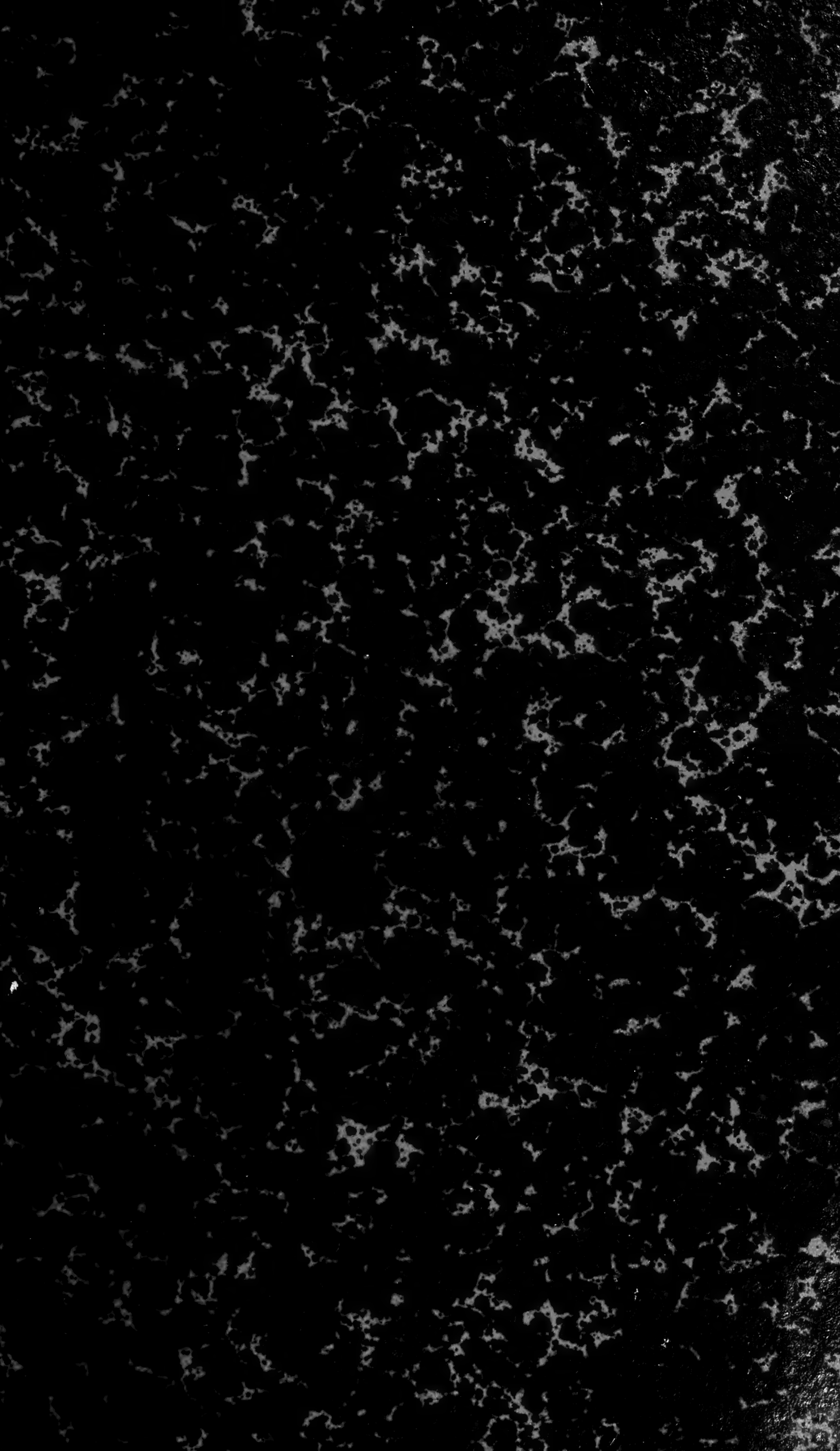

AMERICAN VETERINARY REVIEW,

EDITED BY

PROF. A. LIAUTARD,

Foreign Corresponding Secretary of the Central Society of Veterinary Medicine (Paris), Honorary Fellow of the Royal College of Veterinary Surgeons (England).

ROSCOE R. BELL, D.V.S., and

ROBERT W. ELLIS, D.V.S.

WITH THE COLLABORATION OF

Prof. W. J. COATES, M.D., D.V.S., New York-American Veterinary College.
Prof. O. SCHWARZKOPF, V.M., U. S. Army.
Prof. P. J. CADIOT, of the Alfort School, France.
Prof. W. L. WILLIAMS, V.S., Cornell University, Ithaca, N. Y.
J. F. WINCHESTER, D V.S., Lawrence, Mass.
Prof. S. STEWART, M.D., V. S., Sec'y A.V. M. A., Kansas City, Kan.
M. H. MCKILLIP, M.D., V.S., McKillip Veterinary College, Chicago, Ill.
W. J. MARTIN, M.D.C., Kankakee, Ill.
WM. HERBERT LOWE, D.V.S. (Former U.S. Officer of the Port of New York), Paterson, N. J.
GEO. H. BERNS, D.V.S., Brooklyn, N. Y.
Prof. H. D. HANSON, New York City.
Prof. M. H. REYNOLDS, University of Minnesota, St. Anthony Park, Minn.
L. A. MERILLAT, M.D.V., V.S., Chicago, Ill.
E. MERILLAT, A. B., M.D.V., Chicago, Ill.
And several others.

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All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

FOOT-AND-MOUTH DISEASE, although not likely to find its way to the United States, thanks to the good and strict measures that our friend, the Chief of the Bureau of Animal Industry, Dr. Salmon, has established, is a subject which always deserves the attention of the sanitary veterinarian, and which does not allow him to ignore the condition of live stock in other countries, in relation to the possibility, ever so small, of its importation.

Indeed, what is the general condition on the European continent? Is there a country where it does not exist, no matter how thorough the sanitary department may be? In France, for instance, foot-and-mouth disease, notwithstanding most stringent measures, is prevailing, and one might say spreading more and more. But not only is the Continent invaded, but England, which had been able to boast so rightly of her being free from it for years, has seen, comparatively recently, quite a number of outbreaks whose original source of infection has not been made out as thoroughly as the authorities desired it, notwithstanding the inquiries which were made, a result which is severely noticed in the *Journal of Comparative Pathology and Therapeutics* by the editor, who says: "It is evident that something is wrong in connection with what may be called the investigating department of the Board. It ought to be consoling to the members of the veterinary profession to reflect that little

or none of the discredit attaching to this unsatisfactory state of affairs belongs to them, for it is generally understood that the duties which are undertaken by the Board are at present distributed among its officials on the principle that the possession of a veterinary qualification is evidence of unfitness to undertake such work as the tracing of diseased and suspected animals. For that duty, a naval or a military training is apparently thought to be the best preparation." This is pretty severe criticism, which we are quite certain cannot be brought to the door of the officers of the Bureau of Animal Industry.

But, in relation to foot-and-mouth disease, there is another point which deserves the close attention of our veterinary inspectors. It is the subject of diagnosis. Prof. McFadyean in the last issue of his most valuable jonrnal, relates a peculiar instance, where veterinary authorities in high standing disagree upon a diagnosis, some claiming the disease as being foot-and-mouth disease, while others claimed it was not. This last contention was correct. What was the matter, then? It was an affection which had already been described by the late Prof. Walley, which was called "contagious dermatitis" or "oef" in sheep, and also as "hair-and-hoof disease," "mouth-and-foot disease," or "carbuncle of the coronary band." Prof. Walley described the symptoms as follows: "In the early stages, the lesion is circumscribed and presents itself as a local inflammation, involving the skin and to some extent the subcutaneous tissue. The skin of the affected part, usually of the coronet and lips, in the first place, is swollen, hot and tender, and, where the color can be seen, red; in a few days a breach of the surface takes place, serum oozes from it and a sore is quickly formed, which tends to spread and to propagate itself to the skin of any part devoid of wool with which it comes in contact. The area involved in the diseased processes at the outset does not usually exceed an inch in diameter, but as the malady progresses the whole of the limb may become involved, either as the result of of peripheral extension or by coalescence of different centres of disease. From being of the nature of a comparatively healthy

sore, the lesion assumes a somewhat malignant aspect. The cutaneous papillæ become hypertrophied and congested and readily bleed on being scraped. A purulent fluid of a dirty gray color and possessing a very unpleasant odor, is constantly discharged, and this collects on the surface of the sore, and with the viscosity produces a repulsive condition—a condition, in fact, closely allied to that which is seen in grease of the leg of the horse or canker in the foot of that animal. In addition to these diffused sores, others smaller in extent may form on the skin of the leg and even on the arm, but these isolated sores do not, as a rule, present the foul conditions just described, as the discharges, becoming inspissated, form a crust on the surface; and the same remarks apply, in the main, to the labial sores."

The fact that an error of diagnosis had been made by one who is well acquainted with the symptoms of foot-and-mouth disease can be our excuse for presenting our veterinarians in the United States with such a minute description, but as similar errors might be made by those who have never seen a case of aphthous fever, and we think there are many in America, we have thought proper to guard them against such an error.

There seems to be another important point in relation to this question of differential diagnosis; it is the fact that this disease of sheep has never been observed to spread to cattle, and that any disease affecting the feet and mouth of sheep and which does not spread to cattle in contact with them may without hesitation be pronounced not to be foot-and-mouth disease.

* * *

A VETERINARY SYNDICATE.—The customs and habits of various countries are quite curious, and if some organizations are established with speculative objects principally, in others, on the contrary, they are for the moral benefit of a number collectively or individually.

The creation and organization of the powerful trades unions seem in a great many points to partake of both. Syndicates, however, it seems to us, assume more of either one or the other. After all, syndicates have good objects. Trades unions, we be-

lieve, predominate in the States, and, perhaps outside of the syndicates of business men, the trust companies, we do not know if syndicates of professional men exist. In France, every trade and every profession has its syndicate. For years those of butchers, bakers, etc., have existed; that of the horse-shoers was formed a few years ago; then came the druggists, the dentists, the physicians, and lately the veterinarians. Several departments in France have formed veterinary syndicates which in a short time will all unite into a general national syndicate. In union there is strength.

