONS OF APPRECIATION PICKED UP AT RANDOM FROM AMONG THOUSANDS OF LETTERS RECEIVED:

DR. FREDERICK H. SCHNEIDER, of Philadelphia, in renewing his subscription to the REVIEW, says: "We find we cannot afford to be without it, it is part of our work."

DR. A. J. MITCHELL, of Erie, Pa., says: "We find it impracticable not to have the REVIEW in our library. Any veterinarian omitting the same stands in his own light."

DR. S. F. MUSSELMAN, Cynthiana, Ky., says: "I would feel lost if I didn't get my REVIEW regularly. I enjoy everything in it."

DR. J. H. SHONYO, Winnipeg, Manitoba, says: "I feel sure the REVIEW will prove a welcome visitor during the coming months, as it certainly has in the past, I remain, etc."

DR. J. A. DRESSBACK, of Stanberry, Mo., says in renewing his subscription for the twenty-fifth time: "I am glad to contribute my share to the support of your most excellent journal, as it has been a great help to me. For twenty-four years it has come regularly to me, full of just what every veterinarian ought to know. May your shadow never grow less, is the best wish of yours truly."

SOCIETY MEETINGS.

COLORADO VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of this association was held in Ft. Collins, Col., June 1, 2 and 3, 1911.

The meeting was called to order in Pathology Hall by Dr. Geo. W. Dickey, president, at 10 a. m.

The following members and visiting veterinarians were present: Geo. W. Dickey, A. B. McCapes, R. N. McCarroll, R. L. Van Sickle, G. McClain, A. G. Brocker, F. D. Hylton, A. A. Herman, V. J. Ayres, E. A. Meyer, F. Gilgen, C. G. Lamb, N. J. Miller, T. F. Quinn, H. F. Palmer, M. C. Hall, B. F. Kaupp, Geo. H. Glover, C. L. Barnes, H. E. Kingman, I. E. Newsom, S. Wisner, P. Lamb, J. W. Thompson, A. G. Fisk, A. P. Drew, R. H. Bird, Ira Watts.

PRESIDENT'S ADDRESS.

There are elements of genius in every man that if awakened and trained will enable him to do something worth while. Why then not awaken genius and unlock the energy and harmonious expression that will lead to success? The success of our chosen profession is the one thing dearest to my heart. Let us get it out of our heads that it depends on opportunity or environment. True these are often necessary for the expression of energy or talent, but the primary causes of success or failure are in the individual. Cause and effect are inseparably related. Don't be afraid of hard work. Activity gives life, inertia death. On getting close to those who are winning fame or fortune you will find that every winner is a worker. Genius has been defined as 2 per cent. inspiration and 98 per cent. perspiration. The man who keeps doubtful company will soon be considered a doubtful man and vice-versa. If we would aspire to great things we must cultivate the society of great men. Give the best there is in us every time. So by continual effort we may improve our professional standing as well as our financial and social condition. We are asked to take a course of study quite as exhaustive as the M. D.'s, and whose fault is it—if not our own—that we are not looked up to by the general public as they are? We have a pro-

fession quite as honorable, and as time goes by they are learning to depend more and more on our judgment in respect to the laws that regulate the sanitary conditions affecting the human family. We need not feel ashamed of Veterinary Science. It has returned to human medicine full measure for all received. We may not all be Pasteurs, but by thought, study and close observation each and every one of us can add his mite. I think that the profession demands of us something in return for the many facts given us by the pioneers. We cannot all be pathologists or bacteriologists, but I think that the men who can take their findings and apply them quite as important to the profession and to the community. I knew a man who could recite "Chaveau" from cover to cover, but could not diagnose correctly a case of sore throat or colic. Every man has his forte, and it is well they are not all the same. What a disinteresting world this would be. The success or failure of any undertaking is often attributed to lack of interest displayed by those having charge of it. If *we* fail, let it not be from that cause. I think we ought to divorce ourselves from all the ways and habits of the quack. I would advise you, my brothers, to dress equally as good as the M. D.'s, not loud, but as a well-to-do business man would. For good clothes go a long way toward making a good impression, and then if we can deliver the goods we have spelled success. Cultivate professional etiquette to the limit; don't allow yourself to get in the habit of calling your patrons by their surnames as that gives them license to treat you likewise. Always add the Mr. We all know that familiarity breeds contempt. Cultivate the associations of men who have acquired higher education, for they will add something to your store of knowledge instead of acting as the sucker; absorbing your time and knowledge and gives nothing in return. To succeed it is quite necessary to be kind to your subjects; civil and polite, and at all times a gentleman to your patrons. Try to forget the many obscene stories that you are forced to hear. You need not offend, but just forget them.

Have an office of your own where your patrons can come and see you for a private interview, and where the hangers on that frequent a livery stable will not be tendering their advice. I have no doubt that every man of any ambition has someone to whom he looks up to and wishes he might become as great, as good or as rich. That all depending upon our individual taste. Can't you remember when a boy, learning to read, you admired

some one of the older boys who seemingly could do everything and did you not wish to be like him? Well, we are only learning to read, in the larger sense now, for that matter, and may each one of us find some larger high ideal to look up to. Aspire to great things and although you miss most of them you will still be better off for having tried. If the Governor of our great State was looking for a man to represent him at the Presidential inauguration, where would he go to look for one? Would he select one who loafed around a livery stable? Or would he choose one who had been a success in his life, either business or professional?

You owe something to the community in which you reside. Join with the people who are boosters and help things along, not only with your money, but with some of your time. It will help you professionally to be identified with school affairs, civic societies and some politics; for the day is coming and coming fast when we will be called upon to supervise the food supply of all the cities and towns in the nation, and we don't want the M. D.s to have more than their just share in the work. I think we should have a member of our profession on every local board of health in the state, and when the time is ripe may we be prepared. Gentlemen, we of this state want to be in the front rank of advancement. We cannot afford to lose a chance to further our cause.

One thing I wish to compliment the members of this society on, is the good feeling and good fellowship displayed among its members. We have no cliques nor skeletons in our closets like some other societies, and may we always be so blessed. If one of our brothers should become weak-kneed should we not furnish him with a starch bandage until such a time as he shall overcome his defect. Remember a cable is no stronger than its weakest link.

Stand together and boost. Boost for one another, boost for our profession, boost for the stock interests of the state. Show the men engaged in the stock business that their interests are our interests and will be safe in our hands. Show them that we stand at all times ready and willing to further their interests when we can do so legitimately.

Let us all become optimists. We live in the fairest state in the Union to practice in. A mile nearer heaven than those in the low altitudes. We have more sunshine and more wind, but fewer bad storms and bacteria. You ought to consider your-

selves rich, heirs to the mightiest fortune in the world; manhood. Do not let fear choke the voice of ambition for the ivories that produce a tawdy tune are capable of producing master melody. Accept no compromise from opportunity, but strive to be the best and you will surely win.

In conclusion, gentlemen, I desire to thank you for your patience, and also to thank you for the High Honor I feel you have conferred on me in choosing me as your president. I assure you I greatly appreciate it. I thank you.

THE BUSINESS MEETING.

The minutes of the previous meeting were read and approved.

Two names were added to the membership roll.

Mr. H. K. Hedke, acting Mayor of Ft. Collins, gave an address, welcoming the Association to the city. This was followed by a nice talk from the president of the college, Dr. Chas. A. Lory, welcoming the visitors to the college. Dr. Chas. G. Lamb gave a very appropriate answer to these two talks on behalf of the Association.

The following resolution was passed:

Whereas, The enforcement of the law regulating veterinary practice in Colorado at the hands of the present Board of Veterinary Examiners, has been most satisfactory to this Association; therefore, be it

Resolved, That we express to the members of the said board our appreciation of and thanks for their labors in behalf of the veterinarians of the state, and be it further

Resolved, That we compliment the Hon. John F. Shafroth, Governor of the state, upon the appointment of so satisfactory a board, and respectfully ask that the personnel of the board be not changed during his present administration.

The following motion was passed: Moved by Dr. McCapes and seconded by Dr. Lamb, that we extend a vote of thanks to Dr. W. W. Yard and to the legislators who assisted in the passage of the Veterinary Practice Act Amendment, especially Senator Tobin and Representative Linqvist.

Dr. R. H. Bird moved that a vote of thanks be extended to the local committee for the work in arranging for the successful meeting in progress.

Dr. Geo. H. Glover, president of the American Veterinary Medical Association, urged all who were not members of that

Association to file their applications at once. He further stated that veterinary education in the past had been too cheap, and that it was absurd to think in this day of advancement of a man below the college grade getting a degree of doctor of veterinary science in three years of eighteen months in all.

Dr. Bird replied to Dr. Glover and said in part: I have not been in position to attend all the meetings, but have enjoyed myself immensely while here. I believe that the summer meeting should be held at the State College under the directions of the Division of Veterinary Science.

Dr. Geo. Dickey, president of the State Examining Board, reported that fifteen "quacks" had been compelled to quit practice. Dr. Dickey explained the work of the examining board and the effect of the new law.

In prosecuting non-qualified practitioners, Dr. Brocker advised that the case should be given directly to the prosecuting attorney and not allowed to be tried in the justice court, as conditions in those courts made it hard to secure convictions.

Moved, seconded and carried, that all members of the Colorado State Veterinary Medical Association who attend the American Veterinary Medical Association meeting to be held in Toronto, Can., August 22-25, 1911, are declared official delegates.

THE PAPERS.

Dr. A. G. Wadleigh presented a paper on the subject of strangles. This paper was well discussed by Drs. C. G. Lamb, R. N. McCarroll, T. F. Quinn, A. P. Drew, Geo. H. Glover, H. E. Kingman, B. F. Kaupp and H. F. Palmer.

Dr. J. N. Miller gave a report of some cases of contagious exanthema, which occurred in the northern part of the state. Dr. C. G. Lamb discussed several outbreaks that had appeared in the state from time to time.

Dr. A. B. McCapes talked on the subject of infectious anemia, reviewing conditions in horses noted when he was a boy (long ago).

Dr. A. G. Brocker talked on the subject of the Elk River disease, so called, because it was found in the Elk River district, and was very fatal to horses.

Dr. Geo. W. Dickey gave a talk on a condition somewhat simulating swamp fever or infectious anemia in horses. The disease is always fatal. All horses turned in one pasture come

down with the disease and die. In one pasture in all eight horses have died and mules turned in this same pasture never develop the disease.

The first symptoms noted are: Quit eating grain, but still eats some hay. Later will not eat hay. If feed is changed from alfalfa to native hay or vice versa they continue to eat a while longer. The same is noted in regards to the grain. Constipation is always present, and cathartics are of no avail. They stand usually head down and kick very suddenly. Later they walk around the fence, keeping up this action till exhausted. On standing they usually rest one hind leg on the toe. They never have the proper balance in walking and will try and walk over any object or man if he gets in the way. The conjunctiva is yellowish. Pulse normal. Eat wood and gnaw at the same place for a long time, and the doctor reported that one case had been tied to a telephone pole in the evening, and that he had the pole completely gnawed off by morning. There is no elevation of temperature. The urine is always dark in color.

This paper was discussed by Drs. McCapes, Chas. G. Lamb, Kaupp, Kingman, Ayres, Drew and others.

The next paper was by Dr. A. A. Herman on Radical Operation for Umbilical Hernia.

Dr. F. Gilgen reported an interesting case.

Dr. Geo. H. Glover presented a paper on the Relation of the Veterinarian to Municipal Food Inspection. He spoke of the good work that could be done by the practicing veterinarian in securing municipal food and meat and dairy inspection. There has not been enough activity among the veterinarians along this line, and the physician who has no training along veterinary lines is trying to pry the veterinarian out of the job for which he has been educated.

Dr. S. Wisner gave a report on a case of Pervius Urachus.

Dr. E. A. Meyer gave a report of a case of fracture of the inferior maxilla in the horse. The case belonged to a grading camp, was attacked by colic, "doped" and tied behind a wagon and started to town. After a while the driver noted the animal was in "bad shape," and upon examination thought the horse had "lockjaw." Upon reaching town he was brought to the hospital for treatment when it was discovered both jaws were dislocated. The animal died about two days later, and an autopsy was held. Both jaws were dislocated forward and upward.

There were two questions in the question box. The first one was asked by Dr. Dickey: "In impaction of the bowels at what stage of the disease would you consider it proper to administer arecolin or eserine?"

Dr. Bird said there is a great difference in cases of impaction from alfalfa, and other feeds. Eserine, pilocarpine and arecolin are contraindicated in alfalfa impaction. Linseed oil aids in softening the hard mass. Salines are also given with good results. A restoration of the nervous energy of the bowels. Too much drastic purge may result in rupture of the bowel.

Eserine or arecolin may be given in small doses in impaction, due to wild hay or straw or in over loading, due to grain.

Dr. Drew said: There can be no hard and fast treatment. There may be as many as eight or ten large and hard balls of alfalfa in the floating colon. Where it is thought advisable the doctor gives arecolin one grain, and strychnine one-half grain hypodermically. When necessary atropine is used to combat the ill effects of the arecolin. As stimulants he uses ammonia carbonate one ounce every four hours, sometimes oils. Nuxvomica if indicated. The nux. and ammo. are given in a capsule. He recommends using the Philip's stomach tube in giving enemas and uses physiological salt solution. It is possible to wash out many feet of the posterior bowel and get rid of much offending material.

Dr. Brocker reported some cases of impaction with wild oats. He successfully used eserine, arecoline combined with strychnine and followed this with linseed oil.

Dr. Bird gives sulphocarbolates compound as an antiferment, both by the mouth and through the canula in case it is found necessary to tap the animal.

Dr. Drew says that often he has been enabled to massage and thus break up the hard masses of feces in alfalfa impaction. These are brought against the brim of the pelvis, and by gentle pressure can be broken up. Care must be exercised that there is no injury to the mucosa of the bowel. Dr. Dickey described a case of millet poisoning, and said that he believed that great care must be used in impaction, due to alfalfa in the use of arecoline.

The next question was asked by Dr. Chas. G. Lamb: "Give synopsis of law regarding control of bovine tuberculosis which, in your judgment, would best meet the conditions which prevail

in Colorado." Dr. Topping was to open the discussion on this question, but as the doctor was absent no discussion could be had.

Dr. Lamb then gave a short discussion of the Veterinary Sanitary Laws recently passed by the state legislature.

He said: We have no laws on the statute books to compel any one to destroy tuberculous animals or to prevent selling them. Many municipalities have veterinary inspection and prohibit the sale of milk or meat from animals affected with tuberculosis or other dangerous diseases. A bill covering these points was introduced into the last legislature covering these points, and which passed the house, but was defeated in the senate.

In Colorado Springs a herd was tested and fourteen reactors found. The next day the officers of the Board of Health went to the premises and found that the cattle had been disposed of. The owner told the officers it was none of their business what he did with the cattle. It was ascertained that they had been shipped to Denver, and that the man was said to have sold them, giving a guarantee that they had been tested and found free from tuberculosis. At present they are held under quarantine, but just what the result will be cannot be foretold.

A law was passed that requires all cattle coming into the state for dairy or breeding purposes to be tuberculin tested. This test must be given by a federal or state veterinarian or by one authorized by the state veterinarian to do same. There is a penalty for violation on this law.

A stallion law was passed and provides that only two kinds will be registered. Pure bred and grade. This inspection must be done by a licensed veterinarian, and said inspection certificate must be sent to the State Board of Live Stock Inspection Commissioners who issue the certificate. The horses or jacks must be inspected each year. The fee is limited to \$3, and disqualifications are ring bone, spavin, specific ophthalmia, roaring, and any venereal disease.

The law gives a lien on the mare and get for the stud services. The mare cannot be removed from the county until the bill is paid or permission is secured from the stud owner.

THE CLINIC.

The clinic was held in the clinical amphitheatre of the college.

Cast No. 1.—Ovariectomy of a bitch. Three No. 1. H-M-C. tablets were given as an anesthetic. Operator, Dr. A. G. Brocker.

Case No. 2.—Ovariectomy of a bitch. One No. 1. H-M-C tablet was given as an anesthetic. Some ether was also used. Operator, Dr. R. L. Van Sickle.

Case No. 3.—Ovariectomy of a bitch. One and one-half grains of morphine was used as an anesthetic. Operator, Dr. A. G. Fisk.

Case No. 4.—Ovariectomy of a sow. No anesthetics. Median line operation. Operator, Dr. R. N. McCarrol.

Case No. 5.—Peroneal tenotomy. Bay gelding. Operator, Dr. V. J. Ayres. Operation performed standing.

Case No. 6.—Cunean tenotomy and periosteotomy for relief of bone spavin lameness. Operation performed standing. Operator, Dr. E. A. Meyer.

Case No. 7.—Amputation of the penis. Operation standing. Bay gelding. Operator, Dr. R. N. McCarrol.

Case No. 8.—Surgical removal of warts. Operation standing. Warts on nose, between fore legs and on ear. Dr. Kaupp demonstrated the microscopic structure of these warts under the microscope—a section having previously been removed from one of them and prepared for the occasion. Operator, Dr. V. J. Ayres.

Case No. 9.—Castration of a cryptorchid. Operator, Dr. A. B. McCapes.

Case No. 10.—Castration of mule. Demonstration of a new casting harness. Operator, Dr. F. Gilgen.

Case No. 11.—Castration of stallion standing. Operator, Dr. A. P. Drew.

Case No. 12.—Castration of mule. Operator, Dr. Ira Watts.

Case No. 13.—A saddle stud belonging to the Government breeding stud was presented with the following symptoms: Good flesh. Kept in enclosure with a solid fence. This horse had began about four months previous to run in a circle within his enclosure and occasionally bite at his flank. This he would keep up till he was wet with perspiration and somewhat fatigued. When he was approached he behaved in a normal manner. The horse had been changed from a grain and alfalfa diet to a simple diet and also purged with an aleotic ball, and was at this time somewhat improved.

Case No. 14.—Case of Dr. N. J. Miller was presented for diagnosis. This horse was said to have a difficulty in breathing which had been several months in developing. There appeared to be little difficulty in inhalation, but considerable on exhalation.

tion. A diagnosis of polypus near base of the velum pendulum paloti was made. Removed by aid of a snare made by a broom wire passed through a metal female catheter. Operator, Dr. H. E. Kingman, assisted by Drs. N. J. Miller and E. A. Meyer.

Case No. 15.—This case was a five-year-old stud who showed weakness in the hind quarters. This condition had been noticed only a short time. There was no evidence of infectious anemia.

Case No. 16.—Cow with the following history: Six months previous had developed mastitis. For this there had been given an injection into the udder a 50 per cent. solution of hydrogen peroxide. Later the cow developed muscular and articular rheumatism. This has been treated with sodium salicylate. From milk drawn from the udder under proper conditions a streptococcus was isolated and a vaccine made. Prognosis had been made as unfavorable, but at this time the cow appeared somewhat improved.

Case No. 17.—Case of Dr. I. E. Newsom. Bay gelding, seven years old. Injured in a runaway last October. Fistulous tract below the external angle of the right ilium. Seaton passed through to the inside of the femur and out at the back of the leg. Posterior and below the femerotibial articulation. Pus with offensive odor indicated a possibility of necrosis of the bone.

On June 7, an opening was made to the inside and below the previous opening. A half gallon offensive odored pus escaped.

Report on cases ten days after clinic.

Case No. 7.—Hemorrhage for ten hours after operation. Now doing nicely.

Cases 1 and 2 were dead the following day. Balance of cases doing nicely.

THE ENTERTAINMENT.

Automobiles met the train the first day and took the veterinarians with their ladies on a trip to the breeding station to see the types of American carriage horses the government with the co-operation of the state experiment station are trying to establish.

Luncheon was served to those in attendance at the Northern Hotel; after which the ladies were given a reception at 2 o'clock p. m. at Guggenheim Hall of Household Arts.

The annual banquet and ball of the Veterinary Medical Association of the Division of Veterinary Science, State College, was held at the Masonic Temple the evening of June 2. The members and visiting veterinarians with their ladies were guests

of honor at the occasion. After a sumptuous banquet the following toasts were made: Toastmaster, Dr. I. E. Newson; Our Guests, by Mr. Geo. A. Jones, president of the Veterinary Medical Association; Our Hosts, by Dr. Chas. G. Lamb; The Ladies, by H. F. Kern, a member of the senior class of C. S. C.; The "Vets," by Miss Louise Gaboury; All of Us, by Dr. Geo. H. Glover. Music by the Veterinary Quartette.

The forenoon of the second day the ladies were escorted by the faculty ladies to visit the college buildings.

In the afternoon they were given an automobile ride.

B. F. KAUPP, Secretary.

CENTRAL NEW YORK VETERINARY MEDICAL ASSOCIATION.

The second annual meeting of the Central New York Veterinary Medical Association was held on June 29, 1911, at the Vanderbilt Hotel, Syracuse, New York.

The meeting was called to order at 10.45 A. M. with President W. G. Hollingworth in the chair. Roll call found the following members present: W. G. Hollingworth, H. A. Turner, W. B. Switzer, F. E. York, A. J. Tuxill, J. G. Hill, E. E. Dooling, R. M. Weightman, W. L. Clark, J. A. Prendergast, W. W. Prendergast, J. M. Currie, L. G. Moore, D. C. Papworth. Routine business was then taken up and occupied the attention of the members for the balance of the morning session. An adjournment for lunch was taken at 12.30.

At 1.55 P. M. the meeting reconvened and the routine business not disposed of at the morning session was first completed. Previous to the election of officers, the president of the association, Dr. W. G. Hollingworth, addressed the members, urging friendship and loyalty. He particularly emphasized the obligation resting on the individuals to take an active part in the work of the association.

Dr. A. George Tegg, of Rochester, as a visitor to the association, spoke on the method of electing officers and of the duty resting on the officers to make careful preparation for the meetings.

Under the head of applications for membership, applications were received from the following: Dr. Wallace Anthony, Poplar Ridge, N. Y.; Dr. Almond H. Ide, Lowville, N. Y.; Dr. J. C.

Stevens, Cortland, N. Y.; Dr. John H. Stack, Baldwinsville, N. Y., and Dr. I. L. Buchanon, Auburn, N. Y. These names being favorably reported, the applicants were duly elected to membership.

Dr. Dennie Udall, of the New York State Veterinary College at Ithaca, a guest of the association, addressed the members on "Stomach Worms in the Horse." This practical subject was carefully and interestingly handled and was followed by a lengthy discussion.

Papers on "Tetanus" and on "Sunstroke," read by Dr. E. E. Dooling, proved of practical value and drew forth a good discussion of each subject.

Dr. H. A. Turner took the subject "Dressing of Wounds" as the topic of well chosen remarks.

Under the somewhat enigmatical title "What Was It," Dr. A. J. Tuxill gave an account of an aggravated case of skin disease which was of great interest and resulted in a careful discussion

Dr. J. C. Stevens reported a case of glanders.

The meeting then opened under the head of election of officers. Upon a motion, unanimously carried, the outgoing officers were re-elected for a term of one year. These are as follows: President, Dr. W. G. Hollingworth; vice-president, Dr. H. A. Turner; secretary-treasurer, Dr. W. B. Switzer.

A resolution was duly passed, extending to Dr. Dennie Udall and Dr. A. George Tegg a vote of thanks for their presence and interest in the meeting.

Dr. Tegg extended a cordial invitation to the members to be present at the meeting of the Genesee Valley Veterinary Medical Association, to be held on July 20, at Rochester, New York.

Meeting duly adjourned at 5.30 P. M.

W. B. SWITZER, *Secretary.*

NORTH CAROLINA VETERINARY MEDICAL ASSOCIATION.

The annual meeting of this association was held in Greensboro, N. C., on Wednesday, June 28, 1911. Dr. Watt Ashcraft, the president, being absent, the chair was occupied by Dr. F. S. Charter, vice-president of the association.

On roll call the following members responded to their names: Carroll, Charter, Chrisman, Edmonds, Flowe, Herring, Jones, Koonce, McMackin, Petty, Roberts, Ragland and Wolfe.

The secretary then read the minutes of the last annual meeting, also the called meeting in Raleigh on February 1, which on motion were approved as read.

The literary and scientific program at this meeting proved most interesting and instructive, some of the subjects being a "Review of Recent Veterinary Works," by Dr. G. A. Roberts; "Bacterins in Veterinary Practice," by Dr. J. P. Spoon; "Recent Advances in Pathology," by Dr. T. N. Spencer; "The Practitioner," by Dr. R. W. Wolfe; "Black Tongue in Dogs," by Dr. L. F. Koonce; "Hog Cholera Serum Production," by Dr. B. B. Flowe, and "Some Phases of Tuberculin Testing," by Dr. W. G. Chrisman. Splendid talks were also made by Mr. W. H. Eaton, State Dairyman, on the subject of a "Clean Milk Supply for Cities," and by Mr. J. W. Robinson on "The Farmers' Viewpoint of Tuberculin Testing." In the afternoon an address by Dr. J. G. Ferneyhough, State Veterinarian of Virginia, was much enjoyed.

The subject of tuberculin testing having been discussed at length, resulted in the adoption of a resolution that the members of the association will not apply the tuberculin test to any cattle until the owner agrees that the veterinarian making the test shall brand each reacting animal with the letter T on the right shoulder and that all reactors shall be reported to the State Veterinarian.

Drs. J. P. Spoon, T. N. Spencer, F. C. Herndon, C. R. Graham, J. A. Graham, W. C. Hornaday, R. R. Rhinehardt, J. L. Bullock and B. J. Fitzmorris were elected to membership in the association. Drs. T. M. Owen, J. G. Ferneyhough, W. H. Eaton and J. W. Robinson were elected to honorary membership in the association.