I have the constitution and by-laws of two of these syndicates. Their object is to establish between all veterinarians relations which would allow them to protect usefully and in common their moral and material interests; to solve as much as possible disputes that may arise between veterinarians themselves, between them and their clients, and to act, conciliate or arbitrate in all questions relating to the profession; and also to settle difficulties and quarrels between veterinarians and horse-shoers whom they may employ. In France most veterinarians have shoeing shops.

The idea of such syndicates may not be so improper, and what good could be derived from their organization cannot be ignored. A veterinarian has to complain of another for some professional breach of ethics and he calls on the syndicate to settle the trouble. An unsatisfied client (and there are some) is displeased at the services of a veterinarian; he objects to his bill. May not the syndicate possibly settle their troubles and avoid law suits, with all its loss of time, professional controversies and exhibitions of ill nature. One veterinarian resorts to unprofessional acts to obtain practice, lower charges, etc.; the syndicate settles it.

It is true many of these may also be treated by our veterinary organizations, state or national societies, and yet, no, for the societies ought to have for their object only scientific questions, while the syndicates would have only to consider those of a different nature, more business, more trade-like.

Considering all the advantages that may be derived from it, if French veterinarians have not yet obtained the law which will regulate their practice, we believe their forming syndicates, thus uniting together for their professional protection, is a good move.

* * *

A VETERINARY PRACTICE LAW FOR FRANCE.—Is it this new creation of veterinary syndicates, which shows the influence that they can exercise and the prospective union for protection that will be inaugurated, or is it the result of the official visits of the President of the Republic to the Alfort School? At any rate, a great reform is likely to take place, viz., the official and legal protection of veterinary practice. After years of procrastination and discussions the project of a law *regulating the practice of veterinary medicine in France* is at last presented before the Chamber of Deputies, signed by the President of the Republic and the Secretary of Agriculture.

At last the birthplace of veterinary science comes to the front, and it is probable that the protection which has been granted already in various European States, and which has existed for some time also in the United States, will be possessed by French veterinarians. It is better late than never.

The law has two sections. By the first the practice of veterinary medicine is prohibited for all who have not a diploma delivered by the national schools. Practitioners who have been engaged in practice for three years at least previous, and had been registered, shall be allowed to continue their work. Castration is not considered as exclusively belonging to veterinary surgeons, and, finally, foreign graduates may be allowed to practice in France providing they have obtained the French diploma. To this last effect special exemptions of attendance to school and of examinations shall be granted to the candidates.

The second section treats of the penalties inflicted upon the delinquents, consisting of fines and imprisonment, as the case may be.

While congratulations must be offered to brother veteri-

narians, with a hope that they may derive the profit that they anticipate by a law which grants them comparatively little, there is one part of the first section which will be of interest to foreign veterinarians, viz., that by which they may be allowed to come and practice in France.

Recognition of a foreign veterinary diploma is not new. For a number of years that of the American Veterinary College has received that recognition, and with it graduates of New York have been able to obtain a diploma from Alfort, but by the new law a wider range of privileges are promised, viz., exemption of length of time of attendance and even of examination. In years gone by, and even now, recent graduates of human medicine were coming to Europe to improve their knowledge, as our American schools are probably not yet as thoroughly organized as European institutions, especially on the subject of practical opportunities, there is an occasion that recent graduates of veterinary medicine may do well to take advantage of—it would be for their benefit and that of their future success. A. L.

PROGRESSING BACKWARDS.

In the avowed work of supplanting the horse for practical purposes the automobile is making rapid strides—toward oblivion. One after another come reports from the various cities where their advent had been heralded as the death-knell of the faithful brute which has drawn the loads and borne the burdens of centuries that the syndicates of capitalists who have been backing them have grown tired of the monotonous occupation of sinking money and have announced the withdrawal of the machines from the streets. Only a few months ago a firm in Boston discarded twenty-eight and bought fresh horses; Philadelphia has had a like experience; Chicago has disbanded her company and retired more than a hundred after losing $475,000 in seventeen months; Kansas City's maiden venture was undone almost before it was begun; it is an open secret that New York continues to operate her horseless cabs through fearful

financial loss, and hangs on, like Wilkins Micawber, in the hope that something will turn up; and we know of no commercial firm which has employed them that has not already dismissed them, or continue them merely as an expensive advertisement. Our esteemed New York *Herald* seldom mentions their existence now, and although it is energetic in its quest of news it failed absolutely to secure the item detailing the disbandment of the Illinois Electric Vehicle Company. Although a little late, we give it full permission to copy the facts of the case from the news pages of the current issue of the REVIEW. When inventive genius can daily replace the wear and tear upon the intricate machinery of an automobile as is done upon the complex machinery of the horse, then it may win in a fair competition; but it never can by boastful buncombe, unsubstantiated claims, and malicious denunciation of the honest horse, and when the air bubble has passed by they will still find that horse power over streets and roads is the cheapest and most reliable means of progression, unless every street and every road is provided with a steel track, with a trolley overhead or underground.

ALBERT W. CLEMENT.

Those who were best acquainted with Dr. Clement will be the ones who will appreciate most keenly the great loss which veterinary science has sustained in his untimely demise, in the midst of his active and most enthusiastic labors in its behalf. Few men had been enabled to prepare themselves so well for their life-work as he, who spent years in passing through the various steps of an acute medical education, perfecting his knowledge after obtaining his degrees by intelligent research and study in the post-graduate schools and special laboratories of Europe. United with these qualifications was a love of the work which he had espoused amounting to an infatuation, so that he pursued his quest of knowledge in his daily labors, and thus constantly improved his mind until he stood at the very front of the most learned of his calling. When we say that our profession has sustained a serious loss in the death of Dr. Clem-

ent, it is not meant in the platitudinous sense which accompanies many similar announcements, but we mean to say that one of her sons who could always be relied upon to put his shoulder to the wheel and push hard to attain any goal that would be for her advantage, has through death been lost to us. Year after year, he was a constant attendant upon the meetings of the National Association, and for fifteen years he was a worker for the best interests of that organization—upon her committees, upon the programme, wherever work was to be done; and, although feeling sometimes that he had not received just treatment, he never sulked; he was ready to resume work with a cheerfulness that proved his loyalty to the cause. Thrice was he honored by election to the Vice-Presidency, while in 1898 he became its President, which he declared was the greatest honor in the veterinary world, and which was sincerely appreciated by him. In local veterinary affairs of Maryland, he was ever a leading spirit, and he served upon the first veterinary examining board that was appointed, being largely instrumental in the securing of the laws which have made Maryland in advance of more favored States. In the realm of literature he has contributed a little text-book entitled "Veterinary Post-Mortem Examinations," while his papers contributed to the programmes of association meetings and to the professional magazines were always carefully prepared and the result of much study and investigation.

We say again, that Dr. Clement was a man we could illy afford to lose, for it will be some time before another will come forward who will throw into his work the love and the enthusiasm which always characterized his unselfish labors in behalf of the true science of veterinary medicine. A sketch of his career will be found elsewhere, together with resolutions of his colleagues of the Maryland Association.

THE KANSAS CITY VETERINARY COLLEGE gave its annual banquet at the Midland Hotel, Kansas City, Mo., March 7, 1901. Nearly 100—students of the college, faculty and veterinarians—were present.

ORIGINAL ARTICLES.

EXPERIMENTS IN TREATING INFECTIOUS MAMMITIS IN THE COW.*

By Dr. E. Zschokke, Zurich.

Translated by Archibald R. Ward†, *Cornell University, Ithaca, N. Y.*

Some years ago in this publication the various methods for the treatment of infectious mammitis were reviewed and their inefficiency pointed out. The necessity for carrying on further investigations into the nature of this udder disease and of the possibility of its successful treatment was very evident, because from the reports of some veterinarians there is no doubt that in certain regions this disease assumes the importance of a plague, dreaded even more than foot-and-mouth disease itself.

The farmers are beginning now to apprehend more and more the peril to the productive capacity of their milch cows engendered by this infection. They are manifestly more on the alert for abnormal appearances of the milk, and promptly take measures to have an examination made. In this they do right. A timely diagnosis of the disease may be the means of preventing the spread of the infection. Besides this, individual consumers and cheese factories will receive milk of a more uniformly wholesome character, thus obviating many complaints and detrimental criticisms.

The more exact observations of the appearance of the udder and milk, and the constant increase in the number of samples sent for microscopic examination to the pathological department of the Veterinary College at Zürich, are attributed to an increased interest in and understanding of the disease.

The number and results of these investigations, omitting the

* Heilversuche bein gelben Galt der Kuh. Landwirthschaftlisches *Jahrbuch der Schweiz.*, 1900, Heft. 2, S. 56.

† The translator acknowledges with thanks the valuable aid in his work received from Prof. W. L. Williams, of the New York State Veterinary College, and from Mr. Otto F. Hunziker, B. S. A.

many hundreds of samples of the milk of animals purposely inoculated, are embodied in the following table:

	Curable mammitis.	Incurable mammitis.	Not infected.	Total.
1894	11=45.8 per ct.	3=12.5 per ct.	10=41.6 per ct.	24
1895	10=50 "	3=15 "	7=35 "	20
1896	111=56.6 "	23=11.7 "	62=31.6 "	196
1897	132=49.6 "	50=18.7 "	84=31.5 "	266
1898	126=40.9 "	65=21.1 "	117=37.9 "	308
1899	179=50.6 "	42=11.8 "	133=37.6 "	354
Total	569=48.8 "	186=15.9 "	413=35.3 "	1168

Tabulated according to months, the samples sent in during the years 1896–1899 give the following averages:

	Curable. mammitis.	*	Incurable mammitis.	*	No infection.	*	Total.	*
Jan.	4.6	14	1.3	4	5.3	16	11.3	34
Feb.	7.	21	2.6	8	7.3	22	17.	51
March	12.3	14	4.3	13	6.3	19	23	69
April	11	44	3.5	14	9	36	23.5	74
May	14.2	57	5.2	21	11	44	30.5	122
June	16.7	67	4.7	19	8.2	33	29.7	119
July	18.2	73	5.0	20	14.5	53	33.5	146
Aug.	15.2	62	4.7	19	9.5	73	29.7	119
Sept.	12.9	48	4.2	17	10.0	40	26.2	105
Oct.	13.5	54	4	16	10.2	41	27.7	111
Nov.	8.5	34	4.5	18	9.0	36	22.0	88
Dec.	9.2	37	2.7	11	4.5	18	16.2	66

The figures in the columns under the star show the total number of samples sent in during each month of the four years. The figures opposite them show the average number per month for that period.

It is to be noted that the figures for the year 1896 begin with the month of April, for the law authorizing federal investigation of infectious mammitis in the Canton of Zürich first went into effect in April, 1896.

It appears from the foregoing that infectious mammitis is on the increase from year to year, or rather is brought to light in greater amount. It is also plain that while the disease is man-

ifest during the whole year, it is most severe in the summer months, at a time when the greatest milk production might occur.

In regard to the regional distribution it is worth noting that in certain communities the outbreak is so severe as to warrant speaking of it as a pestilence. The somewhat increased amount of infectious mammitis in the neighborhood of cities may be traceable to the more frequent purchase of fresh cows, because the period of udder congestion is the most favorable time to dispose of an infected animal undiscovered.

If the location of the infected herds be inscribed upon a map, that of the Canton of Zürich,* for instance, it is easy to see that certain parts of the canton are subject to a visitation year after year in the same manner, while other districts remain unharmed. The regions where it is encountered least are those in which agriculture is practiced in addition to dairying. These conditions suggest the idea that the strengthening of the constitution brought about by the use of dairy animals for labor exerts a repressive influence upon the infection.

Stable infection, *i. e.*, the repeated appearance of infectious mammitis in the course of a year in the same dairy, could be authenticated last year in twenty-three cases.

While in a large number of the isolated sporadic cases the means of the introduction of the disease could be recognized, yet there were many others untraceable to any visible source of infection.

The occurrence of four outbreaks of stable infection in which two to four animals became affected rapidly, one after another,

* It may be well to call to mind that in this region the disease may, for practical purposes, be classified into two types—a curable and an incurable form. The first is caused by the short streptococci, which the leucocytes are able to take up and destroy. The incurable form, on the other hand, is associated with long streptococci, which the leucocytes are not able to harm, and which, therefore, remain alive. These streptococci apparently wander through the duct of the teat into the milk sinuses, multiply rapidly, elaborate toxines which stop the milk secretion and cause the assembling of pus cells in the milk sinuses. If the pus cells are allowed to remain undisturbed, they will perform their natural function of curing as much as possible. But if they are milked out daily their function is interfered with and the cure is hindered or rendered impossible.

in the same manner, and in which cases there were to be found long streptococci in this animal and short in that, lead to the belief that there are not two species of streptococci associated with the disease, but only one.

Indeed, the earlier observation that the streptococcus of infectious mammitis varies in size according to the medium upon which it is grown establishes the fact of the variability of this form. It grows in short chains or clumps on agar cultures and in long chains in serum or condensation water. It appears that the conditions of existence in the udder are very dissimilar in different animals. This dissimilarity is to be attributed to every obstruction which we encounter more or less in every infection and which is usually termed resistance. This resistance seems to be quite variable.

We observed a case of short-chain streptococcus infection which recovered fully twice and again appeared a third time, fifteen to twenty weeks after parturition. Here was a very slight resistance, the quality of which was not lessened by the single onslaught of the disease, nor in this case was immunity conferred.

On the other hand, there have been recognized, in goats as well as cows, numerous cases of spontaneous recovery, as well as rare cases of failure to infect in spite of inoculation.

On the 8th and 11th of May, 1899, I inoculated two cows, with healthy udders, and two goats, using about 20 cm. of fresh infected milk from a case of infectious mammitis and which was very rich in streptococci. But it induced the disease in only one cow in the ordinary period of from three to five days.

One goat exhibited a continuous power of resistance. One cow exhibited the disease first on the 28th of May. She had also a few days before suffered from hæmaturia, losing a considerable quantity of blood and had shown a rise in temperature. After the cow had recuperated a few days, the pus and streptococci disappeared from the milk, so that by the 3d of June it was less slimy and became fully normal again on the 6th of June.

In order to explain this attack, one must assume that the affected animal in normal condition was resistant to infectious mammitis, and that only during the time of general debility were the streptococci able to gain the ascendency and exercise their disease-producing power. A like weakening might be brought about by other causes, perhaps by the more severe bladder disease. The attack of fever, which is hardly to be attributed to the udder catarrh, may be regarded as proof of it.

It has been proven by numerous observations that such impairment of the resisting power, especially that brought about by chills of all kinds, opens the way for the appearance of infectious mammitis, only of course when the infection is present. So the disease appears frequently when white turnips are fed; when the change to pasture is made; in cold weather, especially when cold, damp grass must be fed, and after drinking very cold water. The outbreak is sometimes occasioned by chilling of the skin and by draughts.

Often the disease halts in its course; in other cases it subsides as soon as the predisposing causes are removed. This is true of the cases cited above, as well as of the following:

A spotted cow, pregnant ten weeks, owned by M. B., which had been affected with infectious mammitis in three quarters of the udder since June 3d, and which yielded only 585 cm. per day, was on June 20th of last year placed in this institution for experiments in treatment. The green fodder formerly fed was replaced by hay. As a precaution, suggested by earlier observations, we leave experimental animals two or three weeks without treatment in order to observe the behavior of the disease under the changed conditions. If no improvement occurs during the time, then the experiments are commenced.

On the 23d of June the milk of the cow mentioned cleared up and the sediment disappeared. From the 29th of June on no streptococci were to be found and every particle of pus had disappeared. The mess of milk rose to 1350 cm. The cow had

recovered without treatment and was returned. On the 14th of November this animal, whose milk yield had reached four liters, again showed infectious mammitis in one of the quarters which had recovered spontaneously before. Such cases of spontaneous recovery with temporary relapse occasionally occur, and serve as proof of a certain immunity.

Now for the attempts to cure. Earlier experiments have shown that it is impracticable to attempt to kill the streptococci or to obtain improvement by the injection of disinfectants in the udder on account of the great sensitiveness of the glands. Therefore, in these experiments only two substances, both harmless to the udder, were used, namely, potassium iodide, 1:1000, in lukewarm water, and itrol, 1:4000, at about 38° C.

In each case the udder was milked out, and from one hundred to three hundred grams of the solution were repeatedly injected into the teat, being well distributed through the gland by massage. Care was taken throughout to prevent the spread of the infection.

The animals showed neither indications of pain nor change in the glands, but the desired result did not follow. The secretion of the udder remained unchanged and the streptococci were found in nearly the same numbers as before.

Experiments with antistreptotoxin from the Pasteur Institute in Paris, with which some work had been done three years ago, were again resumed. This remedy was supposed to counteract the poison elaborated by the streptococci, and it was hoped that favorable results would follow its use in large doses or its injection directly into the udder.

After injecting 200 grams of this serum subcutaneously, within a period of three days, without any such result, on the 26th, 27th, 28th and 29th of July I injected about 30 grams of the remedy into a diseased milk cistern and distributed it well in the udder by rubbing and kneading.

A noteworthy curative result was lacking. Cultures and microscopic tests added proof that the antistrepto-

toxin exerts no appreciable effect upon infectious mammitis.

Just as unsuccessful was the application of argentum colloidale, which recently has been highly recommended as a general disinfecting agent. 50 grams of a one per cent. watery solution of this preparation were injected into the jugular vein. The pregnant animal bore this imposition very well. During the next few days the streptococci appeared somewhat diminished, but the purulent condition of the udder secretion remained unchanged.

Better results followed the use of silver citrate (itrol) in the form of an ointment (2 parts with 10 parts of camphor and 88 parts lard).

After rubbing this ointment for eight days upon the skin of the four affected quarters of an eight-year-old cow, the secretion cleared and the streptococci and purulent accumulation disappeared. After eight days more the secretion was again normal, but very sparse. The udder took on a violet color, which was soon lost. A skin eruption did not occur. Further observations were discontinued.

It is apparent that itrol has some effect, for rubbing with 20 per cent. camphor ointment without the itrol failed to produce the effect.

Since these recent remedies had put forth nothing of importance, a trial was made once more of the action of counter-irritants. It was shown that a strong and somewhat protracted rubbing with cantharides ointment would each time bring about either recovery or decided improvement.

But in the largest number of cases, especially when the udder secretion consisted almost exclusively of pus and serum, the milk secretion remained in abeyance. The pus and streptococci disappeared, the disease appeared cured, but the milk production either was entirely suspended or shrank to a few hundred cm. per day. Therefore the practical economic success was wanting.

There is no doubt that the poison elaborated by the strep-

tococcus of infectious mammitis exerts a harmful action upon the cells of the milk glands. Even if these structures do not die as a result of its action, they at least lose their physiological function and cease to yield milk. Afterwards, when the harmful influence is not at work, the secreting cells generally resume their function only when incited by the natural cause (parturition).

This appears to be a general law. A healthy cow when dried off can only exceptionally be brought back to lactation before calving again. There are, however, exceptions. Among them is one reported to us by District Veterinarian Hohn, of Richtersweil. A cow which, on account of mammitis, had not been milked for many weeks, later, before she had calved, again yielded a considerable mess of normal milk. We here have made a similar observation in a case treated by us.

Among goats, which, as is well known, go dry very early while non-pregnant, the spontaneous return of the milk secretion is occasionally observed in the spring in non-pregnant animals.

Reviewing the economic disasters which follow almost regularly the treatment of an udder whose secretion is wholly purulent and without regular milk constituents, the question as to whether or not any treatment is worth while must be earnestly discussed. We have already pointed out (*Landw, Jahrbuch*, 1893, and *Schweiz. Archiv. fur Tierheilkunde*, 1897) that the type of infectious mammitis, which is associated with short streptococci, which latter the white blood corpuscles are able to take up and destroy, recovers without aid by means of the curative power of the corpuscles, provided that the udder is not milked out for five or ten weeks.