The following officers were elected for the ensuing year:

President, Dr. L. J. Herring, Wilson, N. C.

Vice-President, Dr. L. F. Koonce, Raleigh, N. C.

Second Vice-President, Dr. J. P. Spoon, Burlington, N. C.

Secretary, Dr. M. J. Ragland, Salisbury, N. C.

Treasurer, Dr. T. N. Spencer, Concord, N. C.

The committee composed of Drs. Roberts, Petty and Ragland presented the following resolution:

Whereas, It hath pleased our Heavenly Father to take from cur midst our fellow member and veterinarian, J. W. Merritt, be it

Resolved, That we express to the bereaved family our sincere sympathy, and that a copy of the same be spread on the minutes of the association.

Adjourned to meet in Raleigh, N. C., in June, 1912.

M. J. RAGLAND, *Secretary*,

THE PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.*

GLENOLDEN, PA., July 5, 1911.

DEAR DOCTOR:

The Pennsylvania State Veterinary Medical Association will hold its 1911 September semi-annual meeting on the first Tuesday, the 5th day of the month, in Pittsburg, Pa. The state association has not held a meeting in the western part of the state for many years and it is the desire of the members of the Western Pennsylvania Veterinary Medical Association to have the state association hold the approaching meeting in Pittsburg, and it is hoped that the selection will meet with general approval.

At the last meeting of the Western Pennsylvania Veterinary Medical Association the following members of that association were chosen to serve on the committees selected to take care of the meeting:

Committee of Arrangements—Drs. J. C. McNeil, S. E. Brunner, W. E. Wight, P. K. Jones and N. Rectenwald.

Committee of Finance—Drs. B. Gunner, E. A. Cahill, C. W. Springer, H. R. Sherrick, J. O. Eyman, H. S. Wright, C. Z. LaBerge and J. A. Waugh.

President Schneider has selected the following members of the state association to serve as a committee with the above two committees:

Committee of Arrangements—P. K. Jones, chairman; N. Rectenwald, E. A. Cahill, S. E. Wight and H. S. Jackson.

This announcement is sent out at this time, two months before the day of the meeting for the following reasons:

1. To inform every member of the profession in the state of the approaching meeting, so that plans can be made to attend.
2. To have it generally known that every registered veterinarian is welcomed at the meeting and invited to become a member of the state association.

* A letter issued by Secretary Reichel to the veterinary profession in Pennsylvania.

3. That the president and secretary are willing to vouch for any applicant to membership on return to the secretary of application blanks properly signed by any registered veterinarian and accompanied by the initiation fee of five dollars, which will cover the regular dues for one year, on or before the day of the meeting.

4. To urge a large number of the profession in the state to contribute to the program. It appears unusually appropriate that the program include reports or papers interesting to the practicing veterinarian.

5. The titles of reports or papers should be sent to the secretary as soon as possible, as the program will go to press August 15. Any that may not be presented at the meeting will be held over for the annual meeting of March, 1912.

In order that every registered veterinarian may receive a program any change of address should be made known to the secretary.

Very truly yours,

JOHN REICHEL, *Secretary.*

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The semi-annual meeting of the Veterinary Medical Association of New Jersey was held at Rutgers College, New Brunswick, July 13. About forty members were present, and four or five visitors from New York and Philadelphia, prominent among whom was Secretary Marshall, of the American Veterinary Medical Association, who made a most interesting and instructive address on dairy inspection. Dr. J. M. McLaughlin, of New York (formerly of Providence, R. I.), read a paper on rabies.

Dr. James McDonough, of Montclair, presented a most interesting paper on spavin, in which he called attention to "knuckling" as being a valuable symptom in the diagnosis of that troublesome condition.

President Rogers, in discussing Dr. McDonough's paper, stated that there was very much more in the "McDonough reaction," as he termed it, than he was at first willing to give credit for, but that he had been convinced by clinical evidence that it was a very valuable aid indeed in the early diagnosis of

spavin, and urged that Dr. McDonough write a fuller paper on the subject and send it to the AMERICAN VETERINARY REVIEW for publication, that the whole profession might benefit by his observations.

Other members added their indorsement to Dr. McDonough's convictions, after following his method of observation for a year or more. Our readers may expect an article on the subject from the pen of Dr. McDonough in the near future.

The meeting was to have been held at the Experiment Farm of the Agricultural Station, but fire destroyed their buildings, so it was held in the Chemical Building, Rutgers College. An open-air luncheon was served on the campus under large shade trees.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The twenty-second annual meeting of the above society will be held in Brooklyn, N. Y., September 12, 13 and 14.

Hotel headquarters will be the Clarendon, No. 284 Washington street, corner of Johnson; the meeting-place of the society will be at "The Imperial," Fulton street and Red Hook lane, four blocks from hotel headquarters. A luncheon will be served to those in attendance at this place.

The clinic will be held at "The Berns Veterinary Hospital," No. 74 Adams street. Surgical clinics will be held on the first two evenings, September 12 and 13 (unless the literary program demands one of the evenings), and will be continued on the morning of the 14th; beginning *early* in the morning and concluding about 1 p. m. A buffet luncheon will be provided at the hospital, where the members may help themselves to a bite any time after 11 a. m. At the conclusion of the clinic, special cars will convey the members, ladies and visitors to Coney Island, where a Shore Dinner will be served at 3 p. m., and the balance of the evening devoted to recreation and pleasure. As the meeting will be held during Mardi Gras week at the Island, there will no doubt be plenty of both.

Spaces for exhibits of drug and instrument houses at "The Imperial" may be obtained by writing Dr. Geo. H. Berns, Chairman, Local Committee of Arrangements, No. 74 Adams street, Brooklyn, N. Y.

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of this association was held at the "Thorndike House," Rockland, July 13, 1911.

The meeting was called to order by President Wescott. Members present answering roll call were: Drs. W. L. West, I. L. Salley, A. L. Murch, C. H. McGillicuddy, H. L. Stevens, C. W. Watson, E. E. Russell, C. T. French and G. F. Wescott. After reading and approval of the minutes of the April meeting, a very interesting paper was read by Dr H. L. Stevens, touching upon three cases in his own practice; giving symptoms, diagnosis and treatment of same.

Case No. 1. Rupture of trachea in Jersey cow.

Case No. 2. Ergotism in 3-year-old heifer.

Case No. 3. Horse with bowel trouble.

A long discussion followed by Drs. Murch, West, McGillicuddy and Salley.

The other essayists of the evening were absent. Dr. Joly on account of illness, Drs. Inglis and Robinson did not report. Voted to meet at Hotel Elmwood, Waterville, October, 1911. Meeting adjourned 12 midnight.

C. W. WATSON, *Secretary.*

DR. J. A. LOGAN, Assistant State Veterinarian, North Dakota, has removed from Bismarck to Oakes, that State.

A COMPLETE list of the names of the applicants for membership in the American Veterinary Medical Association is published in this issue of the REVIEW, beginning on page 612. If the association members will look over this list in a leisure moment, voting on the executive committee's recommendations will be greatly facilitated.

WE desire to acknowledge the receipt of the 1911-12 announcements of the Cincinnati Veterinary College, McKillip Veterinary College, Division of Veterinary Science of the Michigan Agricultural College, Chicago Veterinary College, Indiana Veterinary College, Kansas City Veterinary College, Division of Veterinary Science Colorado Agricultural College, the University of the Philippines College of Veterinary Science, Rush Medical College—University of Chicago, the Alumnus—Iowa State College and the Agricultural Journal of the Union of South Africa.

NEWS AND ITEMS.

ATTORNEY GENERAL'S CONSTRUCTION OF THE TEXAS VETERINARY LAW.

ATTORNEY GENERAL'S DEPARTMENT, STATE OF TEXAS.

AUSTIN, June 24, 1911.

Board of Veterinary Medical Examiners,
Austin, Texas.

DEAR SIRS—We are in receipt of your letter of the 23rd instant asking this Department for a construction of the Veterinary Law as enacted by the Thirty-second Legislature, and which is to be found on page 132 of the Acts of 1911. In your letter you ask if Section 5 of said Act requires all applicants to produce their diplomas and pass a satisfactory examination in the various branches of veterinary science, and does this section exclude all who do not hold diplomas from appearing before the Board for examination.

In reply thereto, you are advised that by the terms of Section 5 any person who desires to practice veterinary surgery in this State shall make application for license to the Board. This application is to be made upon blanks furnished by the Board. His application shall be accompanied by the fee prescribed by law and his diploma shall be submitted for inspection by the Board. The law provides that when these preliminary requirements are satisfied the applicant shall present himself before the Board for examination.

It is further provided in Section 6 of the Act that the Board of Veterinary Medical Examiners shall keep a record of their proceedings in a book provided for that purpose, and that they shall record the name of each applicant, his age, the school from which he graduated, with the date and the degree conferred.

It is further provided by Section 9 of the Act that the District Clerk of each county shall keep a complete list of all the certificates of license recorded by him; and it provides that he shall further record the name of the Veterinary College which conferred the diploma on which the certificate is based.

Therefore, in my opinion, said Section 5 clearly contemplates that the applicant for license to practice veterinary medicine, surgery and dentistry must be the holder and owner of a diploma issued from some Veterinary College.

You further ask in your letter if that portion of Section 5, which permits persons to secure a certificate of license on application to the Board, who have practiced for at least one year immediately prior to the passage and approval of this Act, is meant that no one is required to take the examination prior to January 1st, 1912, unless the applicant sees fit to do so; and in answer thereto you are advised that persons who have practiced veterinary surgery, etc., for at least one year immediately prior to the passage and approval of this act are permitted, if they so desire, to receive a license from the Board, which license will expire at the end of one year from the

date of the issuance of same. If the applicant in this case so desires he may receive this license, or if he possesses the proper qualification, among which is the holding of a diploma, he can take the examination before the Board; and if he passes, may receive a permanent license.

While you have not asked for any further construction than the above, I will voluntarily add that Section 4, which permits a temporary license to be issued by the Secretary of the Board to any applicant whose application is accompanied by the application fee and who presents satisfactory evidence that he possesses the necessary qualification, in my opinion requires the applicant to possess a diploma, and the language "necessary qualifications" in my opinion, means that he must be qualified to present himself for examination by the Board; and one of the qualifications required by Section 5 before he can present himself for examination by the Board, is to possess a diploma which must be submitted to the Board for inspection.

You are further advised with reference to a person who has practiced for one year immediately prior to the passage and approval of this act, that upon the expiration of the license granted by the above Board in that instance, the holder of the license must undergo an examination before he can again practice. He must also at the time he takes the examination be the owner and in possession of a diploma. I do not believe, however, that he must be the owner and holder of a diploma in order to secure a certificate of license from the Board for a period of one year. My opinion is that in that instance the license for one year is not based upon a diploma but upon the fact that he has been in the practice for a period of one year.

You are further advised that persons who have practiced veterinary surgery for five years prior to the enactment of this law, may practice in the county of their residence without a license. They, however, are required to make affidavit before the district clerk of his county that he has practiced veterinary surgery for five years.

You are further advised that if such person moves from the county of his residence he shall comply with all the requirements of this Act before he shall be allowed to practice, and my understanding is that the requirements of this Act, of which he must comply, are found in Section 8 of the Act, which read as follows:

"Any registered veterinarian removing his residence from one county in this State into another county in order to practice, shall in like manner record his certificate of license in the county to which he removes."

Yours very truly,

WALTER C. WOODWARD,
Asst. Atty.-General.

LIST OF APPLICANTS

FOR MEMBERSHIP IN THE AMERICAN VETERINARY MEDICAL ASSOCIATION.

July 24, 1911.

Chas. N. Alkire, M.D.C., Sidell, Ill. (Chicago Vet. College, 1911); Vouchers, George B. Jones and L. A. Merillat. Antone S. Almeida, D.V.S., Dixon, Cal. (San Francisco Vet. College, 1909); Vouchers, C. M. Haring and A. R. Ward. F. J. Anderson, V.S., Grand Forks, North Dakota (Ontario Vet. College, 1905); Vouchers, W. F. Crewe and L. Van Es. Herbert Anderson, V.S., Dickinson, North Dakota (Ontario Vet. College, 1906); Vouchers, W. F. Crewe and L. Van Es. John S. Andrade, M.D.V., Morton, Ill. (McKillip Vet. College, 1910); Vouchers, M. H. McKillip and Charles Frazier. James A. Armstrong, V.S., Regina, Sask., Canada (Ontario Vet. College, 1888); Vouchers, John F. Barnett and D. Tamblin. Jacob

F. Ast, D.V.S., San Francisco, Cal. (San Francisco Vet. College, 1907); Vouchers, Charles Keane and David F. Fox. Frank J. Babbitt, M.D.V., Lynn, Mass. (Harvard Vet. School, 1897); Vouchers, Daniel Emerson and Francis Abele, Jr. Richard M. Bacon, M.D.C., Tilden, Neb. (Chicago Vet. College, 1911); Voucher, Charles A. McKim. Glenn R. Beavers, M.D.V., Arlington, Iowa (McKillip Vet. College, 1910); Vouchers, J. E. Robertson and J. H. McLeod. L. J. Belloff, D.V.S., New Brunswick, N. J. (N. Y. American Veterinary College, 1902); Vouchers, J. Payne Lowe and Wm. Herbert Lowe. H. E. Bennis, D.V.M., Ames, Iowa (Iowa State College, 1908); Vouchers, W. W. Dimock and C. H. Stange. Henning E. Bergh, D.V.S., Suisun, Cal. (San Francisco Vet. College, 1909); Vouchers, Charles Keane and David F. Fox. Bernard A. Bescoby, B.V.Sc., Winnipeg, Man., Canada (Ontario Vet. College, 1910); Vouchers, C. D. McGilvray and F. Torrance. Harris S. Borneman, V.S., Norristown, Pa. (Ontario Vet. College, 1882); Vouchers, H. Preston Hoskins and C. J. Marshall. James Boyd, D.V.S., Milpitas, Cal. (San Francisco Vet. College, 1907); Vouchers, Charles Keane and David F. Fox. John A. Boyd, D.V.S., Mason City, Neb. (Kansas City Vet. College, 1910); Vouchers, A. Bostman and J. S. Anderson. George W. Brett, D.V.M., Washington, D. C. (George Washington University Vet. Dept., 1911); Vouchers, E. C. Schroeder and J. R. Mohler. Charles W. Brown, D.V.S., McCloud, Cal. (San Francisco Vet. College, 1910); Vouchers, Charles Keane and W. E. D. Morrison. Joseph W. E. Bryans, V.S., Lansford, N. D. (Ontario Vet. College, 1907); Vouchers, E. J. Walsh and W. F. Crewe. Albert E. Bryant, V.S., Menomonie, Wis. (Ontario Vet. College, 1893); Vouchers, W. G. Clarke and D. B. Clarke. Clinton E. Burkholder, D.V.S., Chief, Mich. (Kansas City Vet. College, 1908); Vouchers, J. S. Anderson and P. E. Juckniess. Wm. M. Burson, D.V.M., Athens, Ga. (Cincinnati Vet. College, Georgia, 1907); Vouchers, W. A. Scott and T. W. Jago. P. L. Cady, D.V.S., Freemont, Neb. (Kansas City Vet. College, 1910); Vouchers, C. A. McKim and J. S. Anderson. Edward A. Cahill, V.M.D., Canonsburg, Pa. (University of Penna. Vet. Dept., 1909); Vouchers, C. J. Marshall and H. Preston Hoskins. Joseph H. Caldwell, V.S., Edmonton, Alb., Canada (Ontario Vet. College, 1907; McKillip Vet. College, 1908); Vouchers, J. C. Hargrave and M. J. McCay. Wm. A. Caldwell, D.V.S., Edgewood, Cal. (San Francisco Vet. College, 1908); Vouchers, Charles Keane and David F. Fox. Frederick J. Cambon, D.V.S., New Orleans, La. (Kansas City Vet. College, 1911); Vouchers, W. H. Dalrymple and H. G. Patterson. Alne E. Cameron, V.S., Regina, Sask., Canada (Ontario Vet. College, 1908); Vouchers, John F. Burnett and D. Tambllyn. Steven J. Cavney, V.D.S., Portland, Ore. (San Francisco Vet. College, 1902); Vouchers, Chas. Keane and P. H. Browning. Joseph D. Cecil, V.M.D., Philadelphia, Pa. (University of Penna. Vet. Dept., 1910); Vouchers, C. J. Marshall and H. Preston Hoskins. Wm. G. Christman, V.S., Raleigh, N. C. (Ontario Vet. College, 1902); Vouchers, N. S. Mayo and G. C. Faville. Ress Clarke, D.V.M., Winchester, Ohio (Cincinnati Vet. College, 1910); Vouchers, F. R. Smythe and Lewis P. Cook. Burnett L. Clarke, M.D.C., Monticello, Wis. (Chicago Vet. College, 1895); Vouchers, R. S. Heer and W. G. Clark. David B. Comstock, D.V.S., Albany, N. Y. (McGill University, 1891); Vouchers, J. F. DeVine and J. G. Wills. E. A. Cobin, M.D.C., Tucumcari, New Mexico (Chicago Vet. College, 1909); Vouchers, W. A. Savage and F. H. Barr. Willis T. Cowin, D.V.S., Lake City, Minn. (Kansas City Vet. College, 1911); Vouchers, C. S. Shore and L. Hay. Wm. E. Cotton, D.V.M., Washington, D. C. (George Washington University Vet. Dept., 1911); Vouchers, E. C. Schroeder and J. R. Mohler. S. S. Coxe, V.S., Brandon, Man., Canada (Ontario Vet. College, 1894); Vouchers, F. Torrance and W. Hilton. Chas. C. Dauber, V.S., Sturgis, Mich. (Ontario Vet. College, 1904); Vouchers, Judson Black and George W. Dumphy. H. L. Dixon, B.V.Sc., Regina,

Sask., Canada, Ontario Vet. College, 1910); Vouchers, John F. Burnett and D. Tamblin. Alfred J. Dufresne, M.D.V., Glendive, Montana (McKillip Vet. College, 1910); Vouchers, A. H. Cherey and M. E. Knowles. J. B. Dufresne, A.A., D.V.S., Regina, Sask., Canada (Laval University, 1909); Vouchers, John F. Burnett and D. Tamblin. Chas. M. Elliott, D.V.S., Seward, Neb. (Kansas City Vet. College, 1908); Vouchers, J. S. Anderson and S. Stewart. Arthur E. H. Fabian, M.D.C., Lake Geneva, Wis. (Chicago Vet. College, 1908); Vouchers, F. W. B. Achen and W. B. Clark. Edward J. Fallon, D.V.S., San Francisco, Cal. (San Francisco Vet. College, 1908); Vouchers, Chas. Keane and David F. Fox. G. R. Fetherolf, V.S., Reading, Pa. (Ontario Vet. College, 1894); Vouchers, J. W. Sallade and Otto G. Noack. Ray C. Finkle, M.D.C., Seymour, Wis. (Chicago Vet. College, 1910); Vouchers, J. P. West and W. A. Wolcott. Herman C. Fischer, D.V.M., Grand Rapids, Mich. (Grand Rapids Vet. College, 1911); Vouchers, H. L. Schuh and Robertson Muir. William F. Flanary, B.V.Sc., St. Charles, Minn. (Ontario Vet. College and University of Toronto, 1910); Vouchers, J. P. Anderson and L. Hay. Allen A. Foster, D.V.S., Marshall, Texas (Kansas City Vet. College, 1910); Vouchers, D. Folse and W. A. Knight. Harry Frederick, D.V.M., Suffern, N. Y. (N. Y. State Vet. College, 1910); Vouchers, W. L. Williams and V. A. Moore. L. T. Giltner, D.V.M., Chicago, Ill. (N. Y. State Vet. College, 1906); Vouchers, Ward Giltner and Richard P. Lyman. Arthur T. Gilyard, D.V.M., Waterbury, Conn. (N. Y. State Vet. College, 1907); Vouchers, Grove W. Loveland and Thomas Bland. Wm. S. Gimper, V.M.D., Philadelphia, Pa. (University of Penna. Vet. Dept., 1910); Vouchers, W. J. Lentz and C. J. Marshall. A. D. Gemmill, V.S., Celina, Ohio (Ontario Vet. College, 1892); Vouchers, J. H. Blattenburg and Louis P. Cook. George Gordon, D.V.S., Hanford, Cal. (San Francisco Vet. College, 1904); Vouchers, Charles Keane and David F. Fox. Carl P. L. Graff, Dr., Rolla, N. D. (Royal Vet. College, Copenhagen, Denmark); Vouchers, W. F. Crewe and S. P. Smith. Robert Graham, D.V.M., Lexington, Ky. (Iowa State College, 1910); Vouchers, George H. Glover and C. J. Marshall. Harry W. Graybill, D.V.M., Washington, D. C. (Geo. Washington Univ., Vet. Dept., 1911); Vouchers, B. T. Woodward and Adolph Eichhorn. John Greer, D.V.S., Savannah Lake, N. Y. (McGill Univ., 1896); Vouchers, J. A. McCrank and J. F. DeVine. Walter R. Grutzman, D.V.S., Fort Sheridan, Ill. (American Vet. College, 1896); Vouchers, C. A. McKillip and D. Tencknick. John H. Halton, D.V.S., Salt Lake City, Utah (San Francisco Vet. College, 1903); Vouchers, R. P. Lyman and A. D. Melvin. Wm. F. Haney, D.V.S., Modesta, Cal. (San Francisco Vet. College, 1910); Vouchers, Charles Keane and David F. Fox. Samuel K. Hazlett, M.D.C., Oelwein, Iowa (Chicago Vet. College, 1895); Vouchers, Peter Malcolm and C. H. Stange. Charles Head, V.S., M.D.C., Regina, Sask., Canada (Toronto Vet. College, 1906; Chicago Vet. College, 1907); Vouchers, John F. Burnett and D. Tamblin. Charles E. Hershey, V.S., Tiffin, Ohio (Ontario Vet. College, 1906); Vouchers, W. B. Washburn and John V. Newton. Tunis Hicks, D.V.M., Washington, D. C. (Geo. Washington Univ., Vet. Dept., 1911); Vouchers, B. T. Woodward and Adolph Eichhorn. Robert C. Hill, V.S., West Alexandria, Ohio (Ontario Vet. College, 1895); Vouchers, Walter Shaw and Edgar H. Shepard. Wm. A. Hilliard, D.V.Sc., Winnipeg, Man., Canada (McGill Univ., 1897); Vouchers, Wm. Hilton and F. Torrance. George Hilton, V.S., Ottawa, Canada (Ontario Vet. College, 1897); Vouchers, J. G. Rutherford and A. E. Moore. John J. Hogarty, D.V.S., Oakland, Cal. (San Francisco Vet. College, 1900); Vouchers, R. A. Archibald and Charles Keane. Frank W. Hueben, Kansas City, Kan. (Kansas City Vet. College, 1910); Vouchers, R. C. Moore and F. F. Brown. Eugene H. Hyland, D.V.S., Schuyler, Neb. (Kansas City Vet. College, 1908); Vouchers, C. A. McKim and L. P. Carstenson. Ivan B. Irwin, V.S., Stonewall, Man., Canada (Ontario Vet.

College, 1911); Vouchers, F. Torrance and C. D. McGilvray. John P. Iver-son, D.V.S., Sacramento, Cal. (San Francisco Vet. College, 1906); Vouchers, Charles Keane and David F. Fox. Harry W. Jakeman, V.M.D., Halifax, N. S., Canada (Vet. School, Univ. of Pennsylvania, 1909); Vouchers, Wm. Jakeman and C. J. Marshall. Jos. H. Jefferson, V.S., Chicago Jct., Ohio (Ontario Vet. College, 1906); Vouchers, H. Fulstow and W. B. Washburn. Albert C. Johnson, D.V.S., Portland, Ore. (San Francisco Vet. College, 1909); Vouchers, Henry Munn and W. Dean Wright. Wm. G. Keehn, D.V.S., Gresham, Neb. (Kansas City Vet. College, 1911); Vouchers, C. A. McKim and J. S. Anderson. J. Rein Keelor, D.V.S., Harleysville, Pa. (Ontario Vet. College, 1883); Vouchers, S. E. Weber and C. J. Marshall. Dennis R. Keresev, B.V.Sc., Danbury, Conn. (Ontario Vet. College, 1910). Vouchers, Thomas Bland and G. W. Loveland. Frank A. Kickbusch, M.D.V., Marinette, Wis. (McKillip Vet. College, 1904); Vouchers, W. G. Clark and S. J. Walkley. Richard H. Kingston, D.V.S., New York City (New York American Vet. College, 1904); Vouchers, Robert W. Ellis and W. J. Coates. B. F. Kinyon, D.V.S., Ladysmith, Wis. (Chicago Vet. College, 1891); Vouchers, W. G. Clark and F. G. Wilson. Julius Koch, D.V.S., Los Angeles, Cal. (San Francisco Vet. College, 1910); Vouchers, Charles Keane and David F. Fox. George H. Koon, D.V.M., Washington, D. C. (Geo. Washington Univ., Vet. Dept., 1911); Vouchers, B. T. Woodward and Adolph Eichhorn. Robert E. Krieger, M.D.C., Ray, N. D. (Chicago Vet. College, 1906); Vouchers, W. F. Crewe and E. J. Walsh. August R. Lang, D.V.S., Porterville, Cal. (San Francisco College, 1909); Vouchers, Charles Keane and R. A. Archibald. Harry B. Langdon, V.S., Charlestown, W. Vo. (Ontario Vet. College, 1911); Vouchers, G. W. Dunphy and S. Brenton. Omer Laroche, D.V.S., Montreal, P. Q., Canada (Ecole Veterinaire Francais Laval, 1905); Vouchers, M. C. Baker and A. A. Etienne. Adolph H. Legenhausen, M.D.C., Jackson, Minn. (Chicago Vet. College, 1910); Vouchers, L. Hay and F. E. Palmer. Andrew A. Lockhart, V.S., M.D.V., Carnduff, Sask., Canada (Ontario Vet. Col., 1904—McKillip Vet. Col., 1905); Vouchers, John F. Burnett and D. Tamblyn. Edward A. Logan, B.S.A., D.V.M., Wamego, Kan. (Kan. City Agricultural College); Vouchers, F. S. Schoenleber and K. W. Stouder. Otis A. Longley, D.V.S., Fresno, Cal. (San Francisco Vet. College, 1903); Vouchers, Charles Keane and David F. Fox). John F. McNulty, V.M.D., Philadelphia, Pa. (Vet. School, Univ. of Penna., 1898); Vouchers, C. J. Marshall and H. Preston Hoskins. Earl A. McCain, M.D.V., Gregory, S. D. (McKillip Vet. College, 1911); Vouchers, J. T. McGilvray and S. W. Allen. Charles F. McCarthy, D.V.S., San Francisco, Cal. (San Francisco Vet. College, 1901); Vouchers, R. A. Archibald and Charles Keane. F. H. McCarthy, V.S., Pottsville, Pa. (Ontario Vet. College, 1892); Vouchers, J. W. Sallade and I. C. Newhard. John McCarthy, D.V.M., Brooklyn, N. Y. (New York State Vet. College, 1909); Vouchers, E. B. Ackerman and Geo. W. Berns. James A. McCloskey, V.M.D., Philadelphia, Pa. (Univ. of Pennsylvania, Vet. School, 1908); Vouchers, W. J. Lentz and C. J. Marshall. John E. McCoy, D.V.M., Cawker City, Kan. (Kansas City Agricultural College, 1909); Vouchers, F. S. Schoenleber and K. W. Stouder. L. E. McDonnell, M.D.C., Hankinson, N. D. (Chicago Vet. College, 1908); Vouchers, W. F. Crewe and L. Van Es. John F. McDonough, V.M.D., Philadelphia, Pa. (Univ. of Pennsylvania, Vet. School, 1910); Vouchers, W. L. Rhoads and H. Preston Hoskins. John H. McLain, M.D.C., Inkster, N. D. (Chicago Vet. College, 1894); Vouchers, W. F. Crewe and L. Van Es. Adams T. McLean, V.S., B.V.S., Truro, N. S., Canada (Ontario Vet. College, Univ. of Toronto, 1910); Voucher, E. A. A. Grange. William Madson, M.D.C., Peshtigo, Wis. (Chicago Vet. College, 1911); Vouchers, W. G. Clark and J. P. West. Leslie G. Marshall, V.M.D., Towanda, Pa. (Vet. School, Univ. of Pennsylvania, 1904); Vouchers, E. C. Dingley and W. J. Lentz. Stanley T. Martin, V.S., B.V.Sc., Winnipeg, Man.,

Canada (Ontario Vet. College, 1909); Vouchers, F. Torrance and W. Hilton. Wm. H. Mattson, V.M.D., Chester Heights, Pa. (Univ. of Pa., Vet. School, 1889); Vouchers, H. Preston Hoskins and C. J. Marshall. Karl F. Meyer, Dr. Vet. Med., Philadelphia, Pa. (Berne, München, Zürich, Vienna, 1908); Vouchers, C. J. Marshall and H. Preston Hoskins. John M. Miller, D.V.M., Grand Rapids, Mich. (Grand Rapids Vet. Col., Ohio State Vet. College); Vouchers, H. L. Schuh and Robertson Muir. George C. Mitchell, M.D.C., Klamath Falls, Ore. (Chicago Vet. College, 1909); Vouchers, W. Dean Wright and Wm. Lytle. Frederick A. Mitler, M.D.C., Fitchburg, Mass. (Chicago Vet. College, 1908); Vouchers, W. H. Dodge and H. D. Clark. Wm. B. Moorhouse, D.V.S., Tarrytown, N. Y. (American Vet. College, 1894); Vouchers, W. J. Coates and Robert W. Ellis. Calvin W. Moyer, V.M.D., Sunbury, Pa. (Vet. School, Univ. of Pennsylvania, 1911); Vouchers, Louis A. Klein and H. Preston Hoskins. Vincent C. Moyer, V.M.D., Philadelphia, Pa. (Vet. School, Univ. of Pennsylvania, 1910); Vouchers, W. J. Lentz and C. J. Marshall. Albert A. Munn, V.S., Kearney, Neb. (Ontario Vet. College, 1904); Vouchers, C. A. McKim and John L. Hoylman. Jas. J. Murison, V.S., Arcola, Sask., Canada (Ontario Vet. College, 1901); Vouchers, D. Tamblyn and Jno. E. Burnett. Norman Neilson, D.V.S., Cohisa, Cal. (San Francisco Vet. College, 1903); Vouchers, Charles Keane and David F. Fox. Percival K. Nichols, D.V.S., Port Richmond, N. Y. (American Vet. College, 1896); Vouchers, E. B. Ackerman and John L. Halloran. Robert S. Norton, M.D.C., Velva, N. D. (Chicago Vet. College, 1910); Vouchers, W. F. Crewe and E. J. Walsh. Michael J. O'Rourke, D.V.S., San Francisco, Cal. (San Francisco Vet. College, 1909); Vouchers, Charles Keane and David F. Fox). C. B. Outhrie, D.V.S., Salina, San Francisco, Cal. (San Francisco Vet. College, 1902); Vouchers, Charles Keane and R. A. Archibald. E. E. Patterson, D.V.S., Detroit, Mich. (Grand Rapids Vet. College, 1901); Vouchers, H. L. Schuh and Robertson Muir. Don W. Patton, D.V.M., Steele, N. D. (Vet. Dept., Iowa Agricultural College, 1893); Vouchers, W. F. Crewe and L. Van Es. Wm. Henry Paxson, V.M.D., Marietta, Pa. (Univ. of Pennsylvania, Vet. School, 1905); Vouchers, S. H. Gilliland and E. L. Cornman. Charles D. Pearce, D.V.M., Owego, N. Y. (New York State Vet. College, 1908); Vouchers, J. F. DeVine and W. L. Williams. Theo. J. Petersen, D.V.S., Visalia, Cal. (San Francisco Vet. College, 1902); Vouchers, Charles Keane and David F. Fox. Robert M. Platt, D.V.M., Aetna, Kansas (Kansas State Agri. College, 1910); Vouchers, K. W. Stouder and F. S. Schoenleber. Henry Pomfret, M.D.V., Winnipeg, Man., Canada (Ontario Vet. College, 1903, McKillip Vet. College, 1904); Vouchers, F. Torrance and C. D. McGilvray. Chas. E. Price, D.V.S., Santa Ana, Cal. (San Francisco Vet. College, 1906); Vouchers, Charles Keane and David F. Fox. John H. Pullin, D.V.S., Santa Ana, Cal. (San Francisco Vet. College, 1910); Vouchers, Charles Keane and David F. Fox. James E. Quinn, D.V.S., Antioch, Cal. (San Francisco Vet. College, 1910); Vouchers, Charles Keane and David F. Fox. Edward Rafter, V.S., Hamburg, N. Y. (Ontario Vet. College, 1895); Vouchers, Frank Hunt and W. S. Baker. William J. C. Ramsay, D.V.S., Watsonville, Cal. (San Francisco Vet. College, 1908); Vouchers, Charles Keane and David F. Fox. Wm. Readhead, V.S., Lenox, Iowa (Ontario Vet. College, 1895); Vouchers, A. H. Quin and S. H. Brennan. Mandon D. Rentschler, M.D.V., Punxsutawney, Pa. (McKillip Vet. College, 1909); Vouchers, C. J. Marshall and H. Preston Hoskins. George S. Rey, D.V.S., Visalia, Cal. (San Francisco Vet. College, 1908); Vouchers, Charles Keane and David F. Fox. Thomas H. Richards, V.S., Winnipeg, Man., Canada (Ontario Vet. College, 1901); Vouchers, C. D. McGilvray and F. Torrance. Edward H. Riley, D.V.M., Bethesda, Md. (Geo. Washington Univ., Vet. Dept., 1911); Vouchers, E. C. Schroeder and John R. Mohler. Wm. F. Riordan, D.V.S., Gilroy, Cal. (San Fran-

cisco Vet. College, 1906); Vouchers, Charles Keane and W. M. MacKellar. Chester A. Roig, D.V.M., Poughkeepsie, N. Y. (New York State Vet. College, 1910); Vouchers, Otto Faust and Edward J. Nesbitt. Thomas P. Rose, D.V.S., Gresham, Neb. (Kansas City Vet. College, 1910); Vouchers, C. A. McKim and P. L. Carstenson. Guy W. Rosenberger, D.V.S., Hanford, Cal. (San Francisco Vet. College, 1906); Vouchers, W. M. MacKellar and Arthur Paul. James D. Ross, V.S., Winnipeg, Man., Canada (Ontario Vet. College, 1894); Vouchers, C. D. McGilvray and F. Torrance. Alex. Schlesinger, Jr., D.V.M., Whitney Point, N. Y. (New York State Vet. College, 1910); Vouchers, J. Payne Lowe and P. A. Fish. Ernest Schneider, M.D.C., Kulm, N. D. (Chicago Vet. College, 1908); Vouchers, W. F. Crewe and L. Van Es. Lucius A. Severcool, Elyria, Ohio (Ontario Vet. College, 1880); Vouchers, E. H. Shepard and J. L. Farahger. Ralph E. Shigley, M.D.C., Kenmare, N. D. (Chicago Vet. College, 1909); Vouchers, W. F. Crewe and E. J. Walsh. Howard J. Shore, D.V.M., Washington, D. C. (Vet. Dept., George Washington University, 1911); Vouchers, A. M. Farrington and John R. Mohler. Thomas Sims, V.S., Bottineau, N. D. (Ontario Vet. College, 1898); Vouchers, W. F. Crewe and E. J. Walsh. Septimus Sisson, S.B., V.S., Columbus, Ohio (Ontario Vet. College, 1891); Voucher, John H. McNeil. Anthony W. Small, D.V.S., Hayward, Cal. (San Francisco Vet. College, 1910); Vouchers, Charles Keane and David F. Fox. A. N. Smith, V.S., Farmer City, Ill. (Ontario Vet. College, 1888); Vouchers, L. A. Merrill and A. H. Baker. George H. Smith, D.V.S., Hoboken, N. J. (New York University, Vet. Dept.; New York-Am. Vet. College, 1903); Vouchers, J. Payne Lowe and Thomas E. Smith. William B. Smith, D.V.M., Arcade, N. Y. (N. Y. State Vet. College, 1906); Vouchers, J. F. DeVine and J. G. Wills. John F. Stanford, M.D.V., Fayetteville, Ark. (McKillip Vet. College, 1908); Voucher, R. R. Dinwiddie. Wm. E. Stribling, M.D.C., Earlham, Iowa (Chicago Vet. College, 1907); Vouchers, Ralph F. Knight and A. Ribard. M. B. Stiver, D.V.Sc., Elgin, Man., Canada (Ontario Vet. College, 1895); Vouchers, F. Torrance and W. Hilton. Garry T. Stone, D.V.M., Norwich, N. Y. (N. Y. State Vet. College, 1900); Vouchers, J. F. DeVine and W. L. Williams. Chas. E. Struthers, D.V.S., Willows, Cal. (San Francisco Vet. College, 1908); Vouchers, Charles Keane and David F. Fox. George C. Taylor, D.V.S., Redding, Cal. (San Francisco Vet. College, 1906); Vouchers, Charles Keane and David F. Fox. John B. Thompson, M.D.C., Kenmare, N. D. (Chicago Vet. College, 1910); Vouchers, W. F. Crewe and E. J. Walsh. Robert S. Todd, D.V.S., New Milford, Conn. (American Vet. College, 1893); Vouchers, G. W. Loveland and Thomas Bland. Albert N. Towner, D.V.S., Brewster, N. Y. (N. Y.-American Vet. College, 1908); Vouchers, F. W. Andrew and Robert W. Ellis. Jacob Van de Ewe, M.D.C., Sherwood, N. D. (Chicago Veterinary College, 1910); Vouchers, E. J. Walsh and W. F. Crewe. Harry E. Venzke, M.D.V., Pierre, S. D. (McKillip Vet. College, 1911); Vouchers, S. E. Cosford and S. W. Allen. George R. Ward, D.V.S., San Francisco, Cal. (San Francisco Vet. College); Vouchers, Charles Keane and David F. Fox. Edward A. Watson, V.S., Lithbridge, Alb., Canada (Ontario Vet. College, 1904); Vouchers, J. C. Hargrave and D. Warnock. John Welch, V.S., Roland, Man., Canada (Ontario Vet. College, 1895); F. Torrance and C. D. McGilvray. Sydney S. Wertz, M.D.C., Kenesaw, Neb. (Chicago Vet. College, 1909); Vouchers, Edwin O. Odell and Richard Ebbitt. Samuel S. Westgate, V.S., M.D.V., Mott, N. D. (Ontario Vet. College, 1906; McKillip Vet. College, 1907); Vouchers, W. F. Crewe and L. Van Es. Evan J. Will, V.S., Harrisonburg, Va. (Ontario Vet. College, 1896); Vouchers, R. R. Clark and H. Bannister. Hervey W. Witmer, V.S., Shippensburg, Pa. (Ontario Vet. College, 1895); Vouchers, C. J. Marshall and H. Preston Hoskins. Thomas Wrigglesworth, V.S., Eau Claire, Wis. (Ontario Vet. College, 1882);

Vouchers, W. G. Clark and D. B. Clark. Chas. C. Wright, M.D.C., Lebanon, Ore. (Chicago Vet. College, 1910); Vouchers, W. Dean Wright and J. F. Morel. Jos. H. Vigneau, D.V.S., Three Rivers, P. Q., Canada (Laval University, 1897); Vouchers, A. Etienne and M. C. Baker. William W. Yard, D.V.S., Denver, Colo. (American Vet. College, 1894); Vouchers, Geo. H. Glover and G. W. Dickey.

SEE Secretary Reichel's letter, issued to the veterinary profession in Pennsylvania, on page 607 of this issue of the REVIEW.

DR. L. E. WILLYOUNG, First Field Artillery, has gone from Fort Sill, Okla., to be stationed at Schofield Barracks, Honolulu, H. I.

CHESTON MORRIS HOSKINS, younger son of Dr. W. Horace Hoskins, Philadelphia, received the degree of Doctor of Veterinary Medicine at the commencement exercises of the University of Pennsylvania, June 21.

DR. L. J. HERRING, Animal Pathologist and Veterinarian, Georgia Experiment Station, Experiment Station, Ga., has removed to Wilson, N. C., to engage in general practice. We wish the doctor success in his new field.

VETERINARIANS, not only in New York City but throughout the country, will be shocked to learn of the sudden and violent death, on July 24, of Dr. Thos. G. Sherwood, of New York, who has long been recognized by his colleagues in that city and generally as an authority on canine diseases. Dr. Sherwood was driving an automobile, accompanied by his wife, when the machine skidded and plunged over an embankment. Mrs. Sherwood sustained cuts on the hands, face and body, and suffered from shock; but was not seriously injured.

A DEPARTMENT OF VETERINARY SCIENCE has just been established by the College of Agriculture of the University of Wisconsin. Dr. F. B. Hadley has been made chairman of the new department and veterinarian to the agricultural experiment station. Offices and a dispensary with operating and dissecting rooms are provided in the new livestock pavilion. Instruction is to be given to agricultural students to enable them to intelligently care for animals in health and disease and to recognize the common blemishes, vices and diseases to which these animals are subject.

AMERICAN VETERINARY REVIEW.

SEPTEMBER, 1911.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, July 15, 1911.

S. ARLOING'S MONUMENT.—By unanimous decision and on the proposition of Professor Chauveau, the general inspector of the veterinary schools of France, the teaching faculties of the schools of Alfort, Lyon and Toulouse, with the professors of the University of Lyon, have decided to erect a monument to the memory of Professor S. Arloing.

An honorary and an active committee have been appointed. A long list of the members is published in the circular that has just been issued, and among which are names of prominent scientists, physicians and veterinarians from all over Europe. They form a grand committee which makes a strong call to all those who, knowing the work done by Arloing, wish to associate themselves with this act of admiration and of justice.

As a learned scientist, as a teacher, as a veterinarian, Arloing has rendered services which will never be forgotten. General and comparative medicine owe him much.

Some years ago the REVIEW made a call to the veterinary profession of America for a contribution in favor of a similar

occasion, to honor Professor Nocard. Our colleagues over the Atlantic answered nobly, and their contribution was very large. I hope that to-day they will permit me to again apply to them and that they will send their contributions to Professor Maignon at the Lyon Veterinary School, or to myself, if they prefer it.

The circular states that subscribers of at least 25 francs (\$5) will receive a bronze artistic medal representing Professor S. Arloing.

* * *

ANAPHYLAXY AGAIN.—It is some time since I have entertained our readers on this subject, and yet numerous have been the communications that have appeared in scientific journals, as much upon the mode of its production and its intimate mechanism as well as upon the means to overcome it, or the anti-anaphylaxy. After remaining for a long time merely a question of the laboratory, it has become one of daily observation in practical clinics on account of the growing application of serotherapy. Indeed, numerous have been the accidents observed in human or veterinary medicine after successive injections of different therapeutic sera; and their number renders still more important the necessity to find the proper means to overcome them.

In previous chronicles I have given some attention to the questions of anaphylaxy in general; to-day, from a magistral Review by Mr. R. Pecherot, published in the *Journal of Zootechnie*, I extract some recent points of general interest among which, first the symptomatology and again the anti-anaphylaxy proper.

The symptomatology is relatively complicated, differing according to the fact that the injection is made with pure (milk, white of egg) or with toxic albumins. In this last condition, to the ordinary symptomatic series of anaphylactic manifestation, are added other symptoms which vary according to the toxic principle in question.

In the anaphylaxy due to pure albumins, the organs principally affected are the nervous centres; and the symptoms accompanying these lesions may appear in two characteristic periods:

(1) One of *excitement* expressed by uneasiness, chronic muscular contractions, vomitings, frequent expulsions of urine and feces, marked acceleration of the respiration.

(2) One of *depression*, with somnolency, staggering, weakness of the pulse, which remains regular, coma, anuria, constipation. The temperature may remain normal, but it often drops below the average. This has been considered as accompanying the first apparition of the symptoms. Generally the reflexes remain, sometimes they are abolished.

Although these nervous symptoms do generally appear in the above regular manner, they may also frequently differ, and fatal result may occur in the full period of excitement or, again, in that of depression. There are, again, different forms of evolution in the symptoms, which were observed by Alexandrescu and Cinea, which permitted them to recognize four forms: (1) A *fulminant* form with severe dyspnea, cyanosis of the mucous membranes, enormous œdema of the udder, anal and vulvar mucous membranes, dropping of the animal with general contractions, abundant salivation, death in five or six minutes; (2) a *very severe* form of dyspnea, pulmonary œdema, salivary and lachrymal secretions abundant, stupid appearance for three-quarters of an hour, reduction of milk secretion for a week; (3) a *serious* form with severe prurigo of the muzzle, in the submaxillary space and lumbar region, impulsive tendency to move forward, urticaria; (4) a *benignant* form with loss of rumination, œdema of the anal and vulvar mucous membranes, cyanosis of the udder, urticaria.

With horses, these manifestations are exhibited by excessive nervous excitement, extensive urticaria or œdema of the neck and head.

* * *

Considering the subject of antianaphylaxy, Mr. Pecherot gives a little consideration to the methods which have been prin-

cipally recommended by Besredka, of which I have already spoken as being used in Roumania, and he then speaks of the method advocated by Friedberger and Hartoch, consisting in venous injections of a very concentrated solution of sodium chloride, 2 grammes by kilogram of the animal, and to which they add calcium chloride in the proportion of 1 p. 100.

In the resort of serotherapy the means to employ to avoid anaphylactic accidents can be classed as direct and indirect. Among the former are those that act upon the serum, which have not given excellent results.

Carnot and Slavu advocate the addition of chlorhydric acid to the serum.

Heating to 56° C. is recommended by French preparators of serum.

Among the indirect means are those that act principally on the individual himself, either by the method of Besredka, that of F. Arloing, who recommends a rectal injection of the therapeutic serum, or, again, of that of a normal horse, done previous to the first manifestations of anaphylaxy.

In animals, anaphylaxy is treated by anæsthetics, narcotics in large doses, or specially alcohol.

When anaphylactic accidents are produced, during the application of serotherapy this must be immediately stopped or they will return with each injection more and more severe and appear nearer and nearer after the injection.

But finish Pecherot in his review: All these methods give excellent results with the anaphylaxy of laboratory. But no one has yet made its definite proof in clinics.

* * *

In relation with this important subject, however, there has been published in the *Annales de l'Institute Pasteur* an article by A. Besredka, entitled "*Antianaphylaxy, Treated by the Method of Small Doses and Subinfrant Injections,*" which is resumed by Panisset as follows:

After the attempts of vaccination against the serial anaphylaxy of guinea-pig by Rosenau, Anderson, Besredka, Steinhardt, which remained without result, Besredka has shown that one single injection of a small dose is sufficient to prevent the accidents produced by a dose surely fatal in an anaphylactized witness not submitted to antianaphylactic vaccination. For instance, on an anaphylactized guinea-pig by horse serum, inject under the skin $1/20$ th of c.c. of this same serum, dose fifty times inferior to a noevie one; from that moment he begins to be antianaphylactized; four hours after, a dose certainly fatal can be injected in its nervous centres or in the blood without manifestations of any kind. Small doses of serum injected under the skin ($1/20$ th of c.c.) or in the peritoneum ($1/50$) act as true vaccination.

The immunity appears more rapidly (one to two hours) after an intraperitoneal vaccination than after the subcutaneous. It takes place immediately after an intravenous injection. The small dose of serum preserves only against one or two fatal doses; but the method is insufficient against the testing inoculation by the veins or also against massive doses of serum administered with therapeutic object. Then one must have recourse to subintran vaccination. Instead of a small dose, two, three or four injections are made a few minutes apart, the dose being increased at each injection.

In this way an antianaphylactic condition of great power is created. To an anaphylactized animal a venous injection of $1/40$ th of c.c. of serum is made; five minutes later another of $1/10$ th of c.c.; two minutes later $1/4$ c.c. can be injected, and two minutes after 1 c.c. without danger.

In less than ten minutes one succeeds in vaccinating against twenty fatal doses. The method of subintran vaccination can be applied to serial passive anaphylaxy. All species of animals and the most varied manifestations of anaphylaxy are justifiable of the method. Experiments have demonstrated that it prevents

the accidents of lactic anaphylaxy, and it can be applied not only to guinea-pigs but also to rabbit, goat, cattle, horse and dog.

* * *

ANKYLOSTOMOSIS—ETIOLOGY.—Under the names of *Uneinariosis*, *Ankylostomiasis*, *Ankylostomosis* or *Pernicious anhemia* is described a disease which, in man as well as in ruminants and carnivorous, is manifested by morbid troubles, progressive anhemia, gastro-intestinal disorder, due to the presence in the small intestine of two parasite nematods, the *Ankylostomum Duodenal*, discovered in 1838 by A. Dubini, and the *Necator Americanus*, discovered by W. Stiles in 1902. Perroncito in 1880 had proved that the serious disease known as anhemia of the miners, anhemia of the tunnels, was due to the parasitism of ankylostoma, whose general evolution had been established by the works of Grassi and Parma, Perroncito, Leichtenstern, Lambine and Loss.

Laid in the intestine, the egg of this parasite, although already provided with two, four, and even eight blastomers, develops only outside of the intestine, where in twenty-four hours a rhabditoid larva comes out, and is in a few days transformed into an encysted *strongyloid* larva that dessication kills in a few instants, but which may live for two or four months in a place sufficiently damp. Very resisting to most energetic anti-septics, which kills it only after a contact of several hours, this larvæ when once in the living organism undergoes other transformations and then becomes an adult male or female ankylostoma.

This parasite infesting the intestine in the stage of strongyloid larva, the question presents itself: How did it reach there?

Perroncito had admitted that it was through the mouth. Working miners in eating had absorbed the larvæ, which were deposited on their hands. Strongyloid larvæ being found in great number on the walls of the mine galleries, the infestation was thus possible. Or, again, by the drinking of water in which

eggs of ankylostoma had been. Fruits and vegetables watered with such water could also be a means of infestation per mouth. Flies were also accused of transporting the larvæ. But with all these explanations supporting more or less the theory of Perroncito as to the principal cause of the entrance of the parasites in the digestive canal, there remained many authors who did not accept the theory, and among them the principal was Loss, who considered as difficult to generalize it, because of several biological peculiarities of the larvæ, and in 1898 advanced the opinion that the infection was taking place through the skin.

* * *

During that year, while manipulating cultures of larvæ, with the greatest care to avoid infesting himself per mouth, he *without attention* allowed a drop of a very rich culture to fall on his hand, and did not wipe it off immediately. Feeling, after a short while, itching quite violent at the place where the drop of culture had fallen, he scraped the surface of his epidermis, examined it with the microscope, and discovered the presence of a small number of larvæ and quite a quantity of empty larvæ sheaths. He concluded that the disencysted larvæ had penetrated his skin. Three months later he passed eggs of ankylostomas in his own feces. He then started series of experiments similar to the one he had on himself, on human beings and finally on dogs. The results were positive in all and authorized him to affirm the fact of the penetration of larvæ of ankylostomas by the skin.