On the other hand, that type which is recognized by the presence of very long streptococci persists for a long time after the animal has been dry, because the corpuscles are unable to take up and destroy the streptococci.

These observations have been confirmed by later experience. When cows suffer from the curable type of infectious mammitis

and are not milked for many weeks before coming in, they resume the secretion of milk of normal quality and quantity after parturition.

We observed repeatedly that after ten to thirty weeks the one or another quarter would again suddenly become affected with infectious mammitis. It is difficult to say in these cases whether a fresh infection had occurred or whether the streptococci formerly present had persisted somewhere in the udder in a latent condition.

If, however, cows showed the symptoms of infectious mammitis immediately after parturition, it was generally the incurable form. But when the microscopic examination revealed short chains, then it indicated that the cow had been dry for only a short time, or not at all, or still more that the diseased quarters had been milked through the entire period of lactation, upon the supposition that by so doing the secretion of milk would more surely be resumed.

On the average the curable type is more abundant than the incurable in the proportion of three to one (3:1). However, among the seventeen cases that we have observed to occur during the first three weeks after calving, eleven were of the incurable type, and only six were of the curable type (2:1).

From what has preceded, it is evident that no sure treatment leading to the cure of infectious mammitis has yet been discovered, and that those cases cured by treatment are by no means of economic value. The best measures to take against infectious mammitis consist in not milking the affected quarter after the disease is discovered.

For by that means will not only the natural curative processes be aided, but also further spread of the infection will be hindered. For no matter how careful the attendant be (segregating the diseased animals, washing the hands after milking, etc.), there remains yet the danger of infection so long as the infective secretion is drawn. The important point lies in the early discovery of the disease, so that it will be confined to one quarter if possible, and leave the other two or three functional. In

this manner the harm caused by the disease will be considerably lessened and rendered at least bearable until the next parturition.

The farmer will do well to watch the milk and the udder very carefully, so that upon the appearance of any defect in the milk, an examination for infectious mammitis may be made as quickly as possible. This will enable him to be on his guard at the right time to prevent a further spread of the infection. Until the examination is made, he should isolate the cow, milk her after the others, and milk her sound quarters before the diseased one. The hands should be smeared with lard while milking instead of the common practice of dampening the hands with milk. None of the abnormal secretion should be allowed to fall upon the bedding.

The hands are afterward to be well washed with soap and rinsed in warm 3 per cent. carbolic acid solution to disinfect them. The cow's teats should likewise be first washed with soapsuds followed by warm carbolic acid solution.

It is now stated anew that infectious mammitis appears without specific symptoms. In spite of numerous observations, it is not yet possible to make a certain diagnosis from the appearance of the milk or the udder. Sometimes some grains or shreds are found in the apparently normal milk, sometimes the secretion is viscid as phlegm, sometimes contains yellow flakes or is slimy, purulent and oftentimes bloody and shows a sediment after standing. Sometimes the disease is recognized by the bad, salty taste, sometimes by the curdling during cooking, and often the particles in the milk strainer.

The general condition of the animal is not noticeably disturbed except that the mess of milk is constantly lessened. The udder is at times somewhat swollen and hard; very often without a noticeable change. For this reason a professional examination is essential and this necessitates the microscopic examination of the sediment of the milk samples from the diseased quarters.

If anywhere, it is here that the use of the microscope for the confirmation of a diagnosis is necessary.

The description of the technique of the examination is to be found in the *Schweizer. Archiv für Tierheilkunde* for the year 1897 (S. 148).

Whether veterinary police regulations against this disease are required will be seen after the distribution of the disease over the country is somewhat better known.

THE SILVER SALTS OF CREDE AND THEIR APPLICATIONS.

By Adolph Eichhorn, D. V. S., of The American Veterinary Hospital, New York.

A Paper read before the Veterinary Medical Association of New York County, March 6, 1901.

The preparations which I am to describe are by no means new discoveries in the line of medicine, yet I know there is very little known about their use and application in veterinary medicine. My attention to their existence was drawn from foreign literature by the good results obtained from their use in human medicine, but especially by an article of Dr. Angelo Baldoni, who carefully studied these drugs as to their antiseptic properties and their valuable applications in veterinary medicine. The Credé salts are three in number—the argentum colloidale or collargol, the citrate of silver or itrol, and the lactate of silver or actol.

Collargolum is a non-poisonous allotropic silver, appearing in different sized irregular granules, soluble in water in the proportion of 1:100, which solution is black in color. It dissolves also in glycerine, in the proportion of 1:25.

To prepare the solution, I find the best way as follows: First, grind the granules, then add a small amount of glycerine, which should be slowly and thoroughly mixed, then add the water. In the solution we soon notice a slight black precipitate, which cannot be avoided, even in the absence of light and air. This preparation is recommended as a most effective general antiseptic, which can be introduced into the system without

causing either local reaction or general poisonous effects. The advanced theory as to its therapeutical action is that it remains metallic silver in sterile blood or lymph, but in the presence of pathogenic bacteria or their toxins it enters into combination, and acts as a vigorous germicide and anti-toxic agent.

The citrate of silver is a heavy white powder, slightly soluble in water; the solution is opaque, having a slightly acid reaction. It is more soluble in glycerine; a solution of one per cent. has a milky color. In this solution also, when left standing for a certain length of time, the silver will precipitate as a greyish powder.

The lactate of silver is also a heavy white powder, and is the most soluble of these preparations; dissolves in glycerine 1:8, and in water 1:100; the silver does not precipitate in the solution, which is strongly acid in reaction.

All the silver preparations are to be kept in dark bottles, without exposing them to light.

These preparations were used to a considerable extent in human and veterinary surgery by the German army during the Chinese war, the Credé salts being used exclusively with the most satisfactory results. Müller and Wolff also applied the salts in a great many cases, claiming the best results and predicting for them a great future. Weidman, Rider and others have used the citrates and lactates of silver in different affections—as a powder, in solution of 1:100-4000, and as ointments. Dieckerhoff wrote an extensive work on his experience with these drugs, especially in regard to the internal administration of the argentum colloidale as an antiseptic agent in septic infections, also in purpura hæmorrhagica, where it is claimed to be almost a specific. In these conditions he recommends an intravenous injection of about 60 grm. of a one per cent. solution of collargolum. Similar good results were obtained from this treatment by Meisner, Kronigs and Roder, while Meisner and Tannebring cured anthrax in the ox by the injection of 250 g. of two per cent. solution of collargolum into the jugular vein. Other reports in regard to the antiseptic properties of these salts

and especially as to their application in surgery, are very favorable. The advantages are that by their use the wound secretion is diminished to the minimum, and thereby healing of the wound by first intention is facilitated ; unhealthy wounds, with no tendency to heal, abrased surfaces, fistulæ, punctured wounds, etc., treated with mild solutions of these salts, terminate in most instances very favorably in a very short time.

I observed in cases of plantar neurectomy healing by primary intention, treating the wound with a 1:2000 solution of argentum colloidale. I also obtained very good results from the application of the powder of citrate of silver in punctured wounds of the foot, and, following the advice of Prof. Lanzillotti, to disinfect the foot with a 1 per cent. solution of the citrate of silver, then to cut down on the wound and dress with the powder of citrate of silver. There is no need to renew the dressing for three or four or even five days, after which we will find a dry healthy wound with a broad rim of new formed horn.

Dieckerhoff, Baldoni, and others, experimented with the argentum colloidale as a diagnostic agent for glanders, the results of which are not very satisfactory. It was proven that an injection of argentum colloidale intravenously will cause a more marked temperature reaction in glandered horses than malleine, but, on the other hand, it was observed that a reaction took place in other diseased conditions than glanders, but this condition we are apt to get with the use of malleine also. I tested a horse with collargol, which manifested all the characteristic symptoms of glanders. The result of this test was a reaction of 5° F., while the same horse in a test with malleine showed only a reaction of $3\frac{2}{5}$° F. But as I did not employ the drug for the test sufficiently to pass an opinion on it, I will conclude from the experience of others, which, when taken into consideration, does not seem to be reliable enough to condemn an animal, just on the reaction of this test. Further experiments will teach us more about it, as the drug has not been tried enough to form a definite opinion as to its diagnostic value.

As to the antiseptic properties of the Credé salts, Prof. Baldoni took considerable pains to investigate the germicide action of the three salts, which he tried most extensively on the streptococcus, the staphylococcus aureus and albus (these micro-organisms being the most dreaded in surgery). He found the citrate of silver, in a solution of 1:6000, caused death of the staphylococcus aureus in 30 minutes, the staphylococcus albus in 20 and the streptococcus in 22 minutes. In a solution of 1:1000 all died within 7 minutes.

All these microörganisms were very virulent, causing death in guinea-pigs by inoculation in about 12 to 24 hours. The lactate of silver in a solution of 1 per cent. destroyed the staphylococcus albus in 2 minutes, the staphyloccocus aureus and the streptococcus in 3 minutes. The 1 per cent. solution of collargol destroyed the staphylococcus albus in 20 minutes, the staphylococcus aureus in 22, and the streptococcus in 30 minutes. He states further that it would be advisable to employ these salts, especially the lactate, in veterinary medicine, as its antiseptic properties are higher than that of the sublimate. Kôch and Beherings claim that the strength of these salts are four times that of the bichloride. The salts are far superior to the sublimate, as when the solution meets the alkaline wound secretion, and the liquids of the tissues, they do not form an insoluble substance as does the sublimate, but form a soluble composition, which will penetrate into the tissues, thereby acting in the deeper parts.

The following are a few cases where I have employed with very good results the Credé salts:

I. Bay gelding, with a punctured wound on the off flank, caused by a shaft, the wound extending backwards and inwards about 8 inches deep, and 2½ inches in diameter, nearly penetrating the abdominal wall. Treatment consisted of injections with a solution of argentum colloidale, 1:1000; the wound healed inside of three weeks, there being very little discharge.

II. Chestnut gelding, came to the hospital with a lacerated wound on the off forward heel and the off hind coronet. There

was considerable loss of substance; the wound on the coronet showed no tendency to heal in spite of different antiseptics and caustics used. The second day after the application of a moist dressing of the argentum citrate there was very little discharge; wound had a healthy appearance and healed completely in 9 days.