The experiments on dogs were particularly demonstrative, as they allowed him, by killing the dogs at various times from the initial infestation, to watch the tract followed by the larvæ so as to reach the intestines.

Controlling experiments were thus carried out by other authors; with *Ankylostoma Duodenale* (Schaudinn, Herman, etc.), with *Mecator Americanus* (C. A. Smith), with *Anky-*

lostoma caninum (Loss, Calmette and Breton), all gave positive results and confirm the discovery of Loss.

Veterinarians may have heard of this new explanation of the presence of kind of epizootic outbreaks. Our classical works refer to it; Cadeac has mentioned it in the recent edition of his encyclopedia, and it is necessary to insist on the practical importance of the facts demonstrated by Loss. They have elucidated definitely the important question of the etiology of ankylostomosis, and gave proper directions for a rational prophylaxy of the disease, just as well for human patients as it will apply to animals.

* * *

AUTO-INTOXICATION IN INTESTINAL OCCLUSION.—Prof. Roger, in the *Presse Medicale*, has published an article which I may be permitted to *resumé*.

Three theories have been advanced to explain the mechanism of death in intestinal occlusions: That of the *reflex*, in which the nervous system plays the principal part, the *intoxication* and the *infection*.

To-day it is the toxic theory which is most accepted; the obstacle prevents the expulsion of the products from the numerous microbial organisms of the intestines. But the clinical observations and the experiments of Roger and Garnier have proved that *death occurs so much more rapidly that the obstacle is situated higher*. Indeed, if one ligates the duodenum or the jejunum of a rabbit, he will live scarcely twenty-four hours. It will, however, live from thirty to forty hours when the ligature is on the ileum and from four to five days if on the rectum. In the first part of the small intestine, the microbes are relatively in small number; their true habitat is the cecum and it is there consequently that are elaborated in greater abundance the poisons, and a ligature on the rectum, stopping their expulsion, must bring on death rapidly. But, on the contrary, it is slow to take place and is much less rapid than when the

occlusion is duodenal; microbial toxises do not then seem to be the principal cause of death.

In 1906, Roger and Garnier advanced another theory, that of an *intoxication by the poison elaborated by the organism itself*, that is to say, a *true auto-intoxication*.

This theory has suggested other investigations and in particular those of Braun and Borutton, which do not accept the microbial, but advocate the reflex theory. Recently in 1910, Draper-Maury, who has made more than four hundred experiments on the question, has elaborated an important and interesting work. For him, when the occlusion is duodenal, death is due to an auto-intoxication by the substances produced or poured in that part of the intestine; while, when it is situated in the large intestine, it results from a toxi-infection, a microbial influence.

Draper-Maury has made on dogs a potential gastro-enterotomy fistula, that is, an anastomosis between the stomach and the intestine, with which, by placing a ligature on various parts of the portion of the intestine between the pylorus and the new artificial opening on the great curvature of the stomach and then experimenting on dogs, he proved that in the intestinal occlusion, phenomenas of auto-intoxication, in whose genesis the pancreas plays an active and important part; but still he admits equally the influence of the elaborated products of the duodenal and stomach as also that of some gastric and jejunal products. In criticising this, Prof. Roger adds that death cannot be considered as a consequence of the retention of the pancreatic juice, because the ligature of the canals of this gland allows a lapse of life of long duration.

* * *

HERMOPHENYL.—This is a therapeutical agent introduced in medicine since 1901, where it soon reaches a first place among the usual antiseptics—compound of mercury, which is very sol-

uble in water; it possesses all the properties of the mercurial salts and has the advantage of not being toxic, not irritating for the tissues and not coagulating, albuminoid substances. It has been used recently in veterinary medicine and principally by army veterinarians. Lesbre, who writes: With bruised wounds—all of those which were treated were quite serious, existed in various regions, and many were deep and wide—it worked well. The treatment consisted in washing the wound with boiled water, drying it with wadding pads, and then coating the whole surface with a solution, 10 pr. .1000 of hermophenyl. The wound was then covered with a pad of aseptic wadding. The dressing renewed according to indications two or three times a day. In wounds where there were sutures, a cicatrization by first intention was often obtained with serious wounds of the head. The recovery of some wounds may demand several weeks, but the inflammatory symptoms are always mild and hermophenyl dries the suppuration and prevents all accident of intoxication and hydrogyrism.

In fistulous wounds, hermophenyl injected in 10 pr. .1000 solution is followed in a short time with cicatrization of these wounds which had been rebellious to oxygenated water, tincture of iodine and other antiseptics. In punctured wounds of the foot, many cases treated by the introduction of hermophenyl in powder or as a pencil and the wound covered with a pad of aseptic nature, have given most remarkable results. The animals having never shown any of the great pain manifested by the use of sublimate, which closes the fistula and prevents the escape of pus. Hermophenyl has over the sublimate the advantage of not coagulating the albuminoids, of not acting as a caustic nor a toxic, and can be used in a proportion ten times stronger than sublimate, thus having a much greater antiseptic power.

Easy of use, certain in its action, it is a powerful antiseptic that recommends itself in *veterinary therapeutics*.

OCCULT EXPERIMENTAL MESENTERIC TUBERCULOSIS.—Mr. Chaussé, Sanitary Inspector, has been making for some time experiments on tuberculosis. A few months ago he presented to the Academy of Sciences an article where he stated that, when submitted to injections of natural products or very virulent cultures of tuberculosis, dogs would contract an occult mesenteric tuberculosis and remain in that condition for at least six months.

And then the question presented itself: What would become of this latest infection? Would it develop into an abdominally manifested affection, or towards a thoracic tuberculosis, apparently primitive, as would be claimed by the advocates of the digestive origin of tuberculosis; or, again, would the dogs recover by resorption of the pathogenous agents? The solution of this question, very interesting as far as the pathogeny of the human and animal tuberculosis, by injection, suggested to Mr. Chaussé other experiments.

First, he demonstrated that dogs would contract mesenteric tuberculosis easier than he first suspected and be infected with small doses of human or bovine bacilli.

As far as the question of what becomes of that infection, he experimented upon twenty-three dogs which gave him constant results and brought him to the following conclusions:

1. Dogs do contract by ingestion, even with small doses, an occult mesenteric tuberculosis which is detected by inoculation to guinea-pig up from the 150th to the 180th day.

2. In normal conditions the tuberculous bacilli which reaches the mesenteric glands are absorbed in the organism, and this resorption takes place in a lapse of time varying between 80 and 200 days to the maximum.

3. This occult digestive tuberculosis does not, in a physiological condition, give rise to an apparently primitive thoracic infection nor to any other specific localization of similar nature.

Being admitted that the organic reactions of dogs towards the tuberculous virus are *identical* to those of man, it appears probable that these conclusions may apply also entirely to him.

It is certainly a very important fact to consider besides that which has its value in relation with the digestive infection of tuberculosis.

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BIBLIOGRAPHIC ITEMS.—Announcements (?) of colleges, catalogues, bulletins and reports of yearly work have come to me lately for the closing session of 1910-1911. Among them I recall principally the report of the Legislature at Albany of the New York State Veterinary College. It covered over 200 pages and, besides the report of the Director, V. A. Moore, and those relating to consulting, medical ambulatory and small animal clinics, it contains very interesting papers of special work done at the college or in other particular relations which by themselves show that the gentlemen belonging to the faculty of this institution are doing good work in behalf of the profession. For those who desire special information, they may refer with great advantage to the report of Director Moore. Among the subjects treated are to be found: "The Elimination of Tubercle Bacilli from Infected Cattle and the Control of Bovine Tuberculosis and Infected Milk"; "Some Methods Employed in Northern Europe to Control Bovine Tuberculosis," both by Director Moore. "The Elimination of Tubercle Bacilli," by Prof. Elmer G. Peterson. "The Granular Venereal Disease, Abortion and Sterility of Cows," by Prof. Williams. "Hog Cholera and Anti-Cholera Serum," by H. J. Kilks. "Fatal Septicemia in Young Chickens," etc. Those are followed by others from Profs. Fish, Welch, Burnett, Udall and Sunderville.

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THE *Agricultural Journal of the Union of South Africa*, which is issued monthly by the Department of Agriculture at Pretoria, in the May number publishes from Dr. Theiler a revised (second) edition of his previous article on diseases, "Ticks and Their Eradication," brought up to date. This article had

already appeared for general information, but the question has made such progress that it was considered necessary to issue a revised edition to give an opportunity to those who are specially interested to be well informed. The article, although it is principally for lay readers, is nevertheless very valuable to all those who wish information relating to these prevailing diseases of South Africa. A concise consideration of biliary fever of horses, redwater in cattle, gall sickness in cattle, of the fevers caused by *Piroplasma mutans*, *Spirochaetes*, the East Coast fever, heartwater in cattle, sheep and goats, is given and followed by the life history of the ticks; the blue, the bont leg, the red, the brown, etc., with their scientific names alongside. The hosts of the ticks are mentioned as follows: "The blue tick has been found in equines, cattle, sheep, goats, dogs and antelopes. The red tick on equines, cattle, sheep and goats, the reed buck, other antelopes, and the Cape hare. The brown tick on cattle, equines, sheep and goats, dogs, antelopes, Cape hare and lion. The black pitted tick on cattle, horses, sheep, goats, dogs, wild hogs, jackal, bush pig and hedgehog. The bont tick on cattle, horses, sheep and goats, dogs, wild hog, antelopes and ostrich."

For the eradication of ticks and, of course, of the disease they transmit, the various ways are considered: the burning of the grass, dipping, starving of the ticks. All this information, where strictly scientific phraseology seems to be absent, are of most valuable interest to breeders, raisers; and this kind of propaganda is of great importance for the wealth of South African agriculture.

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Acknowledgment is given of:

Annual Report of the Chief of the Cattle Board of Agriculture of Massachusetts.

Lecture on "Bacteriology in General Education," by Dr. V. A. Moore, delivered before the Society of American Bacteriologists.

The *Lawrence Telegram*, with lecture from Dr. J. F. Winchester on "Tuberculosis."

"Studies on the Biology of the Texas Fever." Bureau of Animal Industry, Bulletin No. 130. By H. W. Graybill.

Cornell Veterinarian, June, 1911. *Veterinary Notes*, June, 1911. *Chicago Veterinary College Quarterly Bulletin*.

A. L.

THE TORONTO MEETING.

As the REVIEW goes to press, the great A. V. M. A. meeting at Toronto has passed into history; history that tells of important accomplishments for veterinary progress in America. About seven hundred enthusiastic veterinarians, from all parts of the United States and Canada, who had thronged into the great city of Toronto, wrestled earnestly and persistently with the educational problems so close to the heart of President Glover, and discussed scientific matters, during the entire week. For, although the meeting proper, opened its session on Tuesday morning, August 22, the Association of Faculties and Examining Boards, and the Executive Committee, were already hard at work on Monday, August 21. A full and detailed report of this great meeting will be published, as has been customary, in the October issue of the REVIEW, but we have taken advantage of a little space in our present number, just as we are closing our forms, to give to those of our readers who were not fortunate enough to be present, a brief outline of what transpired.

The important accomplishments for veterinary progress referred to above, consist of a lengthening of the college courses to four years of six months each (or three years of nine months each), beginning with 1913, and one year's high school work or its equivalent in 1914-15, and two year's high school work or equivalent, in 1918-19, as an entrance requirement in order for graduates to be eligible to membership in the American Veterinary Medical Association. This will make for a uniform standard of matriculation requirements and uniform course, and pave the way for a uniform degree in veterinary medicine; as no school in America can afford to disregard so powerful a body as the na-

tional association, at whose doors more than two hundred applicants knocked for admission during the recent convention.

The election of officers, as at San Francisco, was eminently satisfactory, the office seeking the man, and not the man the office; and we feel sure that veterinarians throughout the entire country will rejoice in the election of Dr. S. Brenton, of Detroit, as president. Drs. C. J. Marshall, of Philadelphia, and George R. White, of Nashville, were re-elected to the offices of secretary and treasurer, respectively.

The strain of a strenuous day in the convention halls was relaxed by a moonlight sail on Lake Ontario, on Wednesday evening, in the beautiful steamer "Cayuga," by courtesy of the Mayor of Toronto, where some recuperated by reclining in easy chairs and others found relaxation in "tripping the light fantastic;" and on the following day the three hundred ladies that honored the convention with their presence enjoyed the sights of Toronto, and were honored by an invitation to a four-in-hand drive behind the famous prize-winning horses of Sir Henry Pellett, followed by a visit to his gardens at Casa Loma, on Walmar road, where Lady Pellett served them with tea, and they were treated to a miniature horse show, the horses exhibited comprising some of the recognized champions of the continent, including Sir Henry's latest addition to his stables, "Indian Chief," the champion heavyweight saddle horse of America. Many veterinarians absented themselves from the session and repaired to Sir Henry Pellett's stables, where they met the ladies returning from their drive and shared with them the exhibition of equine aristocracy and inspected the palatial stables that housed them.

Thursday evening found between two hundred and seventy-five and three hundred ladies and gentlemen around the festive board, banqueting at the famous "McConkey's," on Yorke street; and the meeting was brought to a close by a rousing clinic on Friday afternoon, after which a large party of veterinarians and their ladies embarked on the palatial steamer "Toronto" (Montreal Line, Lake and Thousand Islands Division), for Montreal, Quebec and other places, before returning to their homes.

ORIGINAL ARTICLES.

DISTEMPER OF THE DOG.

BY PROF. J. J. L. HELDRING, M.D.C., THERAPEUTIST, DEPARTMENT OF VETERINARY SCIENCE, WASHINGTON STATE COLLEGE, PULLMAN, WASH.

In treating of canine distemper our every effort should be directed toward attaining a practical end. I therefore, at the outset, request that an essentially practical attitude be adopted toward the dogmas herein set forth. If, for instance, the suggestion is made that in the treatment of epileptiform fits, not uncommon in distemper, the practitioner, for the purpose of removing such of the teeth as might give rise to trouble, should look to the dog's mouth—please bear in mind that crowding teeth have absolutely nothing in common with distemper, but reason out for yourself that they may at any time develop a selective affinity for the peripheral endings of an afferent nerve, which may in that manner be induced to carry a painful impression to the central nervous system, upsetting the same at a psychological moment best calculated to throw an ailing dog into "whooping fits."

The term "distemper" is an old one, dating far back into antiquity. At one time it was the common goat for almost any disease, human or bestial, the popular mind saw fit to immortalize. At this writing it has become the exclusive property of the veterinary profession, where, owing to its magic charm, its mysterious subtlety, and its obscure origin, it still forms the bond of scientific contention.

Distemper as a canine disease made its first appearance in Europe shortly after the discovery of America. It was presumably introduced into Spain from Peru by some returning conquerors. In 1740 we learn of its presence in France; in

1760 in England; 1770 in Russia; and now, like rabies, it has become a thoroughly cosmopolitan malady.

GENERALIZATION.—As a contagious disease, distemper appears to be freely intercommunicable among the dog, cat, fox, wolf and hyena tribes of the carnivorous kingdom. Among our domestic representatives of this division we find well-bred animals to be seemingly less resistant to its ravages than are mongrels. Seldom, indeed, does a registered hunting dog escape from its clutches with his olfactory sense fully preserved. With regard to the nature of the contagion, although the specific virus has not as yet been isolated, scientific experiments have pretty well established it to be both fixed and volatile in character. This, in part, accounts for the large number of ostensibly sporadic cases that annually present themselves for treatment. One other fact that forces itself upon our attention is, that canine distemper—although, like infantile paralysis among the human family, it may manifest itself at any period of life—usually singles out puppies somewhere between the ages of eight weeks and as many months. The disease appears to be essentially a catarrhal phlegmania, involving the ocular, respiratory and digestive mucous membranes, either individually or *en masse*. Frequently, also, it is accompanied by grave nervous disturbances, and practically always by a characteristic cutaneous exanthema. These diversified manifestations of one and the same disease have led me from practical motives to consider the various forms in which the disease appears, according to symptoms as they predominate.

Among the early symptoms, more or less prevalent in all forms of distemper, should be mentioned dullness and loss of appetite, followed by chills, dry hot nose with rise in temperature, and in the course of two or three days one or more of the specific forms.

I. THE RESPIRATORY FORM.—As a rule at first only the upper air-passages are affected. There is marked nasal catarrh, accompanied by pruritis, which induces the animal constantly to rub its nose, while a muco-purulent discharge, at times bloody

in character, exudes from both nostrils. There is also a pronounced overflow of tears, accompanied by a troublesome conjunctivitis, in which the eyelids become encrusted and glued together. Simultaneously with this we may observe a very painful laryngitis and pharyngitis, during which there will be noticed difficult deglutition and a dry, harsh cough.

Treatment.—The principles governing the treatment of distemper being palliative rather than specifically curative, it is always well at this stage of the disease to subject the patient to such antiseptic fomentations and inhalations (oil of eucalyptus), as will prove most soothing to the painfully inflamed mucous membranes of the nose and throat. An alkaline gargle like chlorate of potash, or a rubifacient liniment applied over the region of the throat, is likewise recommended, as are also boric acid lotions for the eyes; and finally, before dismissing the subject, permit me to repeat a time-worn, though never to be omitted caution: “Keep the bowels open! Give calomel!”

Should the disease gravitate, or, if you prefer, “radiate,” from the larynx to the bronchii, the constitutional symptoms will at once become aggravated. Your eye will detect an increased number of respirations, while auscultation will reveal a coarse, vesicular murmur, accompanied by mucous rales in the chest. Furthermore, the dry, harsh, vigorous cough of laryngitis has vanished and given place to a weak, painful, husky, pulmonary cough audible whenever the animal shifts its position. Fear or weakness on the part of the sufferer often allay expectoration, with the common result that the infected exudate, at each inspiration, is drawn deeper into the alveoli, thus giving rise to catarrhal pneumonia.

Treatment in the Bronchial Form.—By all means administer stimulant expectorants—ammon. carbonate, for example—or, if you prefer, such of the expectorant group as will excite a greater output of bronchial secretions, *i. e.*, tartar emetic or ipecac. These last named, being also emetics, exert likewise a mechanical effect through violent, spasmodic contractions of the diaphragm, bodily removing any exudate lodged in the upper

bronchial air passages or trachea. Meanwhile continue your eucalyptus inhalations, and don't be tardy about applying a mustard blister to the chest walls.

(C) As has been said, delayed expectoration may give rise to catarrhal pneumonia. Marked dispnoea now arises, the erstwhile loud vesicular murmur disappears, and zones of dullness take its place. This last-named feature, however, is not always present, largely depending for its more or less pronounced distinctness upon a greater or lesser area of healthy lung tissue still intervening between the field of auscultation and the seat of the trouble. As the disease progresses the exudate becomes offensive, so that frequently toward the end a fetid odor emanates from the breath.

Treatment.—When the exudate commences to solidify, remedies tending toward absorption of the same should be administered. Foremost among these should be mentioned iodide of potash, the great lymphatic deobstruent and resolvent. Other alternatives also may now be pressed into service. Echinacea, for instance, combining in itself the valuable properties of a cardiac stimulant, internal antiseptic, all around febrifuge, and diuretic, must be allotted a prominent place.

II. THE NERVOUS FORM.—This second series of manifestations is due to the presence, within the circulation, of the same septic materials or disease products, causative of canine distemper in its simpler forms. Blood heavily charged with toxins forces its way to the higher nerve centres, attacks them, pollutes them, and degenerates them, in case of so-called recovery, not infrequently leaving the animal palsied or subject to fits during life. In the constitutionally weak, symptoms of depression and stupefaction are early manifested; in the strong, at first delirium and rabiform manifestations, followed by profound stupor, are the rule. In either case spasmodic muscular contractions and convulsions due to central irritation are by no means uncommon. At times, also, affected animals will be observed to wander aimlessly about, with staggering gait and head carried backward, or stiffly to one side—the result of meningitis.

Impaired vision, likewise, not uncommonly accompanies this nervous type of distemper, while permanent loss of smell or persistent chorea form by far too ordinary a sequel to require separate comment.

Treatment.—Nervous manifestations in distemper must be always regarded with grave apprehension, while its course and progress, under these conditions, varies so much in individuals that our treatment must of necessity conform itself to circumstances. First of all, look to the teeth and remove such of them as may give rise to trouble. This done, devote your energy to the treatment of symptoms in the order they arise. In the early stages endeavor to divert the blood from the central nervous system to the periphery. This may be accomplished by means of saline purges, bleeding, blistering the region of the spine from occiput to croup, massage, electricity and various other branches of mechano-therapy. Meanwhile restricted exercise, port wine, and constitutional tonics and alteratives like Donovan's solution of arsenic, may be regarded as rational therapeutics, and finally, avoid all excitement and at night induce sleep if necessary by means of bromides.

III. GASTRO-INTESTINAL FORM.—Students as a whole are apt to place the wrong interpretation upon the language of their textbooks. Thus I distinctly remember for years after graduating, to have labored under the mistaken impression that the grave digestive phenomena often accompanying the abdominal form of distemper were due essentially to a "rational and concerted effort," on the part of all vital functions in the animal economy, to rid the system of an infection. Had I correctly interpreted my authority, I should have read "misdirected effort" instead; yet as matters now stood I could not but continue groping in the dark. "The attempted cure is worse than the disease" I argued. "Morbid matter is thrown off in the stools, our scientists assert."

Very well, but what about the resulting gastro-enteritis? What about the oft irreparable dyspepsia, the annihilated power of intestinal absorption? What about the necrotic mucous mem-

brane sloughing away in strips, leaving the denuded intestinal canal raw and hemorrhagic? What about the progressive dysentery which saps the animal's every vital force, until nothing of him remains but a moth-eaten pelt and a bundle of marrowless bones? Are we to accept all this as conclusive evidence of nature's power to remedy her own ills? That much for a puerile point of view! The whole of this vitriolic outburst has long since been relegated to the scrap-heap, duly identified as the idle vapors of a mind overstocked with ill-digested material.

Treatment.—This confession properly disposed of, it now only remains for me to admit that I have since become a disciple of those practitioners who assume a sort of *laissez faire* attitude toward specific diseases in general. To be brief, then, with regard to the condition now under discussion, this is our motto: Modify your diarrhœa, but don't check it. Protect your bleeding intestines, but maintain peristalsis. Tone up your relaxed intestinal walls, but avoid undue irritation. In other words, administer antacids to correct your acrid secretions, bismuth and demulcents to protect your hemorrhagic mucous membrane, sulphate of copper to tone up your flabby intestinal walls, and, above all, both before it reaches the digestive tract and afterwards, checkmate your virus. Give echicifolta to play the part of an intestinal and general antiseptic, and constitutional alterative.

GENERAL THERAPEUTICS.—Having now in detail covered our ground more completely, perhaps, than a specific disease—which, after all, must run its course—would warrant, we next come to a branch of therapeutics of far greater importance than is generally conceded: Nursing! But before entering upon this final dissertation, we are in duty bound to take cognizance of its chief ally—the exanthematous integument. The bowels, as we have elsewhere noted, do not afford an altogether safe and sane outlet to excretions. The skin, however, at the very time when the kidneys, lungs and other viscera are being taxed most sorely by the ever-swelling tide of waste products demanding an outlet, may suddenly manifest a most unwonted activity; may

answer nature's call for assistance; may open wide the semi-inactive sewage gates of the periphery; may point a safe exit to the accumulated poisons within, and all this at a crucial moment when nothing but physical shipwreck seems in store for the stricken patient.

Some years ago, when called upon to treat a rather troublesome eczema in an asthmatic pug dog, slightly superannuated, I became favorably impressed with the foregoing type of reasoning. The skin lesion, indeed, most readily yielded to the typical effects of a mildly astringent lotion, but in its stead arose a most alarming form of dyspnoea, apparently of asthmatic origin. It is evident, then, that we had jumped from the frying-pan into the fire; and, what is more, there we remained until suddenly, at the expiration of perhaps a week, the eczema broke out afresh, whereupon, very gradually the graver respiratory phenomena fell back to their normal asthmatic level. Not suspecting any connection between the two disorders I once more resorted to the astringent body-wash. Same results! The eczema quickly responded to treatment, the asthmatic manifestations became aggravated tenfold; nor was this all. The animal repeatedly thereafter was subjected to the identical experiment, and it never failed to respond to the test. Eczema at high tide, asthma at low ebb, and vice versa. Such was the rule. Some time afterwards, treatment meanwhile having been discontinued, the animal made what might be termed a spontaneous recovery. What, then, are we to conclude? That occasionally in such disorders nature avails herself of the skin as a safe means to eliminate from the system its most injurious products. Also, that in case this comparatively harmless channel of elimination becomes blocked, a more dangerous route is commonly chosen, usually revealing itself in an aggravation of systemic disturbances. In view of this our firm conviction, we are led to believe, therefore, that in various diseases, including canine distemper, to favor excretion of effete material by the skin constitutes rational treatment. A treatment, moreover, which may prove of marked prophylactic value in our war against chorea, or any

of the more common sequelæ that follow in the wake of distemper.

Treatment.—Never sanction the use of astringent lotions, or other preparations of a dessicant nature. But rather, by means of aseptic needles, liberate the contents of the cutaneous pustules that accompany practically all forms of distemper. Also, by means of mildly antiseptic oils or similarly medicated lanolin, render the integument more highly pliable, in this manner facilitating the removal of morbid matter by the skin. And once again, never lose sight of the fact that in canine distemper in its various phases the cutaneous route may prove nature's short cut to health.

NURSING.—Though fresh air forms the mainspring of this all-important branch of therapeutics, it must first and last be understood that "exposure" constitutes no part of the doctrine. Keep the animal in well-ventilated, cool, dry quarters, away from all draught. Also, when, as is often desirable during convalescence, the patient is taken out for exercise, clothe him warmly, if possible in flannels. With regard to diet, always bear in mind that in order that a dog may live, rather than to have him suffer a relapse in the form of an intestinal hemorrhage or intussuscepted gut, it becomes necessary at times to ignore his craving for food. Tempt his appetite, which is often capricious enough, but when once established fail to gratify it. In the intestinal form especially, all solid food should be withheld. Instead, it were better to give liberal quantities of barley water or other demulcent beverage, supplemented occasionally with beef tea or sour milk. The crisis once passed, fresh boiled vegetables may be offered, or finely chopped meat—in short, in moderation anything that may suggest itself to the common-sense mind. And in conclusion permit me, at the risk of becoming tiresome, once more to sound the keynote of this treatise: "The disease being highly contagious, rigidly enforce your quarantine!"

STRANGLES AND ITS TREATMENT.*

BY A. G. WADLEIGH, D.V.S., LA JUNTA, COLO.

Strangles was among the first of equine diseases to be recognized. In 1664, Solleysel gives an account of it and points to the fact that it had been known for a long time. Its infectious nature was determined experimentally by Lafosse in 1790, and since that time by a number of other investigators. It has been thought by some to be identical with scrofula and measles. Sacco and Nasbot considered it as horse-pox.

Strangles is an infectious disease of horses and mules, occurring both sporadically and epizootically. It is characterized usually by a fever followed by an acute catarrh of the upper air passages and a suppurative inflammation of the surrounding lymph glands.

It is a widespread disease among horses and seems to exist in all countries where horses are raised and to be more prevalent in breeding districts than elsewhere. It appears to stand in equine pathology very much as measles do in human medicine—a disease of early life, and consequently more prevalent where there are more young.

ETIOLOGY.—The *specific* cause of strangles is the streptococcus equi, a chain-forming organism, first described by Schutz in 1888. With pure cultures, he produced the disease in healthy horses. These streptococci can easily be found in cover-glass preparations of the pus from lymph glands after staining with aniline dyes. According to one authority, when pure cultures are inoculated in horses they produce abscesses in the site of

* Read before the semi-annual meeting Colorado State Veterinary Medical Association, June 2 and 3, 1911, Ft. Collins, Colorado.

inoculation, and strangles when introduced into the nasal cavity. Inoculation with the virus is fatal to mice.

Among *predisposing* causes, youth is probably first, for susceptibility to the disease is inversely proportionate to the age of the animal. As other predisposing causes we may mention chills, catarrhal affections of mucous membranes, bad climatic conditions, over-exertion and transporting over long distances.

The period of incubation varies from four to eight days.

SYMPTOMS—(a) *General*. The first indication of this disease is a rise of temperature to from 104° to 105.5° , which usually declines one or two degrees in about forty-eight hours and does not rise again until there is suppuration of the lymph glands. The temperature decreases simultaneously with the outward discharge of pus. When there is a pyæmic condition and absorption of toxins the temperature remains high longer. There is a loss of appetite, occasional coughing, depression, and often great weakness. The pulse usually remains about normal throughout the disease except in animals having a weak constitution.

(b) *Local*. As *local* symptoms, we find catarrh of the nasal mucosa, enlargement of submaxillary and pharyngeal lymph glands, a nasal discharge from one or both nostrils which is at first serous and somewhat viscid, but later becomes purulent and yellowish green in color.

The catarrhal condition may extend to the pharynx, larynx, trachea and even to the bronchi. In most cases swelling of the submaxillary glands appears concurrently with the purulent nasal catarrh. Very extensive swellings often develop from the submaxillary glands that may occupy the entire intermaxillary space and even spread to the outer side of the maxilla.

Abscesses form in most cases, but we may sometimes have absorption or induration. In exceptional cases strangles may present catarrhal symptoms without suppuration of lymph glands.

Occasionally one or both guttural pouches contain a large amount of pus. This condition is easily recognized by enlarge-

ment in that region and by the difficult breathing produced by the pressure on the trachea. Sometimes strangles is accompanied by a cutaneous exanthema which takes the form of an eruption of nodules, vesicles, or even pustules which may appear or disappear quite suddenly. An eruption of vesicles may also break on the nasal mucosa.

PATHOLOGY.—The pathology of strangles is quite interesting from the fact that in the beginning the disease is general, but later in its course it becomes a series of localized morbid foci, exceedingly variable in different individuals.

The contagium is absorbed chiefly through the respiratory mucous membranes. It is also thought to enter the body through the intestinal mucosa and open wounds or abrasions in the skin.

The lesions in most cases are characterized by an acute inflammatory process followed by suppuration.

The lymph glands seem to suffer most, but any organ in the body may be involved.

The glandular swellings about the head usually suppurate, the pus discharging either externally or into the oral cavity. Small abscesses often occur under the pharyngeal mucosa. The inflammation may extend to the superficial lymph vessels of the skin, especially of the head, resulting in the formation of a large number of small abscesses. Metastasis seems to take place through both lymph and blood vessels, although the lymph glands are most often affected. Suppurative foci have been found in nearly every lymph gland in the body.

COMPLICATIONS.—Chronic conditions may result, such as pharyngitis, laryngitis, catarrh of sinuses of the head. Also pyæmia and secondary infections. The discharge of pus from glands in the pleural or peritoneal cavities may give rise to a fatal pleuritis or peritonitis. Acute lymphangitis has also been observed as a sequel. One attack is supposed to produce immunity for at least two years and often for the remainder of the animal's life. However, I have seen the disease recur several consecutive years in the same animals.

The *duration* of the disease varies, according to its severity and the localization of the lesions, from a few days to several weeks and sometimes even months.

The *prognosis*, however, is favorable, as the mortality does not exceed three per cent. Death is usually caused by septi-cæmia, toxæmia, pleuritis, peritonitis, suffocation or metastatic pneumonia.

DIFFERENTIAL DIAGNOSIS.—Strangles should be differentiated from purulent nasal catarrh, glanders, parotiditis, pharyngitis, and pyogenic abscesses. These may be differentiated largely by the history and by careful examination.

TREATMENT varies with the severity of the disease. For convenience sake, I will classify it as follows: (1) nursing, (2) drugs, (3) surgery, (4) vaccination.

NURSING includes all care of the animal in regard to food, drink and general surroundings. The food should be of soft nature, such as bran mashes, silage and green food. Water should not be too cold or given in very large quantities. The animal should be kept blanketed at least during the fever stages, and general hygienic principles should be observed during the entire course.

DRUGS.—Medical aid consists chiefly in the application of poultices over suppurating lymph glands, and counter irritants over the region of the pharynx. Also the administration of volatile oils by inhalation and a mild cathartic with intestinal antiseptics given per orem. Febrifuges are seldom needed, but may be indicated when there is excessive fever for several days. In severe cases I often use a dram each of calomel, tincture of aconite, and nux vomica, given in a drench two or three times daily. Also inhalations of oil of tar or eucalyptus, and if there is much pharyngitis or laryngitis, I use a mustard plaster or a stimulating liniment externally.

SURGERY.—All suppurating lymph glands should be opened freely as soon as pus can be detected and abscess cavities syringed out with a strong antiseptic. The guttural pouches sometimes contain a large amount of pus, producing pressure on

the trachea, and usually require opening. Tracheotomy may have to be resorted to in case of excessive dyspnœa.

VACCINATION.—I have not fully satisfied myself as yet as to the real value of vaccine as a curative agent, but I certainly believe that it builds up an animal's resistance against the disease, and many complications have undoubtedly been avoided by proper vaccination during the course of the disease in conjunction with other treatment.

I give 1 c.c. the first dose and repeat the dose every twenty-four or forty-eight hours, gradually increasing the dose to 2 c.c. for yearling colts and 3 c.c. for older animals. I have obtained excellent results from giving one large dose to cases of long standing. Influenza antitoxin has been recommended by some as a curative agent in strangles, but I have never tried it.

PROPHYLAXIS.—This consists in isolation, disinfection and vaccination. Where the disease is quite prevalent the latter is the best means of protection. To give you an idea of the nature of the outbreak we have had to deal with, I submit these figures, which only include the time since January 1, 1911: Number of different cases called to treat, 38; number of cases died from complications, 5; number of guttural pouch operations, 8; number of developed pyæmic condition, 7. Animals develop the disease at all ages, from one week to twelve years of age. The disease has been prevalent in one district for over two years continuously.

In spite of the severity of the disease I have been able to prevent it in at least a majority of cases by a single vaccination. I seldom vaccinate an animal over six or seven years of age.

Out of twenty-six animals vaccinated, all of which were on infected premises, only six developed the disease and those only in a light form. Out of ten animals vaccinated, none of which had been exposed to the disease but all were exposed later, two developed a light form.

Four colts, varying in age from two months to two years, were vaccinated twice, doubling the dose the second vaccination, which was given four days after the first. None of them

showed any signs of the disease whatever. I am anxious to test this method more extensively.

All vaccine used was prepared by Dr. Kaupp in the state college laboratory. I give the following doses: For colts under six months of age, $\frac{1}{2}$ c.c.; for colts between six months and two years, 1 c.c., and older animals from 1 to 2 c.c.

Many stockmen are coming to realize that vaccination against strangles is a good investment, and I believe that serum therapy in this disease has a great future before it. Records of three cases follow:

CASE No. 1.—Bay gelding, three years old. First temperature taken, third day, 105.2° ; gave 1 dr. each of calomel, aconite and nux vomica. Temperature, fourth day, 103.6° ; fifth day, 104.2° ; sixth day, 104.0° ; gave 1 c.c. vaccine. Temperature, eighth day, 104.4° ; gave 2 c.c. vaccine. Temperature, tenth day, 104.6° ; applied antiphlogistin poultice over submaxillary glands. Temperature, eleventh day, 102.6° ; twelfth day, 102.2° ; fourteenth day, 104.8° ; opened submaxillary glands, found small quantity of pus. Temperature, fifteenth day, 102.0° ; sixteenth day, 101.0° ; seventeenth day, 100° . Animal was greatly depressed throughout course but ate soft food regularly. some pharyngitis and coughing but no difficulty in breathing.

CASE No. 2.—Five-year-old mare with colt at side. Colt also had strangles. Called to see case sixth day. Found acute pharyngitis and laryngitis, with very difficult breathing. Temperature, 104.2° . Gave inhalations of oil of tar and drenches of alcohol and calomel; also mustard plaster over pharynx. Temperature, seventh day, 103.0° ; breathing easier; continued same treatment. Temperature, ninth day, 102.0° ; eleventh day, 103.2° ; breathing harder, and considerable swelling in pharyngeal region. Temperature, twelfth day, 103.4° ; opened right guttural pouch; obtained large amount of pus. Temperature, fourteenth day, 101.3° ; still considerable pharyngitis; gave calomel, nux vomica and aconite twice daily and animal made nice recovery in two or three days.

CASE No. 3.—Mare, two years old. Had shown symptoms for several days before I was called. Owner said animal was staggering. I found a temperature of 103.4° and very mild symptoms otherwise, except numerous small abscesses along lymph chains in all four legs which produced a stiff gait. Gave 1 c.c. vaccine and mild physic. Second day gave 1 c.c. vaccine; temperature, 102.0° . Third day gave 1 c.c. vaccine; temperature, 100.6° . Animal appeared normal for about six days, when the owner found her down and unable to rise. I was called immediately, but animal died before I could reach her. Autopsy revealed no large abscesses, but slight suppuration of mesenteric and lymph glands in all the legs. Death might have been due to septicaemia or an abscess in the brain or cord. (?)

Do NOT forget the dates of the New York State Veterinary Medical Society, September 12, 13 and 14, in Brooklyn.

STILL enthusiastic over the REVIEW after thirty years acquaintance: "Enclosed please find check for the REVIEW. I have been taking the REVIEW for about thirty years and find it a welcome monthly visitor. Yours sincerely, C. Horseman."

THE UNITED STATES LIVE STOCK SANITARY ASSOCIATION will hold its fifteenth annual meeting in Chicago, December 5th and 6th. Prof. Ferguson, secretary of the association in a recent communication says: "Membership of the association is now greater than ever before. The Fourteenth Annual Report has had a wider distribution than any previous report and the members of the association are taking a splendid interest in its affairs. The co-operation of every one interested in live stock sanitary control work is desired so that our next annual convention may be the best attended and most profitable ever held. Several topics have already been chosen for the program and suggestions are now asked for additional topics." We urge veterinarians to attend and participate in the meetings of this broad association whenever it is possible for them to do so. Anyone desiring to contribute to the program should address Prof. J. J. Ferguson, Union Stock Yards, Chicago, Ill.

AZOTURIA.*

BY DR. REUBEN HILTY, BLUFFTON, OHIO.

In casting about for a definition of azoturia, I think that the one given by Prof. Law comes nearer to being a real definition of azoturia than any other given by the various other authors.

He says azoturia is an acute auto poisoning occurring in plethoric horses on being subjected to active exertion after a period of idleness and manifested by great nervous excitement and prostration, paresis beginning (usually) with the hind limbs and the passage of hemoglobin into the urine.

This most unwelcome disease has for years and years baffled the most ardent attempts of our profession, and the more research we make and the more we study the nature and causes of this disease, the more we are made to believe that it will continue to be a menace to the practitioner of veterinary medicine.

I have often heard the remark made that we should some time be able to treat azoturia as easily as we now treat parurient paresis, but anyone making this remark does not stop to consider the great amount of tissue destruction in azoturia, especially of the blood. "But," says the man who thinks we should find a specific remedy for azoturia, "this horse was in the best of health and condition just a very short while previous to having been stricken." I will admit that this is true, but may not Mr. A start down Neil avenue with his new \$10,000 auto in the best of repair and still be completely wrecked before reaching the State House, not knowing that his colored chauffeur had for several days been storing nitro-glycerine beneath the

* Read before the Ohio State Veterinary Medical Association, January, 1911.

rear seat? While we are not storing nitro-glycerine in the horse, still, something almost as deadly to him as nitro-glycerine was to the automobile. So, notwithstanding the assertion of some that they have a specific in adrenaline and what not, we still expect to be more or less worried and annoyed by this disease.

Studying the nature and cause of the disease, we find that a period of rest is a constant precursor of an attack. Not a long period of rest, but a short period of two or three days up to seven or eight days. During longer periods of idleness the system adapts itself to handling the products of digestion. Another prerequisite is that the horse must be in good muscular condition and possess a vigorous appetite and a good digestion. The short period of rest interrupts the disposal of the products of digestion and tends to overload the blood with proteids.

Azoturia attacks the horse that is fed freely on a strongly nitrogenous diet. The blood becoming abnormally rich in albuminoids as it does during this short period of rest is, in my mind, one of the important factors in the production of azoturia. Again, the fermentation of large amounts of food in the alimentary canal tends to form toxic products, which, together with the toxic products of digestion in the blood, are, in our minds, the principal cause of the paralysis so constant.

These foregoing in themselves, however, are insufficient to cause azoturia. We must have an active exertion which causes the stored-up albuminoids to be thrown so rapidly into the circulation.

It is estimated that the healthy liver contains about one-fourth of the entire quantity of blood. The torpid liver of the vigorous, well-conditioned horse during this period of rest on rich feed, therefore, must contain much more than this percentage of the blood.

The spleen, which is always engorged after meals, must be especially so after two or three days of inactivity and rich feed, having had no chance to work off by exercise the products of digestion. With the liver and spleen in the above-named condition, there must be a great deal more than one-fourth of the

entire mass of blood highly enriched and ready to be poured through the hepatic circulation into the general circulation.

The origin of the large amount of hemoglobin in the urine may, without a doubt, be traced to the action of the poisonous products of digestion upon the blood. These products being largely stored in the torpid liver, and when drawn so suddenly into the general circulation, as during the first few minutes or half hour of vigorous exercise, may prove very destructive to the blood at large.

Again, we know that an excessive amount of carbon dioxide is very detrimental to maintaining a normal condition of the blood, the carbon dioxide being very destructive to the red blood cells, thus setting free large amounts of hemoglobin.

In studying the lesions found in azoturia, we find that the most prominent are to be noticed in the blood, liver, spleen muscles, and kidneys. I name these in order of their importance in my opinion.

In the last specimen of blood examined, it was somewhat darker, more glary; it delibrinated with much more than ordinary difficulty. The serum remained a distinct red, due to the large amount of free hemoglobin in the blood. Have found the blood in the very first of an attack slightly acid, and in the same case two or three days later, normally alkaline.

The liver on post mortem, especially in those dying in the acute stages, is found enlarged, thickened, and the blood found therein is dark, almost black. The spleen is also larger than normal and highly colored, both pointing to a toxemia.

THE MUSCLES.—Some claim to find the affected muscles pale, but we find the muscles of those dying in the acute stages to show numerous blood extravasations, again pointing to a toxemia, the most marked changes usually being in the psoas and gluteal muscles.

In the kidneys are also found very marked changes. They will show a very marked degree of congestion and numerous dark spots showing throughout the kidney tissue; no doubt the dark areas are caused by the actual rupture of capillaries due

to the enormous blood pressure in the kidneys during the first violent exercise. I believe that the following analysis will bear me out in this assertion:

The subject from which this urine was taken belongs to the Toledo Transfer Company. He was stricken on September 12, 1910, was brought into our hospital in an ambulance, remained down for six days continuously, and at the end of eleven days was able to be on his feet the greater part of the time. Only the most important normal and pathologic elements were investigated:

Color—Brownish red.

Odor—Strong urinous, aromatic.

Consistency—Density increased.

Reaction—Very strongly acid.

Specific Gravity—1.0286.

Sediment—Mucin, epithelia, probable hemoglobin.

Proteids—Serum albumin (heavy), serum globulin (good quality), fibrin, hemoglobin and nucleo-albumin.

Carbohydrates—Glucose, heavy.

Urea—Uric acid and compounds (urates), earthy phosphates, the sulphates (preformed), the carbonates (traces), indican (small quantity).

Diminished—The urates.

Excess—The chlorides, alkaline phosphates.

Microscopic—Centrifugated and uncentrifugated sediment; blood cells in great numbers; masses of blood cells; renal epithelia in good numbers; hemoglobin; uric acid crystals of medium development in small numbers.

Fibrin bundles and bladder epithelia in small numbers; light and dark, coarsely granular casts; blood casts in large numbers.

SYMPTOMS.—Every practitioner is so familiar with these that it is most needless to mention them. We will, however, say a few words concerning the paresis about which and its cause there is little or nothing said in our veterinary literature up to the present. Did you ever stop to reason, while treating a horse affected with azoturia (which was unable to rise), why

he could not rise? In my mind, when we look for this cause, we must again go back to where we studied the poisonous products of fermentation of the food in the intestines and the stored-up products of digestion in the liver. Their influence on the motor nerves during the oncoming of the attack is, in my mind, sufficient to cause this paralysis. The progress of this disease depends very greatly on the severity of the attack, also largely on the care and nursing given the patient.

PREVENTION.—A horse used to constant work should, of course, not be allowed to stand at absolute rest for even twenty-four hours on his usual rich diet; limit the amount of food and give plenty of water and either a laxative or slightly laxative diet. In a number of cases recently, when laying a horse up for a few days due to some slight injury, we had them fed laxative food or gave a laxative and prescribed bicarbonate of soda, and are very well satisfied with the results. We find that bicarbonate of soda is valuable in alkalinizing the blood, also in neutralizing the acid products of metabolism, which lead to the solution of hemoglobin.

TREATMENT AND CARE.—In the treatment of azoturia, we differ so widely that I will give only the line of treatment followed by ourselves and through which we have been more than fairly successful during the past year. I am here speaking only about those cases in which the animal is able to rise, as those cases in which the animal remains on his feet may be very successfully treated with "adrenalin" or most anything else, if you please. We usually begin our line of treatment by getting our horse into a comfortable stall, well bedded, as rest and quiet are very important factors to a recovery. We then administer a dose, $1\frac{1}{2}$ to 2 grains of arecoline, subcutaneously, from which we expect a very profuse sweating and a free evacuation of the intestinal tract, through which we get rid of a very fertile source of poisonous products of fermentation. We in most cases repeat the dose, though smaller, usually 1 grain, in six or eight hours if possible, and continue with one or two doses per day for two or three days. We also attempt to get into the

patient during the first twenty-four or thirty hours, 1 to 1½ pounds of bicarbonate of soda. If the animal is too restless, we give bromides in the drinking water or cannabis intravenously. Chloral hydrate may also be given intravenously, but great precaution must be exercised in its administration. The animal should be encouraged to drink large amounts of water and should be kept in the most comfortable position possible; should not be allowed to lie on one side longer than three or four hours at one time and should, as much as possible, be kept on his sternum, which may often be accomplished by the use of sacks stuffed with straw or bales of straw or hay; when improvement begins to show, mild diuretics may be given with stimulants.

DR. S. R. HOWARD, Hillsboro, Ohio, says: "I have been watching for the monthly visit of the REVIEW for about twenty-five years."

IOWA VETERINARIANS OBSERVE THE THIRD COMMANDMENT.—The following is extracted from a recent letter from Dr. Hal. C. Simpson, Denison, Iowa, the faithful and efficient secretary of the Missouri Valley Veterinary Medical Association, and for many years secretary of the Iowa Veterinary Association. It seems so pleasant and gratifying that we have taken the liberty of reproducing it and trust the doctor will not object to our publishing it. If only all veterinarians could extricate themselves from the exactions of routine practice and spend one Sunday each month with their families beyond the tinkle of the telephone bell! "A number of veterinarians and their families within a radius of sixty miles of Wall Lake, Iowa, Lake View Point, spent Sunday, July 29, at this popular resort. The day was spent in bathing, launch riding, lounging around and eating dinner and supper, which the ladies had prepared for the occasion. The day gave the ladies an opportunity to get acquainted and it was agreed to meet again next year. This is a splendid way to develop sociability amongst the profession."

“IF.” *

BY DR. C. B. FREDERICK, CANTON, OHIO.

I am not in fear of being contradicted when I say that this big little word is used more often than any other by members of this society. From the men high up to those of us who work for a living, it is all the same.

Its minute formation, compared with the protection it affords, is beyond human power to understand. We use it as a protection when we make mistakes; hide behind it when we have failures; throw it at someone else when we wish to transfer the blame for ours or someone else's failure. In fact, we use it as a sort of everyday dress; never forget it; use it more often than the watch; no more apt to forget it than we are to satisfy the demands of natural impulse. But do we always use it as we should? Do we always sandwich it in our arguments at the right place? “If I had,” “If you had,” “If they had” done so and so, well and good. “If it would,” “If it would not,” etc., then there and always comes this word “if.”

Our colleagues use it as well as our clients, the first when the other makes a mistake; the second when the first, perhaps, is to blame. We use it in condemning our drug house—the drug house in defense of her product. When we have failures, we say, “If I had only used some other firm's product, I would have been successful.” The drug house says, “If you had used our product as your materia medica directed, you would have been successful.”

When we learn of our mistaken diagnosis revealed by post mortem, we say, “If, if I had been more careful in my diag-

* Presented at the January, 1911, meeting of the Ohio State Veterinary Medical Association.

nosis, there would not have been occasion to use this little 'if'." Then, in our often careless prognosis, we should not have need of using it, yet I assure you, brother practitioner, none of us are wise enough to cope with the uncertainty of environments. We also oftentimes forget that a good guess is often better, or at least equal, to a big "if." Had we used more tact and less dependence on drugs, we would have saved the use of this word again. Would that we all might remember that history oft repeats itself, perhaps no more often than the actual duties of our life work. If we are slow to establish a practice, if the 'phone does not ring often enough, if our door bells are pulled less frequently than we wish—then it is that we say "if."

"If" I had not advertised my new colleague by questionable methods, "if" I had been kind and helpful toward him, "if" I had padlocked my tongue apparatus, "if" I had strewn roses in his pathway instead of crowning him with thorns—then again I would not have use of repeating "if."

Had I been courteous, had I been prompt in responding to calls, whether hurried or not; had I remembered that one's success is built on the cases that recover, had I remembered that our reputation is not built on dead patients—then we can or cannot have need of using the word "if."

Oh! that we were as wise now as we thought we were when we entered the portals of the veterinary profession. How easy it would be now to quickly eradicate tuberculosis, glanders, hog cholera; how the incurable organic ailments would fade away before our superior attainments, and how nicely we would regulate the offices pertaining to the various boards of health and animal economics. Yea, wherever we go, following the straight path of professional purity or wandering along the crooked highway of quackery, this word is just as big, just as mighty—always standing out ready to block our pathway and turn our hopes sidewise, leaving us to again ponder over this little word's mightiness.

We may stop and ask ourselves, "Why is it that every graduate in this state is not enjoying a lucrative practice? Why

is it that the heads of our boards of live stock are criticised? Why is it that our veterinary colleagues fail to receive their share of abuse"? Simply because the complainer shields his littleness behind this big "if." True, our board of live stock makes mistakes; true, our colleagues are not without fault; yet we find, on investigating the source of criticism, that they too often come from, "he who is without fault should cast the first stone." Too often the critics are store-box philosophers, whose sole ambition is to stand and sit—a sort of professional parasite who dotes on his ability to hide back of this word "if," implying, supposing or "ifing," as it were.