III. Bay mare had bad synovitis on the near hind fetlock; the joint was opened in three places and the probe could be passed through the joint. There was a profuse infected synovial discharge. Treatment consisted of injections of argentum colloidale, 1:500; on the fourth day the joint was closed, and the wound healed nicely; the animal was put to work on the 24th day from the beginning of the treatment.

IV. Bay mare, with fistulous withers, belonging to a veterinarian, who was disgusted with treating the animal and sent it to the hospital. A free incision was made, after treatment consisting of injections with citrate of silver, 1:1000. There was very little discharge following the treatment, and the animal was sent home cured after four weeks.

I could report a great many other cases in which I obtained the best of results with these salts, but knowing that there are always some who can not obtain the results expected, I will not praise them too highly.

The drugs were procured by Dr. W. J. Coates, and with his permission I applied them in the American Veterinary Hospital. I take this opportunity to extend my thanks to him for his aid in my investigations and experiments, in which he is always very liberal to me.

Hoping I have interested you in describing drugs which are almost unknown to veterinarians, and considering we are to keep step with the new discoveries in the line of therapeutics, I think I have fulfilled my mission.

THE LIVE STOCK INSURANCE COMPANY, which has operated in New York and Brooklyn for a number of years to the discomfort of many practitioners, has gone the way of all predecessors.

A NEW METHOD FOR APPLYING THE RABIES TEST.*

By Charles F. Dawson, M. D., D.V.S., Baltimore, Md.

A recent endemic of canine rabies afforded me a good opportunity for testing a new method of diagnosticating it by the inoculation of rabbits.

The method upon which diagnoses have in the past been based and which has been employed in this experiment as a check upon the new method here described, consists, as you all know, in the injection beneath the dura-mater of two or more healthy full-grown rabbits of a few drops of brain emulsion prepared from the brain of the suspected animal. The consequent and necessary trephining of the rabbits is attended occasionally with deaths from cerebral hæmorrhage, septic infection and often permanent injuries to the brain, which frequently cause symptoms resembling those of rabies. Added to this, there is a still more important consideration, which is the ever-present possibility of inoculating one's self with the virus of rabies, owing to the necessity of sewing up and otherwise manipulating an infected wound, it being almost impossible to inject the virus subdurally and not have some of the virus well up through the perforated dura-mater upon the withdrawal of the syringe needle. All operations upon the brain are, of necessity, attended with the risks of injury to that organ; therefore, the less complicated the operation, all else being equal, the fewer are the chances of injury. It seemed to the writer that some other method, to which most of the above mentioned objections would not hold, could be devised, and he therefore determined to put into practice one which had occurred to him some time previous to its adoption, but which had not been tried for lack of material. This method, which will be designated infra-cerebral, in contradistinction to the original, or sub-dural, which, for the sake of anatomical consistency, will be known in this article as the supra-cerebral method, is as follows: A pea-sized

* Abstract read before American Society of Bacteriologists, in December, 1900, Baltimore meeting.

piece of the brain substance of the suspected animal is ground in a sterile mortar containing 5 cc. of sterile .6% sodium chloride solution, and is filtered through sterilized cotton. The resulting filtrate should be of the consistency and color of milk. About two minims (four drops) of this suspension are injected, by means of a hypodermic syringe having a very fine needle ⅞ inch long, on to the base of the anterior cerebrum, above the dura-mater by way of the optic foramen. Although this foramen in rabbits is relatively very large, and there is little risk of damaging other structures, if the operation is carefully done, the nature of the operation precludes one's becoming expert in passing the needle through the foramen by practice upon live rabbits; therefore, it is wiser to gain the necessary experience by repeated trials upon dead animals, before attempting the inoculation. When full-grown rabbits are used, it will be found that the ⅞ inch-long needle is of about the right length to just pass through the foramen and the dura-mater, if pushed in up to the nozzle of the syringe. In performing the operation, the rabbit is thoroughly anæsthetized and held so it will rest upon its chest and abdomen. The head is grasped with the left hand and the syringe is held in the right hand. The right nictitating membrane is lifted out of the way by means of the syringe needle, which is then passed backward and upward through the conjunctival sac and orbital tissues until it is made to enter the optic foramen. The syringe barrel is now firmly held by the thumb, second, third and fourth fingers, with the fore-arm at rest upon the table and the piston is pushed up with the index finger until it is stopped by the traveling nut which had been previously set at a point to allow two or three minims of the virus to be expelled. The needle is carefully withdrawn and the rabbit is allowed to recover from anæsthesia. It is obvious that if too much material be injected, or the needle be passed far enough to injure the brain, the rabbit may die from brain pressure or from brain injury. Frequently, a rabbit will show symptoms of slight brain pressure, but these pass off as soon as the pressure is removed by the dispersion of

the injected virus. Aside from the serious objection to producing an infected wound, which always occurs in the supra-cerebral method from the outflow of the injected virus through the perforated dura-mater, in this method all the virus injected remains, either on the base of the brain, or, if expelled from the dural cavity, probably lodges in the tissues of the posterior part of the orbital cavity. The method is, therefore, much safer as regards possible self-inoculation. The optic nerve is rarely injured, as it is quite small, and its mobility and density largely prevent the penetration of the needle into its substance. Moreover, the infra-cerebral method requires only a syringe to apply it, while the supra-cerebral method requires an expensive set of especially designed instruments.

It is absolutely necessary that the animal be deeply anæsthetized, and, as between chloroform and ether, the writer has found sulphuric ether to be the safe anæsthetic. Should the anæsthesia be too profound and the animal show symptoms of collapse, a few minims of weak alcohol given subcutaneously will revive it. The tongue should be gently pulled forward with a pair of forceps and artificial respiration performed by alternate pressure upon the abdomen and thorax. When natural respiration is re-established, and the animal has completely recovered, it may be returned to its cage and kept under daily observation.

Although the rabbits die with all the symptoms of rabies, an opinion should be given only after the nature of the disease has been thoroughly established. A diagnosis is, in a case where some one has been bitten, of such prime importance, meaning in case of a positive diagnosis, the expenditure of a large amount of time and money for treatment on the part of the person bitten, and, in the case of negative results, relief from the constant dread of the disease, that post-mortem examination of the experimental rabbits should be made to exclude the possibility of death from other causes. In addition to the macroscopic examination, culture tubes should be inoculated from the organs, and any cultures obtained should be studied to

exclude the possibility of death from other bacterial disease.

The supposed immunity to rabies on the part of some of the lower animals, as well as of man, is not to be lost sight of, and for this reason the more rabbits inoculated the better. At least three should be used. In one case, in which three rabbits were inoculated (not here recorded), only one came down with rabies, showing that the chances of making a diagnosis in this particular case was only one in three as applied to the three rabbits used. In this work rabbits are much to be preferred to guinea-pigs, not only because they are larger, but because the inoculation disease is more marked, and is extended over a longer period in them, giving an opportunity for a more lengthy clinical study. In guinea-pigs we sometimes get typical symptoms. They manifest a furious form of the disease, which lasts over a sufficiently long period for observation. In other cases guinea-pigs may die of rabies, having manifested no particular symptoms other than those of illness and emaciation. On this account it is manifestly unsafe to risk such an important question by the use of guinea-pigs for diagnosis.

The following is a brief description of the symptoms in most of the cases tabulated in this article produced by the inoculation of the "street" virus from seven different cases, according to the infra-cerebral method: Generally by the twelfth day after inoculation, sometimes a day or so earlier or later, the rabbits show a hypersensitive condition, which is most plainly marked when the hairs around the nose or along the spine are touched lightly. They will try to get away from the spectator, crouch together in the far end of the cage, and struggle to get underneath each other. At this time the symptoms are of little diagnostic value, because other conditions may produce them, and a record of them is only useful when they are followed on subsequent days by more pronounced symptoms. The hypersensitiveness increases from day to day, and is plainly shown when the animals are disturbed. In response to such a stimulus, they will make rapid movements with the hind legs, sometimes throwing the bedding into one's face in their efforts to

hide. This condition is succeeded by one in which they sit crouched in a corner of the cage, and apparently have partially lost the use of the hind legs. If poked with a stick or pushed over they are slow in regaining their former position; their body rolls somewhat from side to side before its equilibrium is entirely established; the hind legs remain drawn up, and if forcibly extended they are not withdrawn quickly, as in health. The ears lie upon the shoulders; the head is somewhat depressed and extended forward, and the eyes lose their wide-awake appearance. During this period the appetite seems lost and the animal rapidly emaciates. In a typical case the symptoms in such an animal will become progressively pronounced, and on the fourteenth or fifteenth day the animal will be found down and to have entered the paralytic stage. In many cases all the stages are shortened to such an extent that they are not recognizable, and the animal dies soon after the first symptoms manifest themselves. In some cases, in which the various stages are prolonged or the symptoms are late in being manifested, the cause is either to be ascribed to a weak original virus, insufficient dose, or, in cases where the supra-cerebral method has been employed, to a leakage of the injected virus through the perforated dura-mater. For these reasons care should be exercised in preparing the virus to obtain a milky fluid for injection.

In the paralytic stage, the animal lies apparently, though not really, unconscious, at full length on its side with eyes partly closed and head extended backward. The breathing is almost imperceptible, and the whiskers move slightly with the respiratory movements. The limbs have the natural position. Occasionally convulsions appear, which last about a minute. These may be artificially produced by lightly tapping the animal in the flank. During the seizure, the limbs may go through the co-ordinative movements of locomotion. Sometimes the convulsions are simply tetanic in character. The head will be drawn still further back and masticatory movements will be noticed, with grinding of the teeth. Sometimes efforts at vocalization will be made, but no sound is produced, probably be-

cause of partial or complete paralysis of the vocal cords. The animal may lie in this condition from one to three days and often more, before death ensues.

In order to show the comparative value of the two methods as regards the period of incubation and the duration of the disease, Table I is appended. It shows that in most cases the rabbits inoculated by each method exhibited symptoms of rabies at about the same time, or that, as would be expected, the incubation period is about the same in the two methods.

In the cases of rabbits Nos. 343 and 346, inoculated supracerebrally with virus from dogs Nos. 70 and 71, respectively, it will be noticed that they failed to die of rabies even after having shown symptoms simultaneously with Nos. 340, 341 and 342, which were inoculated with virus from dog No. 70 also, and which died of rabies in 16, 21 and 26 days respectively, and with Nos. 344, 345 and 347, which were inoculated with virus from dog No. 71, and which died of rabies in 14, 17 and 14 days

TABLE I.

Virus.	Animal.	Date.	Method.	Incubation Period.	Duration of Illness.
Dog 58.	Guinea-pig 220.	Nov. 15, '99.	Infracerebral.	Unrecorded.	15 days.
	" " 223.	"	"	"	15 "
	" " 233.	"	"	"	14 "
	Rabbit 235.	"	Supracerebral.	16 days	18 "
Dog 59.	Rabbit 242.	Nov. 29, '99.	Infracerebral.	13 days.	15 days.
	" 245.	"	"	14 "	15 "
	" 246.	"	Supracerebral.	13 "	17 "
Cow.	Rabbit 252.	Dec. 4, '99.	Infracerebral.	12 days.	12 days.
	" 253.	"	"	12 "	15 "
	" 248.	"	Supracerebral.	12 "	17 "
	" 249.	"	"	12 "	19 "
Dog 64.	Rabbit 336.	Dec 8, '99.	Infracerebral.	12 days.	18 days.
	" 335.	"	Supracerebral.	12 "	17 "
Dog 66.	Rabbit 1000.	Dec. 18, '99.	Infracerebral.	16 days.	20 days.
	" 324.	"	"	16 "	23 "
	" 332.	"	"	16 "	22 "
Dog 70.	Rabbit 340.	Dec. 21, '99.	Infracerebral.	14 days.	16 days.
	" 341.	"	"	14 "	21 "
	" 342.	"	Supracerebral.	14 "	26 "
	" 343.	"	"	14 "	Recovered.
Dog 71.	Rabbit 344.	Dec. 28, '99.	Infracerebral.	12 days.	14 days.
	" 345.	"	"	12 "	17 "
	" 347.	"	"	12 "	14 "
	" 346.	"	Supracerebral.	12 "	Recovered.

respectively. The failure of a fatal termination in these two cases can be explained upon the theory that they were either immune to a fatal form of the disease, or that the dose administered was insufficient to produce a fatal attack.

A PECULIAR DISEASE AFFECTING HORSES.

By E. J. List, Havana, Illinois.

Read at Bloomington before the Illinois State Veterinary Medical Association, Feb. 12, 1901.

As you will readily understand by the title of my paper, I am to deal with a disease that is not frequently met with and one that I am unable to find described in any text-book or journal at my command. Therefore, I think it well to bring it before you for your earnest consideration, as by so doing I may gain knowledge and be benefitted thereby, and I trust that it will be of interest to you.

The disease affects only the equine species, and has been traced directly to the feeding of hay grown on bottom lands. Havana is situated on the east bank of the Illinois river, where the soil is high and sandy. On such soil it is never met with, but just across the river is the Illinois river bottom, which overflows occasionally; the soil is mucky and has a great many low marshy places in it. From such ground the hay is mown, which causes the disease in question, and, peculiar as it may seem, it is only in certain seasons that it is prevalent. At other seasons it is never met with—that is, we may have it one year, then for two or three years be free from it. A great deal of this land has never been cultivated, and is covered with native slough grass that grows four or five feet high, with a coarse stem. This is the hay that most often causes the trouble, but it may originate when timothy or other hay is harvested from the same soil. It will not cause trouble or produce the disease if it passes through the winter. It is most prevalent in the fall or summer seasons, it making no difference about the condition of the hay, whether cured well or otherwise.

The farmers in this locality believe the trouble is caused by a certain weed found in the hay, but scientific analysis of the weed has proved it to be harmless. After careful study of the conditions, I believe it is caused by a certain spore or fungus that collects on the hay stalk in the same way as "corn-stalk disease," in cattle, with the difference that it affects horses, but I have not been able to isolate the germ.

Semeiology.—The first noticeable sign of disease is a slight nervous condition; a horse otherwise docile will shy when you enter the stall; next he will fly back on his halter, elevating his head as high as possible, and if he succeed in breaking his rein, he will go backward until he meets some solid object to stop his backward motion. Then he will brace up for a few moments, the eye will begin to twitch, and he will tremble furiously for a few moments; then, perhaps, he will grab the earth with his teeth in rapid succession or his hoof or leg or any object in reach. All the while there is great uneasiness and nervous anxiety depicted on his countenance, and at such time his mouth will be dry and hot. As the disease progresses he will probably go down with a spasm, and while down he will keep up the motion of the mouth, still grabbing at the earth, and his legs will move rapidly as if he were trotting. Perhaps the symptoms will subside for a short time, then renew again, and so on until death relieves him, gradually growing weaker from exhaustion, and the great nervous tension that he undergoes; or in less severe cases he may not lose his footing, the spasms are not so severe, and all other symptoms pointing to a milder case. In such cases you may expect recovery in a short while.

Pathology.—I am of the opinion that the trouble lies within the brain; that there is present a terrific congestion of the brain and meninges, brought on by the direct action of the spore affecting the nerve cells, or perhaps by ptomaine poisoning, and as a natural consequence it is followed by meningitis or inflammation of the brain, and death of the animal.

Treatment.—The treatment is very unsatisfactory, although a great number of milder cases recover in from 24 to 36 hours.

At the onset you are unable to approach the horse to give him medical aid from the delirious frenzied condition of the animal, as he will bite, strike with his legs, and so forth. Believing as I do that the trouble is congestion of the brain, I have directed my treatment according to conditions. The first thing to do is to apply ice packs to the brain, changing them often, and aconite and potassium bromide internally. I have never tried chloral hydrate, but believe it would be indicated.

FISTULA OR POLL-EVIL.

By GEORGE I. SMITH, D. V. S., LEXINGTON, MO.

Perhaps there is no disease with which the average country practitioner comes in contact that is so resisting and obstinate in treating as is fistula or poll-evil.

Its origin being specific or not, it requires good persistent treatment and a thorough knowledge of the drugs or chemicals used, and also to know when they have been sufficiently used, or to know when to quit. Repeatedly cases have come to me for treatment when there was absolutely nothing to be done save to let them alone and give nature a chance to overcome the effects of drastic caustics from the hands usually of "Father Barbarism." In its early or primitive stage it is easy of treatment, that is, treatment in line of "cause and effect." The nature and conditions of the case offer difficulties which only the trained practitioner and close observer can readily overcome. Through ages untold we have heard of men who are famous in curing fistulæ; we read of gun-shot prescriptions that never fail, yet there are animals after animals which have been treated by this man and by that man and finally passed up as incurable from the simple fact that the course pursued, with the strongest and most deadly caustics, was in absolute opposition to the curing effects or removing the cause. Dr. Pence, of Troy, Ohio, speaks of tincture of iodine as a reliable treatment, which I can endorse from personal experience. I have often used it and at all times with good results. However, there

are cases that are not so susceptible to the iodine treatment. For instance, where the bone has become involved, the scapula or vertebræ, and especially the vertebræ.

I would like to call your attention to one case which I have just treated. A carriage horse, about ten years old, with the history that three years ago he broke out on both sides of the withers, and under the treatment of above famous man was cured in nine months.

From then until the first of last December he was at work, at which time swelling was noticed about the head and withers. I was called on Dec. 10, and upon examination found a collection of pus on each side of the withers and poll. The discharge from the four free openings I made was not less than a gallon and exceedingly granular, showing age. I put him under treatment of daily doses of iodide of potash, with good irrigation and drainage, hot compresses and injections of protargol three times daily. In six weeks he was returned to his usual work, and at this writing appears free from scar or blemish and absolutely sound.

I have used protargol several times with like results, and can see no reason why it should not become a decided favorite, except it is an expensive preparation. But my experience with it, like the iodine, is that it is not so useful when the bone has become involved. In all cases, however, the internal use of iodide of potash is of great benefit. Let us hear from others on this line.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

THREE CASES OF PSEUDO-ABSCESS OF LUNGS.

By W. L. WILLIAMS, Professor of Surgery, New York State Veterinary College, Ithaca, N. Y.

I. Abscess of Liver, with Rupture Into the Right Lung.

Patient (1690), a grade shorthorn steer, one year old, had been unthrifty for some three months, and being suspected of tuber-

culosis was tested therefor March 1, 1899, with negative results.

On March 25 the patient refused food and water, and an examination disclosed apparent pneumonia, which rapidly grew worse and developed symptoms of abscess of the right lung. On March 27 tympany also appeared, which was partly relieved by the administration of aromatics. The animal died a few hours later.

Autopsy revealed multiple abscesses of the liver, with adhesions of the latter to the diaphragm and rumen. One abscess cavity communicated wih the rumen, another through an opening in the diaphragm with the upper portion of the right lung, thus accounting for the symptoms of pneumonia and pulmonary abscess. The unruptured hepatic abscesses contained about one gallon of thick pus. The origin of the infection was not determined.

II. Infection of Peritoneum After Removal of Scirrhous Cord, Followed by an Abscess Between the Liver and Diaphragm, with Rupture Into Lung and Discharge of Pus Through Trachea.

Patient (2016), a one-year grey gelding, castrated by castrator during spring of 1899, and presented at clinic October 26, 1899, with two small scirrhous cords, each about 4 cm. diam., each with a fistulous opening.

The two tumors were removed under chloroform anæsthesia and usual antiseptic precautions. The wounds were packed with iodoform gauze and sutured.

On October 27 the tampons were removed and omitted. Temperature 101.4° F. Wound washed with 1:1000 sublimate solution. October 28, temperature 102.8; October 29, 103.4; 30, 102; 31, 101.5; November 1, 101.4; 2, 105.4; 3, 105.2; 4, 105; 5, 103.4; 6, 101.8. November 7 to 14 the temperature vacillated between 101 and 103. During entire time appetite had been good, and the wounds had been dressed daily with 1:1000 sublimate solution, and with some misgivings the patient was discharged on the 14th. The colt felt well and seemed right except for the erratic temperature. The wounds were well healed.