How easy it would be for the workers of our own profession "if" we would all aim at the highest professional mark and all be ready to stand in line for professional equity and higher attainments, never to be satisfied to walk the trodden paths of ages past, but try to discover something new, something better, something for the coming veterinarians to look up to with admiration and thankfulness.

The veterinarian is criticised by his sister profession—why? We are criticised by our legislators—why? Simply because of our professional jealousy. True, we cannot help envying our successful brother, that is a natural instinct within us; yet, however envious we may be, never allow that envy to be thrown on the screen of everyday public life, but better emulate the successful brother than to attempt to cover him with your "ifs"; for just so long as we devote more time to assailing our successful colleague's success than to our own business, just so long will we be tobogganing our own way to failure—not alone to ourselves, for in our downward way we grope about and either hinder our brothers' advancement or carry them with us.

Why is it that every graduate practicing in this great state of Ohio is not now a member of this or some other recognized association? Simply because his excuse is "if." You courteously ask why? His answer is always "if." Why? Because of some little sixpence of an excuse, emphasized with that word "if."

When we hope for that which is best, when the workers strive to better conditions—spend time and money to lift the profession to a higher plane—it is then that we meet opposition from those whose sole aim is to pull backward; but when some achievement is accomplished, when something for their best interests is handed to them, they greedily gulp it down and go about with puffed-up chests, singing their own praise: “See what I have done!” The procedure reminds us much of the old story of “Betsy and the Bear.”

Better that we emulate the good qualities of our brother practitioners; emulate the good deeds they have done—digest the rich legacies left us. If we do so, we will assimilate their good and grand discoveries and will then grow portly as a profession and will continue to develop into a Samson association, whose every wish will be recognized and every whim answered by the legal manufacturers in the State House. We have just as good men, just as good societies, just as good material to draw from. This being true, why is it that we do not receive proper courtesies at the meetings in the legislative halls. Simply because of the “ifs” that quackery has instilled into the men that have it within their power to enact or table our bills when opportunity is presented. “If” quackery is to be abolished and our profession expects to receive its just demands, more men must be enlisted in regular practice, for in every stock-raising county in our state, as well as in the cities, there is a dearth of legalized men. This being true, pray tell me how can we compel stock owners from calling illegal men; for just as long as the stockman is unable to get a registered man, his only alternate then is the neighboring quack. The regulars are at present enjoying the most fruitful business of their careers. That there is more demand for good men to-day than ever before is emphasized on every hand. All the veterinarians with whom I am neighborly associated are unable to take care of the business which is knocking at their doors; now, if all the illegal men in the state are debarred by legal invasion, the legal men will be swamped and either force them to give up much business

or fill premature graves. As long as the demand exceeds the supply, just so long will quackery exist, law or no law; the brotherly feeling as well as the dollar forms a sort of osmosis between the stock owner and his neighbor. Scores of times are we called miles away by some poor fellow who, by kindness, has produced azoturia, indigestion or something else, and we are unable to go. No regular can be secured. Then the quack is called. I am not a supporter of the quack or quackery, yet when I see what is done and will be done until we as a profession are able to more fully supply the demand for legalized men, this situation will continue to exist. Let us all enlist as many bright young men as we can into the bright side of this matter and fill our colleges with embryonic material that will sooner or later remove quackery. The greatest antidote yet discovered for this disease is the college graduate. They expel them quickly and surely. This being true, the remedy is more college men. To me this is the only feasible means of stamping them out. Then the laws, properly enforced, will keep them out. In many of our cities and dairy districts we are blessed with food and dairy inspectors, who, with their busy practice, fill minutely the duty involved. In that same community scores of diseased animal products are for sale from wagons and over counters. The inspectors are not wholly to blame—\$50 per month is about the average compensation. "If" the health boards expect to get \$200 worth of services for \$50, they are sadly disappointed; they are "ifing" pure and simple. "If" they ever hope to get proper services, they must not "if," but sooner or later raise the price, or continue to get service the same as to-day. We must, as a body, either ignore the price paid, or laws must be enacted whereby the man who fills these positions is to receive a salary equal at least to that paid by the B. A. I.' "If" they do so, the problem of pure food will be solved partially at least.

Again, "if" the regularly inspected tubercular herds in Ohio were quarantined, what would be the result? "If" every diseased milk-producing cow were destroyed and the owner

compensated at two-thirds her actual value, do you believe the surplus in the state treasury would long exist? "If" again. Dear brother, I am not a pessimist, yet I can plainly see but one solution: either discover a tubercular serum to prevent or wipe out the disease, or rely solely upon sanitation and Pasteurization.

Gentlemen, what I have said may have done no one any good and, I pray, no harm. For my purpose, suffice it to say that the work of this association has never been greater or its strength taxed more severely than now. Every individual effort must be put forth by all. Let us remember that this association is the keystone of veterinary progress in our state, and must expect nothing for the welfare of us individually, only through the archives of our society. Let us ever hope that the bonds of unity will be strengthened—the closer affiliation of all—a steady march onward.

Let us aim high and to the mark, let us be true to our highest ideals, and may that aim ever be to do our best.

It was worth the trip to Toronto to listen to Dr. Rutherford's remarks in connection with his introductions as toastmaster at the banquet at "McConkey's."

FIRST VETERINARY SCHOOL.—The 150th anniversary of the erection in Lyons, France, of a veterinary school will be celebrated in that city about the middle of May, 1912. Preparations are now forming to commemorate the event in a fitting manner, and invitations are being issued to all veterinary schools in the United States and elsewhere for the purpose of having delegates in as large a number as possible.

It is authentically recorded in the annals of veterinary science that the world's first veterinary school was founded in Lyons in 1761, since which time similar institutions have been inaugurated in many countries, the last being reported from Abyssinia.

In connection with this anniversary it is planned to establish a local museum, the exhibits of which in archives, illustrations, instruments and appliances will give a complete view of the evolution of instruction in veterinary medicine and surgery. Particular attention will be paid to the development of the pioneer school in Lyons.—*From Consular and Trade Reports.*

SOME DISEASES OF THE NEW-BORN FOAL.*

BY H. FULSTOW, V.S., NORWALK, OHIO.

Spring will soon be with us again, and with it the diseases incident to parturition. One of the common and often fatal diseases of the new-born foal is "Septic Arthritis." This disease is the result of an infection with pathogenic organisms, gaining entrance to the system before cicatrization of the navel has occurred. The loss that it entails in some breeding districts is enormous. Year after year breeders are continually losing from one to a dozen or more foals from this disease alone. Such losses might be reduced to a minimum if thorough sanitary precautions were observed. Parturition occurs in filthy, dirty places where no precaution has been taken to guard against infection. When dropped, they wallow around in dirty stalls and yards, the raw, bleeding navel coming in contact with soiled bedding and dirty floors, germs of all kinds gain entrance through the large open vessel, especially the omnipresent pyogenic organism. In from twenty-four hours to several days or weeks, the above-mentioned disease develops. Pure cultures of a streptococci can nearly always be obtained from the joints. A very large percentage of all such cases could be prevented if good sanitary precautions were taken. All mares that are to foal early before a run out to grass is possible, should foal in a clean box stall that has been prepared by thoroughly cleansing and disinfecting. For this purpose, chloride of lime or copperas water is excellent to use on the floors and the usual lime wash with some disinfectant added, for the walls and ceiling. The mare must be watched and, as soon as the foal is dropped, the

* Read before the Ohio Veterinary Medical Association, January, 1911.

navel must be ligated with a stone ligature that has been soaked in a good antiseptic solution, about one inch from the belly and the remainder severed below ligature. The umbilical stump must be soaked in a strong bichloride of mercury solution for a minute, and this must be repeated daily until complete cicatrization has occurred. Inside of thighs, udder, tail, etc., must be washed with some mild antiseptic solution before the foal is allowed to suck. Both should now be removed to another box stall, prepared in the same manner as the first. Stall No. 1 should be thoroughly cleaned and disinfected before another mare is allowed to foal in it. On nice, bright days, mare and foal should have exercise in a clean yard or paddock. The sanitary condition of the stalls must be maintained from day to day. In districts where this disease is prevalent the foals could with benefit receive a prophylactic dose of stock vaccine made from the common species of pyogenic organisms. Then in the system anti-bodies would be formed ready to cope with the living organisms, should entrance occur. Anti-streptococcic serum seems to work well in conjunction with the usual eliminative treatment practiced in all toxemia.

RETENTION OF THE MECONIUM.—Another common disease among foals which are born early in the spring, before their dams have had a chance to run at grass and have been kept up all winter on dry feed. A very important predisposing cause of this condition, and one frequently overlooked in the condition, is the loss of the "colostrum" milk from the udder of the dam previous to parturition, due to excessive and abnormally early glandular activity. In from a few hours to two days, if the foal does not receive enough colostrum—nature's stimulant to peristalsis—to cause evacuation, that is, of the meconium or first feces, such symptoms of distress will be noticed: dull and dejected in appearance; back arched and straining, also lying down a quarter part of the time; absolute indifference to the teat, with the usual symptoms of enteralgia following and rapidly increasing in severity, till death from inflammation of the bowel results. Pregnant mares previous to foaling should

be fed on laxative food. Grass, if in season, is the best, but when not available, bran mashes, carrots and clover hay. If the foal is born while the mare is still on dry feed, a suitable dose *Ol Ricini* with a little aromatic should be administered and its action aided by enemas of glycerine and water or soapy water at intervals. The foal must be carefully watched until the meconium has passed and golden yellow feces is being evacuated. When such measures have been neglected and symptoms of intestinal disturbances are being manifested, the above treatment must be given, but more vigorously, and in some cases with the addition of some stimulant, as whiskey in small quantities. The oiled finger must be inserted into the rectum and any feces that are within reach removed. Sometimes, when digital manipulations are unsuccessful, a piece of bailing wire formed into a loop and carefully used is capable of reaching and removing feces that otherwise would be impossible. The little sufferer must be kept comfortable and warm as possible. Another disease which occurs frequently among the lower animals and in partially civilized countries, not infrequently among human beings, subsequent to birth, is "Tetanus." Curative treatment is almost always unsuccessful, but by prophylactic measures as recommended for septic arthritis, the disease can be practically eliminated.

IF any veterinarians have chanced to leave Toronto without seeing the photographer who took the group picture in front of Convocation Hall, they may procure one by writing to Mr. W. J. Johnston, No. 239 Victoria street, Toronto, Canada. The price is \$2.00.

HORSE LIKES TO KILL RATS.—Tiffin, Ohio, Saturday.—Snowball, a horse driven by an express company, has a specialty of catching rats. He stands with one front hoof raised over a hole, and when a rat appears down comes the hoof and there is another face in rat heaven. Already the horse has killed several hundred rats. Snowball is of almost pure Arabian blood. Formerly he traveled with a circus. He rarely misses a rat.—*Special despatch to the Herald.*

A NEW SULPHOCARBOLATE.

BY HERBERT F. PALMER, CHICAGO, ILL.

It is now thirty years since the sulphocarbulates were proposed and used as intestinal antiseptics by Dr. Waugh. Considerable difficulty was experienced for a long time in obtaining these salts in sufficient purity for internal administration to human beings, as up to that time they had been employed only in veterinary practice, and externally. Their value was not recognized by this branch of the profession, and it was only after they had been firmly established in ordinary medical practice that their control over mange was discovered.

It was not long before clinicians began to realize that they had in these salts not merely another intestinal antiseptic or another salt of zinc, soda or lime, but a group of remedies possessing qualities distinguishing them from all others of their class.

Opposition was aroused the moment they began to be popular; they had no financial interests to push them and printers' ink is a power even with the medical profession. Each of the wealthy and powerful advertising houses had a preparation of its own which they pressed upon the notice of the profession. True it is as in the day of Caiaphas, the high priest, that if a thing has real merit it will survive; and to-day the sulphocarbulates are the first thought when intestinal antiseptics are mentioned.

Each of the three sulphocarbulates has its place—zinc as an astringent, soda as an antacid, lime as a reconstructive; and the combination of these in the noted W-A Intestinal Antiseptic

Tablets has been approved by the testimony of many thousands of physicians. Since their manufacture has been so perfected as to secure a satisfactory quality, their value has been established without dissent.

No matter how good a remedy may be, it is not good enough if a better is to be had. The objections to the sulphocarbolates are the unpleasant taste and the large dose. Here presents an interesting question: In studying the effects of the iodides and bromides, the suggestion was made that when these haloid elements were combined with small-dose bases, the iodine and bromine effect of a full dose was equivalent to that of a full dose of the same elements when combined with the alkalies. In other words, that a milligram of the iodide or bromide of gold, arsenic or mercury equaled in iodine or bromine effect a gram of potassium iodide or bromide. Clinical trials show that there is some truth in this; also that the effects of hyoscine, morphine or quinine hydrobromide are not identical with those of the sulphates. Even the minute quantity of acid in the valerate of zinc or strychnine gives those salts a variation of action from the sulphates.

Somewhat recently the remarkable power exerted by copper over the living microscopic impurities of water have been realized, and now this metal is employed to purify vast quantities of drinking water, such as is supplied to New Orleans. The sulphocarbolate of copper may prove a means of securing the advantages of the sulphocarbolates with much smaller doses. From some observations it appears to have about the same irritant action as sulphate of copper. The adult dose, then, would be a milligram every waking hour, for in these doses the sulphate is effective as an astringent especially in the diarrhœas of the aged, and that beyond any other remedy.

Should the sulphocarbolate of copper prove a success it will be a distinct advance in therapeutics. It may be tried in gastric and intestinal conditions where an antiseptic is indicated—fermentation, acidity, flatulence, fetid stools, etc.

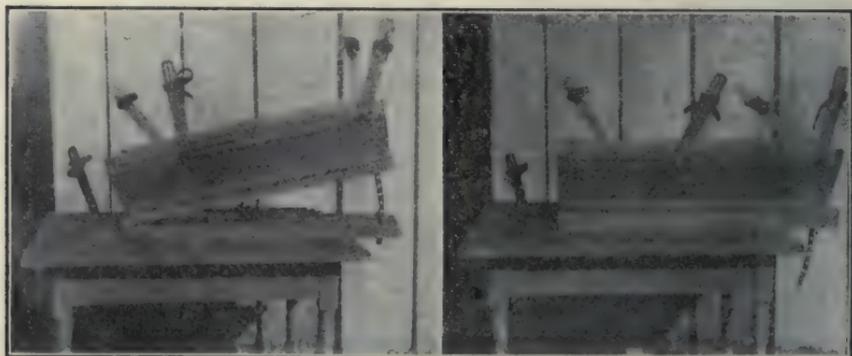
A CANINE OPERATING TABLE.

BY M. RAY POWERS, D.V.S., STATE VETERINARIAN, CLEMSON COLLEGE, S. C.

The accompanying photographs of a canine operating table may be of interest to REVIEW readers. For some time I have felt the need of a table of this kind for spaying bitches, removing tumors, etc., and, being unable to find one of this style, I had this made at a total cost of less than \$4. It has been in use for a year and has given perfect satisfaction.



ing tumors, etc., and, being unable to find one of this style, I had this made at a total cost of less than \$4. It has been in use for a year and has given perfect satisfaction.



The photographs clearly show how the table is made. Dimensions are as follows: Length, 5 feet 8 inches; trough, 8 inches deep, 10½ inches wide at top; arms, 12 inches long with slots (about 6 inches) for the straps.

This table will accommodate dogs of all sizes, as the anterior arms can be shifted about one-half the length of the table. The arms are securely held by means of thumb screws; which also permit the dog's legs to be held at any angle. The application of three coats of bathtub enamel adds greatly to the appearance and cleanliness of the table.

THIRTY veterinarians entered a motor boat for a trip out of New Haven through New Haven Bay into Long Island Sound, on August 2d. The aquatic sport proved too much for 50 per cent. of them, as only fifteen noses could be counted when the little craft again started out upon the choppy waters of the Sound. Or it may have been the shore dinner provided by the Connecticut Veterinary Medical Association for its members and guests at Mansfield's Grove that lowered their estimation of their swimming accomplishments. Speaking of shore dinners, the Nutmeg State has set a standard that the Empire State will have to hustle to come up to at Coney Island on September 14th, at the close of the state meeting.

SECRETARY WILSON IS 76. Has been in the Cabinet longer than any one in U. S. history. Washington, Aug. 16.—James Wilson, Secretary of Agriculture, who is the oldest member of the President's Cabinet and who has held his portfolio since 1897, a longer period than any other Cabinet officer in the history of the Government, to-day celebrated the seventy-sixth anniversary of his birth. Secretary Wilson was born August 16, 1835, in Ayrshire, Scotland, which was also the birthplace of Robert Burns. He came to this country when 16 years old with his parents, and, after a brief residence in Connecticut, settled in Tama County, Iowa, combining farming with politics. Wilson served in the Iowa Assembly and was three times a Representative in Congress. He is absent from here on a vacation which will include a series of lectures on agricultural themes.—*New York Press*.

REPORTS OF CASES.

SOME CASES FROM MY NOTE BOOK.

By CHAS. M. CASEY, V.S., New York, N. Y.

Responding to a call to a sick cow, found a four-year-old Grade Holstein down. After making an examination, asked the owner when the cow was due to calve; he replied in about three weeks. The cow had a temperature of 104° F. and appeared to be paralyzed in her hind parts.

After an ineffectual attempt to get her up, she was put on stimulants and left where she was. Called the next day and found cow still down but eating good. We got her up by use of slings and continued the stimulant treatment; her temperature was now 103° F. The following day the owner came to town and reported the cow able to stand alone and get up and down all right, and did not think it necessary for me to go out to see her again.

About three and a half weeks later, I received another call from the owner of the cow, to the effect that she had calved all right, but had not "cleaned," and desired me to come out to his farm and take care of her. On arrival at farm, I found the cow and her heifer calf in good shape except for the presence of the after-birth, which I removed, and left everything looking good.

About ten days later I received another call from the same man to the self-same cow, in which he said she appeared as though she *again* wanted to have a calf. On my arrival, I found the cow, sure enough, "in labor," and upon examination, found to my great surprise the presence of another calf. The cow required assistance this time, but in a short time I removed a second large calf (ten days after the birth of the first one), put the cow on stimulants and returned to town. I saw the owner three weeks later, and he said the cow and both calves were doing well.

SOME HEAT PROSTRATION CASES IN WHICH COCAINE WAS THE PRINCIPAL DRUG EMPLOYED.

Case I.—July 1, 1911. Bay truck horse down on the street with heat prostration; gave 3 grains of cocaine hypodermically, and administered at ten to twenty-minute intervals small doses of tincture of nux vomica and aromatic spirits of ammonia, showering head, body and extremities with cold water from hydrant. The horse got up in one hour from the time of administering the cocaine, was sent home in ambulance and made complete recovery.

Case II.—July 1. Bay truck horse, heat case, not down but "wobbly" on feet and unable to proceed further. Gave 3 grains of cocaine hypodermically, nux vomica and aromatic spirits of ammonia by mouth and showering. Was all right and able to walk home at end of half an hour.

Case III.—July 4. Gray truck horse, not down, but unsteady and unable to proceed further. Gave 3 grains of cocaine hypodermically, 2 drachms of sulphuric ether hypodermically, nux and aromatic spirits and showering. Walked home after three-quarters of an hour.

Case IV.—July 4. Bay truck horse down. Gave 3 grains of cocaine hypodermically, nux and aromatic spirits, ice packs to head, showering; got up at end of one hour; sent home in ambulance. Made complete recovery.

Case V.—July 5. Sorrel truck horse down. Gave 3 grains of cocaine hypodermically, nux, aromatic spirits, sulphuric ether hypodermically, one dose; ice packs to head, showering; got up in one-half hour; sent home in ambulance. Made complete recovery.

Case VI.—July 6. Large truck horse down. Gave 3 grains cocaine hypodermically, nux, and aromatic spirits per mouth, showering. Got up in half an hour and was walked home.

Case VII.—July 7. Gray truck horse, medium weight, down. Gave 3 grains of cocaine hypodermically, nux, and aromatic spirits per orum, showering. Got up in one hour from time of injecting cocaine. Was very unsteady on feet for another half hour, and then walked home, where convalescence was completed.

Case VIII.—July 7. Bay truck horse (poor condition) down; brain symptoms present. Gave 3 grains of cocaine hypodermically, sulphuric ether hypodermically, nux and aromatic spirits by mouth at intervals; showering. At end of half

hour seemed to be gaining; gave $1\frac{1}{2}$ grains cocaine hypodermically. Half hour later running back a little; gave another $1\frac{1}{2}$ grains cocaine, after which he seemed as though he was about to get up. Went to office for more medicine; returned to find him dead, three hours from the beginning of the treatment. Three factors worked against a favorable termination of this case: (1) the poor condition of the animal; (2) the fact that he had dropped the day previous from the heat (driver had not reported it); and (3) he lay exposed to the direct rays of the midday sun on a hot asphalt street on one of the hottest days during the "heat spell," from 11 a. m. till 2 p. m.

Case IX.—July 10. Sorrel truck horse down. Gave 3 grains of cocaine hypodermically, nux and aromatic spirits at intervals, $\frac{1}{4}$ grain strychnine hypodermically, showering. Got on his feet in $1\frac{1}{2}$ hours; sent home in ambulance; recovered.

Case X.—July 11. Bay business horse, not down but swaying when stopped, and registering a rectal temperature of 108° F. Gave 3 grains of cocaine hypodermically, nux and aromatic spirits by mouth, showering. All right in about three-quarters of an hour, but not returned home for seven hours, when sun had set.

Case XI.—July 11. Bay business horse, not down, very "wobbly" on feet. Given 3 grains cocaine hypodermically, stimulants and showering. Recovery in about one hour.

Case XII.—July 11. Brown truck horse, not down, very unsteady on limbs; respiration very accelerated, pulse irregular. Gave 3 grains of cocaine hypodermically, nux, aromatic spirits, showering. Walked into temporary quarters at end of an hour and a half.

Case XIII.—July 12. Gray truck horse (very heavy) down, thrashing. Gave 3 grains of cocaine hypodermically, followed by usual stimulants. Repeated cocaine three times after first dose, 3 grains each time, making a total of 12 grains administered during the $3\frac{1}{2}$ hours the horse was down. At the end of that time the horse got up and was sent home in ambulance in good shape.

Case XIV.—July 13. Gray horse (heavy), not down, very unsteady on feet and unable to proceed. Gave 3 grains of cocaine hypodermically, followed by nux and aromatic spirits. Rallied in half hour and was later walked home.

Case XV.—July 13. Gray truck horse down. Gave 3 grains cocaine hypodermically, followed by usual stimulants. Repeated

dose of 3 grains cocaine half hour later; horse still down, and still later $1\frac{1}{2}$ grains of cocaine. Horse finally got on his feet at expiration of $2\frac{1}{2}$ hours and was sent home in ambulance.

Case XVI.—July 13. Chestnut truck horse down. Gave 3 grains cocaine; usual stimulants by mouth; showering. Later, another 3 grains of cocaine, and still later $1\frac{1}{2}$ grains cocaine. Got horse on feet at end of two hours. Sent home in ambulance.

Case XVII.—July 13. Gray truck horse down. Gave 3 grains cocaine, nux and aromatic spirits, showering. Got on feet in half hour and later walked to stable.

Case XVIII.—July 14. Brown truck horse, not down, very unsteady on feet. Gave 3 grains of cocaine and usual stimulants. Recovered in about three-quarters of an hour.

The first case reported, that of the cow, was seen in Onondaga County, N. Y.; the heat cases were seen in New York City, and I report them because of the very satisfactory results from the use of cocaine in this class of cases which I have experienced in the treatment of those reported. There were probably as many more cases treated at the same time in the same practice in identically the same manner, in which the results were the same; but I have only reported from my own notebook those cases that came under my own personal observation. This treatment may not be new to the majority of practitioners, but I have never seen it used except here two years ago, and again this summer, and felt after this *second* experience with it, it was my duty to my colleagues to tell my experiences. If others have used it in heat prostration, I should like to hear from them through the REVIEW; and if any of them have cows that calve twice in ten days, I should like to hear from them also.

PUNCTURE OF ABDOMINAL CAVITY BY WOODEN PICKET.

By L. J. HERRING, B.S., D.V.S., Wilson, N. C.

On April 14, 1910, while at the Georgia Experiment Station, I was called to see a black mare that had jumped up on a picket fence, made of pine palings, sticking one of the pickets into her abdomen just posterior to the ensiform cartilage. The

paling broke off in the cavity, leaving enough protruding to catch hold of, so the owner had it pulled out by a negro man.

When I arrived on the scene I found about a bucketful of the small intestines out, but the owner had a clean sheet wrapped around the mare and kept her up until I got there, although she was in much pain from strangulation. I at once cast the mare and proceeded to clean up the intestines with a 1 to 1,000 bichloride solution, replaced them, and sutured the inner layer of muscles on the peritoneal side, then the muscles and the skin. In each layer I used continuous sutures, but left long ends so they would hang out of the wound. I used plenty of a mixture of iodiform and boric acid as a dry dressing while suturing. A bandage was put around the mare to hold the dressing in place and 4 c.c. of nuclein given hypodermically. The mare was left in the hands of nature then. Upon my return the next morning I found the mare whikering for food and only had a degree rise of temperature. The wound from now on was dressed every other day and the nuclein solution was given every day for four days, and then every other day. After two weeks, calls got farther apart and the stitches were taken out without any trouble, they being left long. Within five weeks the mare was driven, and to-day she is working and the scar can't be found easily.

ANOTHER instance has been brought to our notice of a wandering agent representing himself as an authorized agent of the AMERICAN VETERINARY REVIEW and a London veterinary journal, who has fleeced one of our old subscribers out of \$4.50, which he represented as the price for which he would supply the REVIEW and the London paper for one year. Of course neither of the magazines received the subscriptions taken and the dishonest individual walked off with the money.

We have repeatedly warned subscribers against just such swindles, explaining again and again that the REVIEW has *no* wandering authorized agents and never sells the REVIEW for less than the publisher's price, \$3.00. Again we repeat, do not be taken in by their representations, but send your subscriptions *direct* to the REVIEW office, where you will be immediately taken care of.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

ADENOMA OF THE LEFT THYROID BODY, OPERATION, RECOVERY [*F. Chambers, M.R.C.V.S., G.V.S.*].—Ten-year-old trooper has a huge swelling extending from four inches below the base of the left ear under the throat and a short distance on the right side. The swelling is as big as two polo balls. It was hard, seemed fibrous in consistency and has a large suppurating hole on the under surface. It had been blistered several times without advantage. Suspicious of botriomycosis he received a treatment of iodine externally and internally with no result. The tumor kept enlarging, more ulcerations of the skin occurred, its removal is decided and performed under chloroform. It required the removal of a large piece of skin to expose it, and it was only after a careful dissection that the tumor was extracted after over an hour of delicate work. Hemorrhage was profuse and controlled with ligatures and forceps. The removal of the growth left exposed the posterior angle of the left submaxillary bone, the larynx in its entity, the pharynx, the left carotid and the two jugulars. Suturing of the wound was impossible, and the large gap was dressed twice a day with Lysol's solution and smeared with creosoted vaseline. During the treatment, the animal took pneumonia but pulled through it and after some time, as the cicatrization was going well, it closed up by degrees, having only a small salivary fistula as complication. At the time of writing complete recovery was close at hand.—(*Vet. Record.*)

SARCOMATOUS LIVER IN A DOG [*Carter Armstrong, M.R.C.V.S.*].—For three weeks this fox terrier, ten months old, has been losing flesh. He is off his appetite, drinks constantly and has frequent vomition. He is in an emaciated condition; his visible membranes, are pale, temperature 103 degrees Fahrenheit. Abdomen is painful on pressure principally over the stom-

ach. The dog was found the next day dead in its kennel. Autopsy revealed a large liver occupying most of the abdominal cavity. It presented the appearance of a tumor quite unlike liver tissue, in fact it was a new growth. The spleen showed areas of similar appearance. The liver weighed 11 pounds 13½ ounces. On microscopic examination it was found to be a round-celled sarcoma. The stomach was inflamed and had several gastric ulcers, one of which had eaten through the walls of the stomach.—(*Vet. Record.*)

DOUBLE-SIDED OPERATION FOR GUTTURAL POUCH DISEASE [*Capt. Wakefield Rainey, A.V.C.*].—This Canadian troop horse has a somewhat bad smelling discharge from both nostrils; this has a muco-purulent character; distinct fluctuating swellings exist on both sides of the guttural pouches; temperature is 102.2 degrees—there is dysphagia. Horse is prepared for operation. From a point about the middle of anterior border of wing of atlas two incisions were carried through the skin, one upward, the other downward. The triangular flap of skin was dissected. the parotid exposed and detached near the anterior border of wing of the atlas by blunt dissection, the stylo-hyoid muscle was located and a bold puncture made through it. Pus escaped freely. A seton soaked in tinct. iodine was introduced and brought out at Viborg's triangle. About one pint of pus was allowed to escape and continued to flow out for several days. A similar operation was performed on the other side some four days after, which was followed with same results. There was some dysphagia this time, and it required a great deal of careful and attentive nursing to pull the horse through. Only a small subcutaneous abscess complicated the case and retarded the complete healing. Six weeks from the date of the first operation were necessary to obtain radical recovery.—(*Vet. Record.*)

TETANUS [*Henry B. Eve, M.R.C.V.S.*].—Aged black gelding had a ball given to him on a thatch—peg—as he was difficult to give it to. After a few days he gave manifestations which left the writer no doubt as to the diagnosis. Traumatic tetanus, probably the result of a lacerated wound in the pharynx caused by the point end of the thatch-peg piercing the mucous membrane when delivering the ball. *Treatment:* Animal isolated in dark loose box, ears plugged to avoid hearing sound; no sling; sheep skin over the neck, dorsal and lumbar region, hypo. inj. anti-

tetanic serum twice a day for nine days. Internally oil lini by enemas, nicotine suppositories. The ninth day electuary of glycerine, belladonna, extract cannibas indica and hydrocyanic acid three times a day. Recovery in three weeks. Nutritious diet of gruel, linseed tea, beef tea enemas, milk and eggs, etc.—(*Vet. News.*)

CHLOROFORM IN THE TREATMENT OF CHOKING [*W. Lotham, M.R.C.V.S.*].—A year old heifer had been ill for two days and was suspected of being choked with a piece of turnip. The obstruction was indeed felt half way down the neck. The probang was used but with no effect, and two or three attempts remained unsuccessful. Chloroform was then administered, and as soon as the animal was fairly under, the probang was introduced and without difficulty; the spasm of the œsophagus having subsided the piece of turnip was forced down the œsophagus. This is the second case treated in the same manner by the writer and with similar result. The treatment is worth trying in preference to œsophagotomy, or when the obstruction is in the thoracic portion of the œsophagus.—(*Vet. Journ.*)

TWO CASES OF EQUINE TUBERCULOSIS—MOTHER AND DAUGHTER [*J. A. Gilruth, D.V.Sc., M.R.C.V.S.*].—*One*; a nine-year-old mare, reared on the place of the owner and fed with milk from a cow, said “not to be a good doer.” The mare showed symptoms of tuberculosis, but the owner would not allow her to be tuberculined. She was destroyed several weeks after and the examination of her spleen, the only organ which the writer could secure, was found with lesions of tuberculosis, confirmed by microscopic examination.

The second case was that of another mare, daughter of the first, which also presented undoubted manifestations of generalized tuberculosis; the thorax, the udder, lymphatic glands, etc., were diseased. The animal was immediately destroyed and tuberculous lesions were found in the spleen, the udder, the abdominal cavity and in the liver, which weighed 35 pounds. The kidneys, round the posterior aorta, in the lungs and the pericardium.—(*Vet. Journal.*)

ETHYL CHLORIDE IN FOLLICULAR MANGE [*J. B. Buxton, M.R.C.V.S., D.V.H.*].—Record of four cases, three of which proved successful, the fourth dying after a few days:

1°. Case had typical lesions on the lips, nose, top of the head and along the back.

2°. Case had the whole chest affected besides the head, nose, paws and fore limbs.

3°. Case, most severe of all; had the chest, throat, head, lips, eyelids diseased, with skin thickened and riddled with holes as though it had received a charge of small shot. This animal died after the fourth day of treatment.

4°. Case had lesions of the chest and paws.

In all the demodex was found in the pus and scabbs taken from any of the diseased spots. The treatment was the same for all, viz., thorough cleaning and drying of the parts, spraying of ethyl chloride applied slowly until the skin was insensitive to the prick of a needle, and the application continued for about a minute after, care being taken not to freeze the skin too hard to avoid subsequent necrosis. One, two and sometimes a third application is necessary.—(*Vet. Journ.*)

PAROTID ABSCESS BY FOREIGN BODY [*S. J. Nolton, M.R.C. V.S.*].—Record of a case that occurred in a Guernsey cow which had a swelling occupying the lower two-thirds of the right parotid region. Not very painful; it was opened and a good deal of salinous pus with putrefaction odor escaped. On exploring the cavity a piece of wire was detected, one end of which was buried in the gland tissue and the other in the skin. It was extracted, measuring $2\frac{7}{8}$ inches in length. The animal never showed any difficulty in mastication or in swallowing. Washing with carbolic acid solution $2\frac{1}{2}$ per cent. brought about rapid recovery.—(*Vet. News.*)

DYSTOKIA IN A BITCH [*T. A. Hency, M.R.C.V.S.*].—Well bred black young bitch, two years old, had two years before, fracture of the pelvis; is now suffering from foetal dystokia, being two days over her time. The trouble was due to contraction of the pelvis and a large still born foetus. Cesarean operation was indicated, if the dog could be saved. After thorough disinfection the abdomen was opened, the body of the uterus was brought towards the opening, surrounding it with boric gauze. One by one five pups were removed. The lips of the wound were well wiped and the uterus carefully replaced, and after the peritoneum being sutured, the wound was closed with sterilized silk, interrupted sutures, and a dressing of boric gauze protect-

ing the whole. Rest, daily dressing of the wound, careful diet and eventful recovery was the result.—(*Vet. Record.*)

UNEXPLAINED HEMORRHAGE [*G. H. Livesey, M.R.C.V.S.*].—Favorite fox terrier is old (15 years), is noticed getting rather short of breath. Perhaps too much food; his lips have been noticed smeared with blood. His mouth is examined, and only three canine teeth and two molars are the remains of his dentition. The back molar on the left side is covered with tartar and a little blood is oozing from the gum. The tartar is removed, and the blood is found coming out of the socket of the posterior root. Extraction; is indicated and carried out. Hemorrhage follows very abundant and difficult to stop. The next day it returns and cannot be controlled except by cotton wool soaked in adrenaline and plugged in the cavity. But after a short time the wool came out and severe bleeding returned. The dog died notwithstanding all attempts to help him.—(*Vet. Record.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

CONTRIBUTION TO THE STUDY OF ALOPECIA IN HORSE [*Messrs. Tayet & Tortigue, Army Veterinarians*].—Whatever may be the various causes of alopecia the three following cases are interesting:

(1) Half thoroughbred mare is cast, and fired on the tendons of the anterior legs. Very nervous, she struggled much during the operation. Three days after, on the body and principally the thoracic walls numerous tufts of hair came off and continued to do so; so that 10 days after the operation the skin of the thorax was entirely hairless. There had been no privity, no parasites—general conditions and appetite have remained good.

(2) For similar conditions a thoroughbred receives the same treatment. Eight days after the hair came out by tufts and soon the skin is also hairless.

In these two cases perhaps the condition may be attributed to sudden chill or again nervous effect.

(3) Half thoroughbred mare is presented to the writers because of patches over the body where the hair is coming off. These depilations continue to increase, the head and the greatest

part of the body are hairless. Then the process continues, and the mare is in a short time entirely without hair all over her body; she has the same appearance as a Chinese pug. There has been but slight privity, no parasites, the general condition and appetite have remained good. The alopecia was of short duration, the hair grew again rapidly.

What was the cause?—(*Rev. Vet.*)

TESTICULAR LOCALIZATION OF EPIZOOTIC LYMPHANGITIS [*Mr. L. Teppaz*].—A stallion of 10 years of age, has been treated for several months for recidiving serotal fistula of the right side, from which but little pus escapes. Some time previous he had been affected with epizootic lymphangitis. Shortly after he had a large abscess of the testicular region which, after being punctured, left the fistula rebellious to all kinds of treatment. A probe introduced into it, goes in some 10 centimeters, the testicle is hard, intimately adherent to the serotum and the animal is finally castrated. The enucleation was quite difficult on account of adhesions. The testicle shows an irregular fistula, parallel to its great axis and three others shorter emptying in the first. The pus that is found is thick, of dirty yellow color and contains in great quantities *Leucocytozoon piroplasmoides*. There was no spermatozoides neither in the pus or the epididymis. The testicle incised shows nothing particular, but frottis of its tissue shows no spermatozoid but a large quantity of leucocytis with leucocytozoons.—*Bull. Soc. Scien. Vet. de Lyon.*)

MORE CASES OF ASPERGILLOSIS [*Mr. Chretien, Sam. Vet. Asperg. of the Hen*].—At the autopsy of a hen taken off from a market stand, the following lesions were found: All the airy sacs were much dilated and plainly visible. In incising their membrane it is found thickened and covered on the inside with an abundant deposit of brittle yellowish fibrine, while on its inner face it is covered with a greenish moldy deposit. The right abdominal sac is much dilated and as a consequence the liver is pushed away to the left. The Glisson's capsula is the seat of chronic inflammation. There is also severe pericarditis—with the pericardium—covered with a fibrinous coat analogous to that of airy sacs. The right lung is the seat of pneumonia. The microscopic examinations of the sacs and of the pulmonary serosity reveals the presence of mycelium, with numerous forms of fructifications, characteristic of *aspergillus fumigatus*. The

moldy deposits of the sacs were due to *asperillus fumigatus*. Cultures in bouillon and on potatoes were purely those of *asperigillus*.

Aspergillos of Goose. A thin goose presented similar lesions in its airy sacs. The left lung was also diseased.—(*Hyg. de la Viande.*)

CONTRIBUTIONS TO THE PATHOLOGY OF THE THYMUS [*Mr. L. Naudin*].

First Case.—An eight-month-old heifer in perfect health is suddenly taken with short breathing, refuses to eat and appears very sick. She dies at the end of an hour. *Post mortem:* Cadaver is in good condition, conjunctive little injected. No lesion in the abdomen. Opening the thorax leaves 3 or 4 liters of fluid escape, both lungs are excessively œdematous, the perilobular connective tissue is gorged with limpid serosity; no inflammatory lesion. The thymus is very large and forms a bilobulated mass, which on being cut through is filled with numerous hemorrhagic points. This condition resembles that in cases of sudden death in children, attributed by physicians to hypertrophy of the thymus.

Second Case.—Six-year-old dog has frequent spells of dry cough. His condition is good, auscultations and percussion are negative. After long treatment and all forms of medication the symptoms get worse, he loses flesh, his breathing becomes very difficult, tuberculosis is suspected he is destroyed.

Post Mortem.—On opening the chest, there appears in the anterior part of it a whitish mass, ovoid, divided in two lobes by a slight depression. It measures 20 centimeters in the antero-posterior diameter. It is soft, fluctuating and has on its superior face a groove—for the passage of the trachea and œsophagus. The lungs are healthy. Pleuro, pericardium and lymphatic glands also. Incised, this mass, which can be nothing else but the thymus, is made of a fibrous membrane surrounding a cavity, divided into numerous lobules filled with a thick fluid looking like sour milk. This mass enclosed in the mediastinum has acted as adenopathies of that region.—(*Rev. Gen. de Med. Vet.*)

MIXED OR STERCORAL CALCULUS [*Mm. Caz-lbou and Serisé. Army Veterinarians*].—Fifteen years old, this mare is taken with colic, not severe. She lays down on lateral decubitus or on her back. She has no evacuations, repeated rectal examinations give

undecisive results. Anorchia not complete, abdomen shows dull pain on pressure. Auscultation of the cœcum and second portion of the large colon indicates slight borborygms. Slight tympanitis. Constipation continued, notwithstanding laxatives, pilocarpine, eserine. After 10 days' of treatment an abundant diarrhœa follows a purgative of castor oil and intestinal irrigation. Recovery is looked for. Three days later, the symptoms return and last until death, which occurred some three weeks after; constipation having remained rebellious to all treatment, only a few hard, small, black balls of feces being evacuated after rectal irrigations.

Post Mortem.—Liquid mixed with food is in the abdominal cavity. Stomach is empty, small intestines shows spots of hemorrhagic congestion. Large colon filled with matter more or less soft. At 75 centimeters from its origin there is a transversal laceration. In its terminal extremity and closing the origin of the floating colon, there is a hard mass, nearly spherical, 20 centimeters in diameter, sure form in aspect. It is a stercoral calculus weighing 1 kilo 0.400 grams. Cut through its middle, it shows in the centre a piece of coal surrounded with sand, around this there is a zone of packed alimentary matter, which is itself enveloped by a coat of sand and gravel. The whole is surrounded by a layer of alimentary substance smooth and like felt.—(*Rev. Gen. de Med. Vet.*)

ITALIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

RUPTURE OF THE INFERIOR AND LATERAL SESAMOID LIGAMENTS IN A MARE [*Dr. Luigi Menicagli*].—“*Sestilia*,” an English thoroughbred mare, while being exercised in a racing track, fell suddenly as if one of her legs had been fractured. She got up but was very lame. The fetlock of the left fore leg was down nearly on the ground, and the limb rested on the heels of the foot and the fractured face of the two first phalanges. Prof. Vachetta called to see the case, explored carefully the fetlock joint and the condition of the tendons of the flexor tendons. These were found uninjured. It was possible to give to the joint movements of flexion and extension. There was a little above the centre of the joint, a transversal depression and above it the

two great sesamoid bones were easily made out attached to the bifurcated end of the suspensory ligament, but separated from the the os suffraginis by the rupture of the inferior sesamoid and lateral ligaments. The case was very serious and an unfavorable prognosis given. The career of the mare was at an end as a race horse, but the owner decided to have her treated, and if possible saved, to use her for breeding purposes. To allay the inflammation cold astringent applications of vegeto-mineral water were applied and an apparatus (Ortosome of Defays), was applied. After a few days the mare accustomed to it, was able now and then to get up. When after a few days the inflammation had somewhat subsided, the ortosome was modified in being made stronger and a permanent supporting dressing applied, so as to immobilize the joint as much as possible. After fifteen days the mare could move with short steps. The fetlock was considerably swollen, cool and hard and ankylosis was going on gradually. The author lost sight of the mare which had been removed to a breeding place.—(*Il Nuovo Ercol.*)

VERTEBRO-COSTAL VARIATION IN A HINNY [*Doct. Camillo Mobilio*].—Destroyed for anatomical practice, this Hinny was 12 years and presented the following peculiarities in its skeleton: 7 cervical vertebra, 18 dorsal, 1 vertebra between the dorsals and the lumbar with characters of the vertebra of both regions, 5 lumbar, 5 sacral, there were but 9 caudal remaining after the amputation of the tail. With the exception of the 26th vertebra all the others were normal. There were also 18 pairs of ribs.

The 26th, as that which followed the 18th dorsal, had all the characters of the first lumbar in the normal animal with the exception of a certain smaller transverse process. At the extremity of each of these, there was a rudimentary rib, articulated by arthrodia with the vertebra. The two rudimentary ribs were two lamella quite falciform in shape, with rounded extremity, much curved in their length with their convexity turned backwards. That of the left side was shorter than the right (10 and 12 centim.).

At the inferior extremity of each of these costiform appendages there was a fibrous prolongation, resting upon the cartilage of the preceding rib. In this fibrous prolongation, there were small bony nuclei, much smaller on the left than on the right, where they were well developed.—(*Giorisale della R. Soc. Naz Veter.*)

INTESTINAL STRANGULATION BY PEDUNCULATED LIPOMA [*Doct. Camillo Toffa*].—A gelding has colic for several hours, passed neither feces or urine. There is complete anorexia. Temperature is 39° C. pulse frequent; 50 centig. of hydrochlor. of morphia are given subcutaneously, and the animal appears quieter. Later when the effects of the morphia have subsided the symptoms return. The temperature has raised to 39.8° C. there is severe dyspnea; the animal lays down and struggles continually. Obstruction of the intestine is then suspected and chloryd. of pilocarpine is administered without giving rise to any fecal passage. The animal dies the next day. At the opening of the abdomen a long portion of the small colon (?) about 80 centi. is blackish and in a state of gangrene. Between the folds of the intestine is discovered a tumor of fat, true lipoma, pedunculated and floating through the intestinal mass. The peduncle of this tumor is twisted twice round the intestinal folds and obstructed it completely. As soon as the peduncle was cut and the tumor removed the intestine was perfectly free.—(*Clin. Veter.*)

LARGE TESTICULAR TUMOR IN A MULE [*Dr. Ruffo Galli*].—While tumors are not exceptional in the body of our domestic animals, those of the testicular region are rather rare, although few cases are on record where the size reached by the neoplasm has been very large, one having been observed in Alfort weighing twenty pounds.

This case was observed in an old animal, bought for surgical exercises. He had a swelling of the scrotum as big as a man's head, which by its development prevented the isolation of the region in two sacs; in fact there seemed to be but one testicle. The animal was in poor condition, moved with difficulty, the hind legs apart. A dull fluctuation was detected, and on exploration gave escape to a little yellowish serosity. Rectal examination excluded the possibility of hernia. Searching the other testicle it was found way up the inguinal canal, much reduced in size. The left testicle was the diseased one, and it was decided to operate on him. After preparing the instruments and two large clamps, the animal was cast and secured as for castration. A long incision on the great curvature of the swelling divided the skin and subcutaneous connective tissue and with care the other layers of the envelope were isolated until the cord and its coverings were reached. One of the clamps was put on

and the operation completed—the right testicle was removed also without difficulty. The animal was then destroyed. The tumor weighed 2,300 grams. There was on its surface smaller growths. The nature of various sections of the tumor was that of sarcomatous formation.—(*Il Nuovo Ercol.*)

FRACTURE OF THE TWELFTH RIB IN A BOVINE—LACERATION OF THE RUMEN—GASTRIC FISTULA [*Doct. Enrico Sampoli*].—In a long article the author describes the conditions of the animal, the object of an injury which presented first a large swelling on the left side, followed after a few days by suppurative collection and fistulous tract. The detection of the fracture was quite difficult to make out. No treatment was allowed, and at the postmortem the following lesions were recorded: Large collection of food from the rumen mixed with pus and necrotic structure. Wide wound of the eleventh intercostal space with muscular laceration, fracture of the twelfth rib, adhesive peritonitis holding the rumen with formation of a thick ring preventing the dropping of the rumen contents into the abdominal cavity, laceration of the rumen 6 centimeters long with necrosis of the borders of the median injury, small amount of serosity in the peritoneal cavity. The injury of the rumen was situated about 3 centimeters lower than the injury of the intercostal space.—(*Il Nuovo Ercol.*)

CERVICAL CARCINOMA IN A DOG [*Dr. Asturo Galli*].—One day without apparent cause this dog showed a swelling on the left side of the neck. After two months it grew larger, and to-day it is a tumor, spheroidal, as big as a large fist and situated on the left side of the neck, where it hangs by a long peduncle measuring six centimeters in length and permitting ample oscillatory motion of the growth. Surgical interference was suggested, and the operation performed by Prof. Vachetta after careful antiseptic preparations and under local anesthesia with stouaine. A circular incision was made near the base of the peduncle, the tumor isolated and separated from its subcutaneous relations. The peduncle rich in blood vessels was amputated, the hemorrhage being readily controlled. Several sutures completed the operation and the recovery was perfect and uneventful. The microscopic examination of the structure of the neoplasm revealed its carcinomatous nature.—(*Il Nuovo Ercol.*)

RUSSIAN REVIEW.

By S. A. GRUENER, M.V.S.

THEORY AND PRACTICE: WASSERMAN'S REACTION IN DIAGNOSIS OF GLANDERS [V. V. Fedders].—The method of complement fixation applying to diagnostic purposes is called "Wasserman's Reaction," and was first used for diagnosis of syphilis. In recent times a beginning has been made to use this method for diagnosis of glanders. The author made many experiments using this method, and the result of his work he has published in pamphlet form. It is well known that the basis of the method of complement deviation or fixation is presented in the phenomenon of hemolysis. Hemolysis, as we know, is the property of red blood cells (of sheep or some other animal) dissolved with the serum of another animal, for instance, rabbit.

If we introduced the red blood cells of the sheep (intraperitoneally or intravenously) into the body of another animal—rabbit—after some time we could obtain from the latter animal (rabbit) serum which should have the property, in a weak solution, to dissolve the red blood cells of the sheep.

But if we heated this rabbit serum to 56° C. it would lose its power to dissolve the red blood cells of the sheep and we should not obtain hemolysis.

To render this active again, it will be enough to add the fresh serum from another normal animal (for instance guinea pig).

The scientists conclude that every immunizing serum consists of two substances—one thermostabile which is called *amboceptor* and another *termolabile*, which after heating to 56° C., is rendered inactive and which is called the *complement* (add substance).

This last substance is contained in every serum in sufficient quantity.

To dissolve red blood cells it is necessary to have two substances.

Serum without amboceptor is not active and does not dissolve the red blood cells or if amboceptor in small quantity, this dissolving will not be distinct. The previous treatment of rabbit-injection into its body of the red blood cells of the sheep increased the amboceptor, and the serum from this rabbit would be active in a weak dilution.

Serum without this complement is also not active and does not dissolve the red blood cells.

The heating to 56° C. destroyed the complement, and therefore the serum after heating does not act.

If we should add the normal serum, whose content is a complement, the phenomenon hemolysis would occur.

This serum which dissolved red blood cells (serum of rabbit) is called *hemolytic serum*.

A famous German scientist, *Ehrlich*, has explained the phenomenon of immunity.

According to his theory, by every introduction into the animal organism of any foreign substance (foreign blood, protein substance, bacteria, etc.), reaction occurs.

This reaction consists in the formation in the organism of a particular or distinct *antibody* or *amboceptor*.

If foreign blood be introduced into the organism *hemolytic amboceptor* is formed.

If bacteria be introduced it has a stimulating effect on the production of a *bacteriolytic* amboceptor.

A poison which stimulates the production of an antibody (or amboceptor) is called *antigen*.

The amboceptor in which complement is fixed becomes anchored to the antigen and the phenomenon of bacteriolysis occurs.

If the serum, which contains specific bacteriolytic amboceptor is heated to 56° C., then it loses its property of anchoring the antigen.

But after adding the serum of a normal animal (guinea pig), the anchoring takes place.

The serum of the very sick animal contains specific amboceptor which has the property with the complement of anchoring the specific antigen.

The serum of a horse that has glanders, contains specific amboceptor, which could with its complement unite with antigen.