On November 28 patient was returned to clinic with history that he had travelled home ten miles without difficulty, had been turned to grass and appeared well until November 22, when his feet and legs were found much swollen from hoof to body and the appetite had failed, along with a general aspect of serious disease.

These untoward symptoms continued without material change till his return, looking unthrifty, with staring coat, emaciation, debility, a temperature of 104.9 and pulse of 60. Exploration per rectum revealed no difficulty about the inguinal rings and the wounds made had healed.

From the time of return until December 4 the patient showed a capricious, poor appetite, with a temperature vacillating between 101 and 103.5 with progressing emaciation and weakness.

On December 4, a cough appeared, with a thick, dark reddish fœtid discharge from the mouth and nostrils; the temperature dropped to 99.8 to rise shortly after to 104.8.

Diagnosing a metastatic abscess of lungs, a trachea tube was inserted, after which a trocar was inserted through the chest wall into the right lung and about 10 liters of saline solution were injected into the suppurative area through the trocar canula and allowed to escape through the trachea and trachea tube, washing out much pus. The patient seemed for a time stronger, but the temperature quickly rose to 106.6. The injection of saline solution was repeated in a few hours. The patient died during the night of December 4.

The autopsy on December 5 revealed right pleura somewhat inflamed, especially at border of diaphragm, some dark reddish flocculent exudate present.

Right lung adherent to diaphragm throughout its posterior surface. Diaphragm much thickened. Between the liver and the posterior part of the diaphragm a large abscess existed of about 5 liters capacity. This had ruptured forward through the diaphragm into the right lung, inducing the symptoms of pulmonary abscess. The posterior and central portions of the right lung were largely necrotic, the other portions mostly hepatized. Small areas of hepatization occurred in the left lung. The capsule of the liver was intact and at the point of the abscess about 1 cm. thick. The abscess was between Glisson's capsule and the diaphragmatic peritoneum.

The infection had, it seems, entered the peritoneal cavity through the wound made into the peritoneal sheath of the spermatic cord during the removal of the tumors, had become located and vegetated between the hepatic and diaphragmatic layers of peritoneum and opening in the direction of least resistance had penetrated the right lung, and opening into a large bronchus escaped through the trachea and nostrils.

An error of judgment was probably made in removing the

pack from the operative wound so early as 24 hours after operating, and the disturbance of the wound led to the entrance of the infecting microörganisms.

The case is unique in that the inguinal wounds did well apparently and that a fatal infection of the peritoneal cavity supervened, at a point far removed from the wound, without inducing a general peritonitis. The peritonitis so far as could be observed during life or seen after death was definitely confined to the abscess area.

III. Metastatic Abscess of Bronchial Lymphatics.

Patient (2669), a roadster foal, 3 months. Late in August, 1900, a suppurating sore was noted on the supero-external face of the left tarsus, presumably due to a wound. From this point the pus gravitated downwards in the subcutaneous tissues for a distance of 5 to 6 cm., and showing no tendency to recover the patient was presented at the clinic on Sept. 8 in condition described. The general appearance of the animal was bad, being somewhat emaciated, with rough, staring coat. The walls of the suppurating cavity were swollen, but rather soft, indistinct, without a good line of demarcation. The pus was yellowish-white and rather thin.

The suppurating sac was opened at the most inferior part and dressed antiseptically. On September 16 the pus had gravitated beyond the dependent opening made on the 8th, and this opening was continued 2 to 3 cm. lower down, giving a free opening and the animal discharged with directions for antiseptic handling.

On October 2 the case returned wih an abscess at the postero-external side of the femoro-tibial articulation, which on being opened discharged .5 liter of pus. The abscess cavity was dressed with antiseptic pack. The general condition of the foal had declined, but it continued to take the milk from the dam's udder and eat some food in addition.

At this period the dam also appeared indisposed, was becoming emaciated and showed marked bulimine, leaving good food to eat boards from the paddock fence and rubbish from the ground. This was corrected by tonics.

The suppurative tracts at tarsus had not yet healed, were freely opened and cauterized. This area now improved.

The abscess in region of femoro-tibial articulation, however, exhibited no tendency to heal, but the discharge of pus rather increased. At the same time swelling appeared in the popliteal region.

About October 10 the patient received an accidental wound of the coronet of the right hind foot on the outer side, apparently due to a tread from the dam. Careful disinfection brought about an early subsidence of lameness, and the wound apparently healed in five or six days.

On October 12 a careful digital exploration revealed a very small communication with a deeper seated abscess, which had its location in the popliteal space. This was freely opened and .5 liter of pus evacuated.

The cavity reached from the gastrocnemius upwards to a level with the ischiatic tuberosity; this was packed with antiseptic gauze and carefully dressed daily.

No marked improvement occurred. These abscess cavities healed slowly, but the emaciation and debility grew apace. The abscess walls were indefinite, soft, and bore shreds and masses of necrotic tissue.

On October 19 an abscess had appeared in the inguinal lymphatics, which was freely opened and carefully dressed.

October 21.—Patient much worse, showing rapid, shallow respiration, with a profuse nasal discharge of a dirty reddish color, very fœtid. The right side of the chest was non-resonant. Auscultation revealed the presence of liquid (pus) in the bronchi. Abscess of lungs was diagnosed and early death anticipated. The patient grew rapidly worse and died on October 24.

Autopsy.—In the coronet at the right side of the left hind foot there was still pus visible in the tissues at the seat of the accidental wound, which occurred during presence at the clinic about October 10. The suppurating tracts about the tarsus were almost completely healed and showed nothing notable.

The large abscess cavity of the popliteal space extended from gastrocnemius to ischial tuberosity. The walls were ill-defined, soft, with much pus and necrotic shreds, and within the walls numerous suppurating areas.

The opened inguinal abscess offered nothing of interest. At the anterior end of the sheath of the penis on the left side the lymph glands were enlarged, and on section were found suppurating.

The sublumbar lymph gland of the left side was the seat of an abscess 6x10 cm. in size.

The mesenteric lymph glands of the colon varied from .5 to 3 cm. in diameter, and were filled with pus.

The posterior mediastinal lymph glands had undergone suppurative destruction, forming an abscess 7 cm. in diameter,

which had ruptured into the right lung and thence into the right bronchial system, inducing the above-related symptoms of pulmonary abscess. The right lung was affected throughout, the central portion had completely broken down, constituting a dependency to the abscess in the mediastinum, while the surrounding area was necrotic, black and extremely fœtid. The periphery showed varying degrees of hepatization and necrosis.

The left lung showed minor areas of hepatization. The pleura of right lung was congested, that of left apparently healthy. The pleural cavity contained an ordinary amount of lymph darkly colored.

The three preceding cases of spurious pulmonary abscess suggests the inquiry, how frequently and under what conditions does genuine pulmonary abscess occur? We see large suppurating cavities in tuberculosis, actinomycosis, and perhaps other chronic infections, but find scant definite data as to the occurrence of pulmonary abscess proper from metastasis in acute suppurative infections.

PENETRATING WOUND OF THE LUNG.*

By W. J. MARTIN, M. D. C., Kankakee, Ill.

On the morning of August 28, 1900, I was hurriedly called to attend a mare that had, it was thought, been gored in the pasture by a bull some time during the night. Upon arriving at the scene of the accident, I found the patient, a roan mare, six years old, standing in a stall, from which she was backed for my inspection with difficulty. While the mare was standing still, and also during movement, a current of air could be heard escaping with a slight hissing sound both during inspiration and expiration from a wound in the pleural cavity. The wound was situated on the right side, between the sixth and seventh ribs, and on a line extending about four inches above the elbow joint.

The wound in the skin and external muscles was six inches in length, and the edges were of a very ragged nature; the rent in the intercostal muscles and pleura measured four inches in length. The intercostal muscles attached to the sixth rib had been torn entirely loose from their attachment and hung in shreds over the edges of the wound.

The fingers, rendered strictly aseptic, were passed into the wound and on into the chest cavity, where shreds of the pleuræ and small torn pieces of the lung substance were felt. There

* Read before the Illinois State Veterinary Medical Association, February 12, 1901.

was not much appearance of hæmorrhage having taken place externally to any great extent, though it was feared that this had occurred internally. Viewed from every standpoint, the case was considered a desperate one, and the owner was so informed. However, it was determined to save the animal's life if possible. The wound was thoroughly irrigated with a solution of saponified cresylic acid in boiled water, one part to one hundred. I might mention in passing that this saponified cresylic acid is a preparation similar in composition to lysol. The ragged edges of the wound were next trimmed off with the dressing scissors, the fascia and muscles of the deep part was brought together with interrupted sutures as well as possible, the parts were again thoroughly irrigated with the antiseptic solution; the external muscles and skin were next brought into apposition with continuous sutures and the parts again irrigated. A compress of absorbent cotton, over which was smeared an iodoform ointment, was then placed over the wound, and over this was tightly placed a wide roller bandage, which encircled the body and breast.

The mare was ordered to be fed exclusively on green corn, and water was to be given in a pail placed in the feed box. Under no circumstances was the animal allowed to be moved from the stall, which was ordered to be kept scrupulously clean and thoroughly disinfected once a day with the antiseptic solution. The bandage and dressing was not disturbed for four days, at which time the tension of the bandage was slightly slackened. The wound was flushed night and morning under the bandage with the solution of cresylic acid by means of a syringe. The bandage was removed on the eighth day, when it was found that the opening into the pleural cavity had healed by first intention. The external wound also healed rapidly under the treatment, and the mare made an uninterrupted recovery without any complications.

Penetrating wounds of the chest are, we know, of the gravest nature, and in the horse often end in fatal complications, such as pneumothorax, hæmathorax, pneumonia, septic infection, etc. The success in this case is attributed wholly to the antiseptic precautions which were so rigidly carried out.

CALCULUS OF STENO'S DUCT IN THE HORSE.