Therefore: (1) *Inactivated* heated to 56° C. serum of suspected horses (bacteriolytic amboceptor);

(2) Specific glanders antigen, and

(3) Serum of normal guinea pig (complement) unite together after being placed one hour in an incubator.

We see that one needs just the same serum (normal guinea pig) in the hemolytic system and in the bacteriolytic system.

If we add hemolytic amboceptor and red blood cells to the mixture of antigen, the inactivated serum of a diseased horse (amboceptor) and the serum of a normal guinea pig, then after

this addition, no hemolysis will take place, inasmuch as this hemolytic system required a complement.

This complement being already fixed in bacteriolytic system is lacking in the hemolytic, that is to say, has *deviated* therefrom.

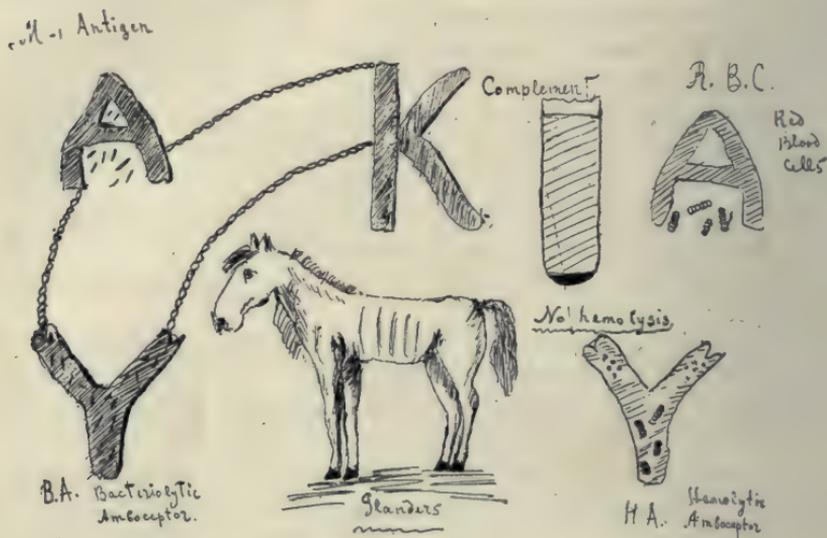


CHART I.

In this it will be seen that the antigen and bacteriolytic amboceptor have united with the complement blocking the union of the complement and hemolytic amboceptor with the red blood cells to produce hemolysis.—Glanders.—No hemolysis.

On the other hand, if the horse from which the serum is taken is in health not infected with glanders, then no anchoring occurs between the antigen and the bacteriolytic amboceptor, because the serum does not contain specific bacteriolytic amboceptor.

The complement then will be free and by addition of hemolytic amboceptor and red blood cell there will occur *hemolysis*.

Therefore hemolysis appearing shows the *absence of the disease*; not occurring shows the *presence of the disease*.

In presence of the disease the serum contains specific amboceptor which anchors antigen by complement fixation.

In the absence of disease, the serum of the suspected horse does not contain amboceptor and anchoring does not occur, and the complement will be free to take place, in hemolytic system, if we should add hemolytic amboceptor, and the red blood cells.

The author explained this phenomenon with original picture: Plate I., showing the phenomenon of the horse infected with glanders.

Plate II., showing the phenomenon of the horse healthy.

In the third picture the author has showed what the result would be, if we should take for the test an *excessive quantity of the complement*.

As the picture indicates an excessive quantity of the complement being present, has united with all the substances of the hemolytic system, and also of the bacteriolytic system.

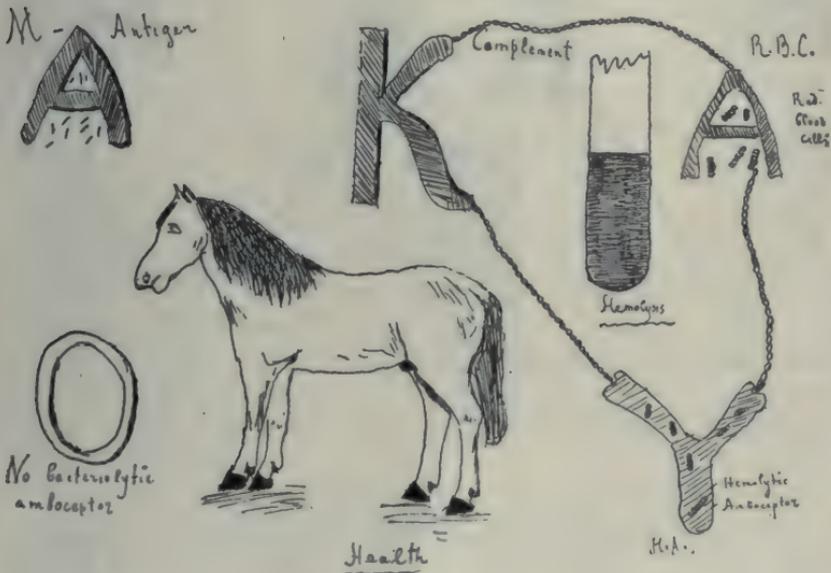


CHART II.

In this it will be seen that the lack of the bacteriolytic amboceptor in the serum of the suspected horse has allowed the complement and the hemolytic amboceptor to unite with the red blood cells and hemolysis has taken place.—No glanders.

In this case hemolysis has occurred, and we can make false conclusions that the horse, the serum of which has been tested, is not sick.

In order to avoid the error, it is necessary to determine the exact quantity of complement needed to chain or anchor only our system, that is to say, it is necessary to make the *titration* of the complement.

The titration of every substance used is also necessary.

The substances which are used in the fixation complement test are as follows:

(1) The serum of the suspected horse which is to be tested (bacteriolytic amboceptor).

(2) The antigen (glanders bacilli extract).

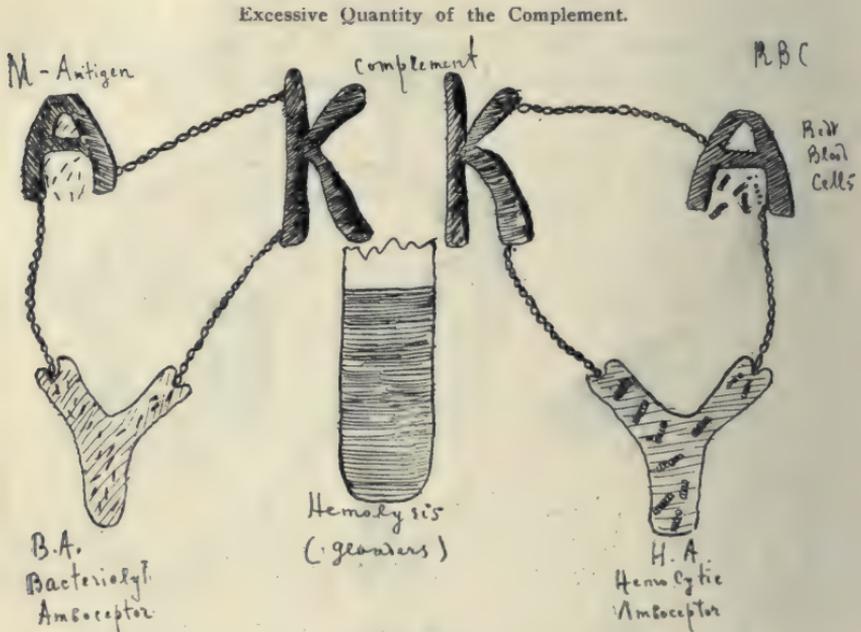


CHART III.

This illustrates an error in technique in which too much complement has been used. Although glanders is present the titre or proper quantity of antigen and bacteriolytic amboceptor does not deviate all the complement. The complement left over after this union unites with the hemolytic amboceptor and with the red blood cells, and hemolysis takes place, although glanders be present in the suspect.

(3) The complement (serum of normal guinea pig).

(4) The hemolytic amboceptor (serum of rabbit which has been treated with red blood cells of sheep).

(5) Red blood cells of sheep thoroughly washed.

The author has described in detail how to prepare every substance; how to titrate the complement, the hemolytic amboceptor, and how to obtain everything which is necessary for making the fixation test.

In the first place he has described how to obtain the blood from the sheep.

After the sheep blood has been obtained from the jugular, the physiological salt solution is added to defibrinated and filtered blood and several times centrifuged and the clear supernatant fluid taken out with a pipette then pour into it a clear solution and centrifugate again.

This washing must be repeated until the red blood cells are thrown down, and fluid above is completely clear.

1. *Hemolytic Amboceptor*.—The author prepared the following:

The rabbit is inoculated in the ear intravenously with red blood cells, suspension in salt solution from a sheep.

The author made 4-6 injections at intervals of 3-4 days suspended in the same quantities of physiological salt solution.

After several injections a small amount of blood is taken from the veins of the ear of the rabbit; the serum of the rabbit is then titrated in order to determine how much is necessary for the producing of hemolysis.

(3) The *Complement*.—The author obtained by severing the carotid and jugular and killing guinea pig.

After the collection of the blood the serum is allowed to separate, is collected and titrated.

(4) The *Antigen*.—This is a shake extract of bacilli mallei in physiological solution.

All investigators use this extract preparing it from culture of glanders bacilli.

But in regard to the dangers (?) in connection with the preparation and to render the process more simple, the author has decided to try using the mallein as antigen.

He has taken the mallein prepared in the INSTITUTE OF EXPERIMENTAL MEDICINE AT ST. PETERSBURG, made dilution in salt solution 1:500 of the mallein—it is sufficient for the test.

The serum of the animal to be tested the author obtained from blood drawn from the jugular vein of the suspected horse. For this purpose, the author recommends a hypodermic needle of a 10 c.c. syringe, a sufficient quantity of blood is drawn for testing purposes.

The author described in detail the *titration* of the *hemolytic serum* (*amboceptor*) and the *complement*.

Two doctors in Russia, V. Avrorov and S. Seslavinsky, died last year from glanders infection in preparing the antigen in the laboratory.

It is not necessary to make extract concerning this because the reader will find its exact description in the pamphlet—Dr. J. Mohler and Dr. A. Eichhorn—“*The Diagnosis of Glanders by Complement Fixation*,” W. 1911.

Also, it is needless to explain the complement fixation test. This description one may find in above pamphlet.

The author gives detailed instruction concerning the making of this test.

His experiments as well as the work of other authors show that the fixation complement test for glanders diagnosis is the valuable and most perfect method.

The work of *Mr. Fedders* is peculiar in regard that he used *mallein* as the antigen, instead of the extract of glander bacilli, which has been used by other authors.

EXPERIMENTS IN IMMUNIZATION OF HORSES AGAINST GLANDERS [*Prof. A. V. Dedulin*].—The laboratory of experiments of M. Marxer and the author showed that “pharasa,” prepared from glanders cultures, was harmless to horses and would immunize them.

Therefore the author decided to make field experiments on a large estate at Carlovka, situated in the province of Poltava, South Russia. For the ordinary agricultural work on this estate, about 3,000 horses were used, but during the grain harvests and particularly to the peasantry of various parts of 10,000 horses belonging to the peasantry of various parts of Russia were brought into requisition. These horses, coming from all parts of Russia, infected the horses belonging to the estate with glanders.

This occurred in 1909. In this year 276 horses succumbed to glanders. After such a loss, the managers of the estate were eager that experiments be made in the actual immunization of horses against glanders, and they gave 600 horses for this experiment.

First these animals were tested with mallein and gave negative results. Then 303 were inoculated by the method of *Prof. Levi and Dr. Marxer*.* To avoid any mistake the author secured the “pharasa” for this experiment directly from Dr. Marxer.

From the 303 horses tested, 269 were inoculated according to Marxer’s usual process and 34 responded immediately. The methods used in these cases were two-fold; first, the usual method

with the first 269 animals, *i. e.*, 0.3 "pharasa" dissolved in sterilized water was injected hypodermically into each horse. After three weeks 0.4—0.8 were given to the same horses in the same manner. That the absorption might be more perfect, the pharasa was injected 0.1 in 5.0 of sterilized water at three separate points.

The rapid method in this process consists in injecting: the first day 0.1, the second day 0.2 and the third day 0.4.

All the horses bore this inoculation very well. The inoculated point became inflamed and swollen, but after 7 days, the swelling was entirely absorbed, neither pus nor gangrene appearing. Some rise in temperature was observed.

During the following 16 months, 14 horses perished from glanders on this estate, but of the inoculated horses not one died.

Besides the experiments conducted on the estate in Poltava, the author tells us of further experiments performed at the experiment station in the Cossack province of the Don. There were sent to this station 2 inoculated horses. After 14 months the inoculation was checked by hypodermic injections of virulent cultures of glanders which rendered the animals extremely sick. They recovered, however, within 2 months. The author, Prof. Dedulin, does not consider these experiments to have completely solved the problem, and he will continue his experiments.—(*Arch. Veterinary Sciences*, 1911, May.)

* Prof. Levy, Dr. Blumental and Dr. Marxer, Centralblatt f. Bact., Orig. 1906-13.

HUNGARIAN REVIEW.

THE TREATMENT OF METACARPAL EXOSTOSES [*Dr. Joseph Loeb*].—The frequency of metacarpal exostoses in the horse, their location (intermetacarpal, postmetacarpal, etc.), and their complications, surely justify the endeavor to cure this disease quickly and thoroughly, since it interferes so much with the usefulness of the animal. First of all the hoof must be properly treated so that the weight of the body is evenly distributed. For the lameness, rest is essential, and the Priessnitz compress, the hydrothermo regulator are of great benefit, as is also massage. Various irritant ointments are recommended. Hoffman uses iodine and mercury ointments. Gibson, Mayall, Knauer and

Plosz remove metacarpal exostoses by operative measures. The author also was successful in removing the bony new growth in one case by operation. In other cases he obtained very good results with Klein's Antiperiostin. In one horse there presented a metacarpal exostosis 4 c. m. by 3 c. m., with an elevation of 2.5 c. m., and indistinct margin. This was rubbed with antiperiostin for ten minutes. The resulting swelling disappeared in four days, after six weeks the crust also came away. The bony growth, however, could no longer be felt under the crust after the fourth day, and the horse was laid up for only four days. In another case the exostosis on the metacarpus measured 5 c. m. by 2 c. m., with a thickness of 2 c. m. After applying antiperiostin, the bony growth disappeared in five weeks.—(*Allatoroosi Lapok, No. 7, 1911.*)

IN Prof. Hobday's remarks at the A. V. M. A. banquet at Toronto, this eminent London veterinary surgeon spoke in optimistic terms of the outlook for the veterinary profession. He said in so many words, that "the outlook was never brighter than at the present time."

THE very excellent article on "The Elimination of Tubercle Bacilli From Infected Cattle and the Control of Bovine Tuberculosis and Infected Milk," by Prof. Veranus A. Moore, Director of the New York State Veterinary College, in the recent report of that institution, has been translated into German, that it may be used in teaching the classes at the Berne Veterinary School.

It is gratifying to note that every detail of the programme for the post-convention trip planned by the REVIEW was carried out identically as described in the August issue, by a goodly number of those in attendance at the Toronto meeting. A large delegation from Massachusetts, Pennsylvania and New York completed the programme in the trip over Lake Champlain and Lake George and, finally, in paying a visit to the state capitol at Albany.

CORRESPONDENCE.

WOODBURY, N. J., July 28, 1911.

Editors AMERICAN VETERINARY REVIEW :

I have recently used in several surgical cases a preparation of iodine bearing the trade name of Iodone, and it has qualities that recommend it strongly in high-class veterinary surgery.

It is decidedly anæsthetic, is not easily rubbed off a wound surface, liberates free iodine on contact with moisture, and is a thoroughly good antiseptic.

The formula is $(C_6H_4C_2O_3)_2KI.I_4$; and Iodone Surgical Powder contains sufficient amount of this compound to liberate 2 per cent. of Iodone in contact with the secretions of the wounds or any other moisture.

This is in no sense an ad. for the makers; I am merely calling attention to this product, as in my experience it is the first compound of iodine which really liberates iodine. Iodone is of value, because it permits of a *dry* iodine dressing, and as its price is not prohibitive, it should be popular in veterinary surgery.

Yours very truly,

T. B. ROGERS.

WASHINGTON, D. C., August 13, 1911.

Editors AMERICAN VETERINARY REVIEW :

Through your columns I desire to express my deep gratitude to the Army Veterinarians for a beautiful silver punch bowl recently presented me through Dr. John R. Mohler, of the B. A. I.

This beautiful bowl bears the following inscription :

“ Presented to
Dr. John P. Turner
by the U. S. Army Veterinarians
In appreciation of his services.”

I feel that the little mite I have contributed toward their future happiness is not deserving so beautiful a remembrance.

Very truly yours,

J. P. TURNER,

SOCIETY MEETINGS.

ALABAMA VETERINARY MEDICAL ASSOCIATION.

The fourth annual meeting of the above association was held at Birmingham June 16 and 17. The following is a summary of work of the meeting:

M. F. Jackson, President, opened with his annual address.

Report of Secretary and Treasurer, Chas. A. Cary, read and approved. Thirteen members answered to the roll call.

Eleven new members were elected. Seven visitors were present.

I. Paper read by E. M. Duncan on Sanitary Milk. Discussed by Drs. Bahnsen, McAdory, French, Stoples and Cary.

Construction of barns and keeping up of cattle with defective udders.

II. Report of a post mortem examination, and importance of post mortem examination always being held by a veterinarian.

Post mortem findings, first case. Case of strangulated small intestine through gastro hepatic omentum.

Second and third cases of diaphragmatic hernias. Animals lined 15 to 24 hours after first symptom appeared.

Discussed by Drs. French and Bahnsen.

III. Black Leg, by Dr. J. E. Threadgill.

Causes, modes of transmission, symptoms, animals affected and preventive treatment.

Discussed by Bahnsen and French. Limits of age of single and double vaccination. Adjourned until p. m.

IV. Dr. A. H. French—Rabies, animals susceptible, incubation, infection secretions, etc.

Discussed by Bahnsen, McGuire and Cane.

V. Dr. R. V. Hazelwood—Report of case of intussusception and uses of bacterines in nail punctures and fistulous witness.

Discussed by Whitfield, Piatt, Jackson and Cary.

VI. Dr. J. E. Threadgill—Reports on 12 cases of tetanus, 11 of which recovered.

Barium chloride and tetanus antitoxin used.

Bahnsen claims period of incubation will aid in prognosis.

One to 6 days, 99 per cent. dil.

Fourteen to 24 days, cases recover if they can be kept from lying down and from taking inhalation pneumonia.

Keep excretory organs active.

VII. Dr. W. D. Staples—Neurectomies in veterinary practice—much discussed.

VIII. Dr. P. F. Bahnsen—Purpura hemorrhagica.

Discussed by McAdory and T. D. Jackson.

IX. Dr. O. W. Payne—Rheumatism and its treatment.

X. Dr. J. A. Piatt—Ergotel in congestion of lungs, and potassium permanganate in forage poisoning. Ergotel hypodermically in congestive stage.

Fifteen grs. pot. permanganate in quart of water for forage poisoning.

XI. Dr. T. D. Jackson—Strangles.

Transmitted by way of alimentary canal and air passages; 25 per cent. of shipping fever develops into strangles; 75 per cent. influenza or its complication of pleuresy, pneumonia or bronchitis.

XII. Dr. W. M. Howell—Tuberculosis in Alabama Oxen.

XIII. Dr. R. B. Nixon—Dipping, Vat.

XIV. Dr. I. S. McAdory—Duty of the Veterinarian to the milk producer.

XV. Dr. M. F. Jackson—Contagious pustular dermatitis. Cases reported.

XVI. Dr. C. A. Cary—Methods of Identifying Dairy Cattle in Dairy Inspection.

Officers for ensuing year are:

W. B. Fleming, President.

W. D. Staples, Vice-President.

C. A. Cary, Secretary and Treasurer.

CLINIC.

A polyclinic was held on Saturday, June 17, at Dr. French's Veterinary Hospital.

Dr. Piatt did double plantor neurectomy. Dr. W. D. Staples did a like operation. Drs. McAdory and Bahnsen amputated the penis of a pointer dog. Dr. Cary operated on an umbilical and also on a ventral hernia. Dr. Bahnsen demonstrated his method of casting and restraining animals. Dr. French gave a demonstration in the use of rabies virus.

A RESOLUTION.

Resolved, That the Veterinary Medical Association endorse the work of the tick eradication in Alabama, and that the facts show that the government, the state, the counties in which the work has been conducted, has been well done along the line of tick eradication, and the education of the people in the benefits, the value of and the best methods adopted to the work, and in no case shall the work be abandoned.

Adjourned to meet at Auburn or Columbus, at direction of the Executive Committee.

B. F. BAHNSEN.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the Connecticut Veterinary Medical Association was held in New Haven, Wednesday, August 2, 1911.

In the morning and early forenoon the members and guests assembled at Dr. J. H. Kelley's Hospital, enjoying themselves in looking about the place and examining patients; greeting old friends and partaking of refreshments which Dr. Kelley had generously provided, that those who left home on the early trains would not suffer from hunger, before the regular dinner.

At eleven o'clock the company embarked, in a launch chartered for the occasion, for a sail down the harbor to Mansfield's Grove for dinner, which was the best dinner ever served to the members in the history of the association.

After dinner, Dr. Judson, the president, called for speeches from Dr. R. W. Ellis, Dr. B. D. Pierce, Dr. J. H. Kelley, who spoke briefly in regard to enjoyment of the occasion. Dr. Ellis outlined the plans under consideration for the special train from New York to Toronto, for the A. V. M. A. meeting, and urged every member of the association to try and arrange his business so as to be able to go to the meeting with the New York delegation. The doctor also extended a cordial invitation to everyone present to attend the meeting of the New York State Veterinary Medical Society, to be held in Brooklyn, September 12, 13 and 14. Dr. Pierce also urged the doctors to attend the convention, saying that the Massachusetts Association had plans under way

for a special train from Boston, and they would be pleased to have any of the Connecticut members go with them, that cared to. The president then called upon Hon. H. O. Averill, Commissioner on Domestic Animals, for a few remarks. Mr. Averill thanked the members for the invitation to the meeting, and explained the principal features of the new law regarding the importation of cattle into the state, also explained what he would probably do as to inspecting and tuberculin-testing of cattle, though no definite rules had been formulated at present, but would be issued as soon as possible after the law took effect. At four o'clock meeting adjourned, some of the party returning to New Haven by boat, others by trolley car. All present were highly pleased with the entertainment which had been so nicely planned, and carried to a successful termination, by Drs. Kelley and Whitney, as it surely was the most enjoyed outing the association, and its guests, ever had.

Members present: Drs. Thos. Bland, H. E. Bates, F. F. Bushnell, H. C. Balzer, Chas. L. Colton, G. E. Corwin, Jr., Geo. L. Cheney, B. K. Dow, J. L. Devereaux, L. B. Judson, A. C. Knapp, J. H. Kelley, P. T. Keeley, G. W. Loveland, B. D. Radcliff, Oscar Schreck, H. L. Tower, R. S. Todd, J. E. Underhill, H. Whitney.

Honorary members: Dr. R. W. Ellis, New York City, H. O. Averill, Commissioner on Domestic Animals.

Visitors: Dr. B. D. Pierce, Springfield, Mass.; Dr. R. P. Lyman, East Lansing, Mich.; Dr. A. W. Sunderland, Bristol; Dr. D. R. Keresey, Danbury, and veterinary student Mr. McCuen, New Britain, also Mr. Haverstick, representing a pharmaceutical house.

B. K. Dow, Secretary.

PROF. E. A. A. GRANGE, Principal of Ontario Veterinary College, deserves a vote of thanks from the entire veterinary profession of America, first for inviting the A. V. M. A. to Toronto, and second, for the admirable way in which he provided for the comfort of its members while there.

DR. WILLIAM W. YARD, Denver, has been appointed State Veterinarian of Colorado, having as well as the duties of a state veterinarian, the entire charge of the State Meat Inspection Laws. The doctor still retains the position of Secretary of the State Veterinary Examining Board.

NEWS AND ITEMS.

THE Pacific Coast was represented at the A. V. M. A. meeting at Toronto by Drs. Archibald, Fox and Keene. Dr. and Mrs. Nelson were present from Spokane, Wash.

DR. J. E. NANCE, who recently encircled the globe, as alluded to in a recent issue of the REVIEW, has located at Muskogee, Oklahoma, where he will engage in general practice.

DR. WILLIAM H. GRIBBLE, Washington Court House, Ohio, spent a vacation from the cares of practice at his old home in Churchville, N. Y., as has been his custom for a number of years. This year the doctor made the trip in an automobile, spending three days on the road, camping out wherever fancy dictated.

DR. F. R. WHIPPLE, formerly head of Veterinary Department and Professor of Veterinary Medicine and Surgery in the West Virginia University, has opened a veterinary hospital at Peoria, Ill., where he says he hopes to receive the REVIEW for many years to come. We certainly wish the doctor much success.

ADMIRAL TOGO and his staff traveled to Toronto in a private astringent, soda as an antacid, lime as a reconstructive; and the car attached to the train of the New York delegation. When the Admiral returned to his car from the dining car (passing through the special cars of the veterinary party), he was accorded a salutation from the American Veterinary Medical Association, which he acknowledged gracefully.

PROF. L. A. MERRILLAT, of Chicago, and Dr. J. H. Blattenburg, of Lima, Ohio, two of our most prominent surgeons, have accepted an invitation to attend the meeting of the New York State Veterinary Medical Society, to be held in Brooklyn, September 12-14. Dr. Blattenburg has consented to do the Williams' operation for roaring, demonstrating a new feature in the technique. Prof. Merrillat will do some operations not yet designated.

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