By W. C. Holden, V. S., Delphos, Ohio,

I report this case of calculus that I removed from Steno's duct, August 25, 1899, on account of its practtial interest and com-

parative rareness. A brown mare, ten years old, was brought to me with an enormous swelling on the right side of her neck, extending from the submaxillary space to the base of the ear, with the history that she had not eaten much for the last four months. She was terribly emaciated, pulse normal. In the centre of the swelling there was a soft spot about the size of a silver quarter, which I opened freely and allowed about a pint of thin fluid to escape, which had a very offensive odor. I inserted my finger in search of a foreign body of some kind but failed to find any. I dressed it with antiseptic solution and sent mare home, a distance of about four miles. I saw the owner in a few days; he said the swelling had about all disappeared. On September 8th the mare was brought back with quite a swelling of the parotid gland, the submaxillary glands somewhat enlarged. I felt a soft place near the angle of the jaw, and made a free incision, which brought out a large quantity of thin, fœtid matter.

I syringed the cavity with carbolic solution and then inserted my finger and removed what seemed to me a petrified timothy head. The small end was turned upward with about one-half inch doubled back. In removing it it fell on the floor and broke in three pieces. I dressed the wound with carbolic acid, one part glycerine, one part linseed oil, eight parts to be injected once a day with a syringe. I saw the mare again October 2d. She made a good recovery; had taken on flesh very rapidly and was looking well.

I have more faith now than ever in what Dr. Dunglison says—that calculi may form in every part of the animal's body. With pleasure I send you the stony substance for your examination. It is now in several pieces and has almost lost its fœtid odor.

[Our examination convinces us that the foreign body was a portion of a head of timothy, which acted as a nucleus for the deposit of salts of the parotid secretion, thus forming a salivary calculus.—EDITOR REVIEW.]

HIGH TEMPERATURE.

By W. C. HANAWALT, Sheffield, Ill.

October 28, a Mr. Henry Smith, living four miles northeast of Sheffield, came into the village and called at my residence with a black mare, eight years old, which he led behind his road wagon.

He said: "Doctor, my mare keeps rubbing her head all the time, and seems to have some kind of itch. I would like if you can, to do something for her."

Approaching her more nearly, I noticed the left side of her head with the skin rubbed off from the muzzle to the ear, swollen and erysipelatous, pulse very rapid and weak. Auscultation revealed a roaring sound at the base of her neck or breast. Râles in the large bronchi and a purring sound lower down. Surface of the body was extremely warm. Temperature at rectum 108° F. I had proceeded thus far with the examination when suddenly the mare became violent and plunged at the owner, tearing away his coat and shirt sleeves and bruising the flesh of his arm. This action on the part of the beast angered the owner, and he struck the mare with the lead rope several times, and just as he ceased to whip her she flew at him again, this time taking a piece from Mr. Smith's breast and injuring him severely, and had he not taken to his heels and run might have taken the man's life. From this time on the animal was furious. We had to lasso her and get her into the stocks to prevent her from injuring us, which she would try to do by chasing us over the fence and into the barn, etc.

After getting her into the stocks she would kick, squeal, snort, rave, bite the stocks, snap at sticks pointed at her, grabbed a bottle used for drenching and smashed it into many pieces, stamped, trembled, had spasms or convulsions, slobbered and tore around as much as she could, bound in the stocks, until she died in about one and a half hours by collapse.

[NOTE.—We think that Dr. Hanawalt has very accurately described a case of true equine rabies.—R. R. B.]

A FORLORN CASE OF TYMPANY.

By W. C. HANAWALT, D. V. S., Sheffield, Illinois.

A black horse, eight years old, belonging to Mr. Westervelt, had been acting colicy about 24 hours. Mr. W. gave it his pet remedy of laudanum, ether and nitre without effect, there being only a short cessation of pain, until he saw the animal was "badly bloated," as he termed it, and the rectum was protruding about six inches, and the beast was swaying and staggering about the stall as if about to fall and die. At this stage of the disease I happened to pass, when he called me in. I had no idea that I could save the horse, but saw a good opportunity to investigate. I sent my trocar in at five different places

and relieved the gases from every point; then gave a heaping tablespoonful of salicylate of sodium followed by socotrin aloes, ℥ xii. This was on March 13, and to-day (15th) the nag seems as good as ever. I report this simply to show how the unexpected will happen now and then, for I did not expect that the horse could live. The above remedies were all I gave the horse of any kind.

SCHMIDT'S TREATMENT FOR PARTURIENT PARESIS.

By A. O. KENNEDY, V. S., Columbia, Tenn.

Since I have commenced to keep a record, I have had ten cases of parturient paresis. I have saved eight out of the ten, with Schmidt's treatment. One of the cases that died, I did not do anything for at all; she was almost dead when I saw her. I like the treatment, and will use none other so long as I have the success with it that I am having.

SERIOUS INJURY TO THE CORONARY BAND, WITH RECOVERY.

By A. W. BAKER, V. S., Brasher Falls, N. Y.

In answer to Dr. Rogerson, F. R. C. V. S., who reports an accident to the foot of a horse, on page 511, Vol. XXIV., I had a case in a mule which was quite similar. His foot was caught in the frog of a railroad at a crossing at Brushton, N. Y., which threw him down upon the track. In trying to release the foot the coronary band was torn about two-thirds of its extent, pulling the hoof to one side at an angle of 45 degrees. I was telegraphed for, and being fourteen miles distant it was about four hours after the accident when I saw the patient. It was impossible to return the hoof to its normal position on account of the swelling and the large amount of clotted blood which had settled in the inside of the hoof. I, however, cast the mule and used warm water to dissolve the blood clots, afterwards turning him upon his back and straightening the hoof. At first I was at a loss for a contrivance to retain the hoof in its normal position; but decided to set the foot in varnish and bandage it snugly. This was done, and the dressing was not removed for three weeks, when it had nearly healed, there being but little lameness left. Of course, the patient was placed in slings at my first visit. He made a good recovery, and eight weeks after the accident he was put to work, and is still working in that vicinity, having no deformity remaining.

FIVE INCHES OF BROKEN RIB REMOVED.

By A. W. Baker, V. S., Brasher Falls, N. Y.

A gray gelding, weighing 1400 pounds, was working on a new railroad at Tupper Lake, and in blasting part of a stone struck the horse's side, about seven inches from the backbone and on the ninth rib. It required a railroad ride of 64 miles and a drive of 8 miles to reach the place, and by the time I arrived the injured parts were quite badly swollen. An examination showed the rib broken. Although I thought it useless to try to save the horse, the owner insisted upon an effort being made, as he was an exceptionally valuable animal. I removed about five inches and a half of the broken rib, and he made a good recovery, but a small scar and a depression remaining as evidence of the accident.

A PLACENTAL COMPLICATION.

By Francis Abele, V. S., Quincy, Mass.

Was called to remove placenta from cow. It was the first retained one that this man had ever had on his place. What was outside appeared "ripe" and hung low. There seemed to be a second short section. Felt in, but could not follow it. Lost it at cervix. Then discovered that there was a small rent in cervix through which the small end of placenta had penetrated, thus holding the heavy end in check. I cut short end up close and removed both at once.

DEPARTMENT OF SURGERY.

By L. A. and E. Merillat,

of the McKillip Veterinary College, Chicago, Ill.

TRAUMATIC VENTRAL HERNIA.

No part of veterinary kelology is more important than that of ventral hernia, the exposing and predisposing causes of which are legion in domestic mammals.

An abdominal hernia is called "ventral" when it occurs independent of the natural orifices. As to contents they are generally enterocele, epiplocele, or hepatocele. In rare cases they are splenocele or hysterocele. As to cause they are probably *always* traumatic, although Hertwig claimed they might result from congenital deformities of the abdominal paries. If

they ever occurred in the new-born or young animal their congenital origin could not be doubted, but as they are seen only in older animals it is, indeed, very evident they are always acquired through violence.

Kicks, horn-thrusts, collisions with blunt objects and parturition are the more common special causes. The dog is frequently ruptured from the kick of a brutal master, and while the horse and ox are less liable to sustain such a breach from the same cause, we know of one instance in which a cow was frightfully ruptured by the kick of its milker. When the abdomen is distended by food or pregnancy, a trivial thrust, which would otherwise do no damage, may suffice to fissure the muscles. The domestic animals are exposed to all manner of violence, and their viscera being supported largely by the walls, gravity naturally favors hernia formation when the walls are wounded. The violent muscular contractions of parturition is often referred to as a cause of ventral hernia in the region of the udder.

The common location of ventral hernia is along the costal margin, anywhere from the last rib to the sternal cartilage; along the linea alba or in the prominent part of the abdomen between the stifle and the ribs.

Diagnosis.—Ventral hernias vary both in shape and size. In shape they vary from well-defined tumors to flattened, shapeless swellings, while in size they are seen from the size of a small egg to that of a bushel measure. The old hernia is easily diagnosed. They are non-inflammatory, compressible, fluctuating, and generally reducible, and the orifice can readily be felt on palpation. The recent tumefaction, accompanied with the usual œdema, is, however, a more difficult proposition. The swelling prevents satisfactory manipulation of the orifice, and the obscure fluctuation, if any, may be serum, or blood as well as intestines. The veterinarian can do no better than treat all recent tumefactions resulting from violence on the expectant plan until the inflammatory action no longer masks the real condition. When located in the posterior part of the abdominal cavity, rectal exploration may reveal the orifice, but in no case must an incision be made for diagnostic purposes. Such a course is dangerous on account of the unavoidable sepsis which would follow, and besides the detection of hernia by an incision would then demand an immediate radical operation more likely to result seriously than if left alone. In dealing with recent injuries to the abdominal wall the veterinarian needs only wait

until it is possible to make a correct estimate of the lesion. In no case should such injuries be slighted or spoken of as trivial.

Treatment.—Old Ventral Herniæ in the small animals generally respond nicely to the palliative operations already recommended for exomphalos. Those having only a narrow fissure may even be treated with very good results by radical herniotomy. But in the large animals the usual wide opening, the strong muscular contraction, the weight of the viscus and the great danger of sepsis all serve to place old ventral among the incurable conditions, whether treated with palliative or radical surgery. Furthermore we are hardly warranted in performing a dangerous herniotomy for a condition that is neither unsightly nor harmful. The majority are not specially unsightly and they seldom strangulate. We are only justified in making the attempt in animals kept for their physical appearance. Except in a ventral hernia having an elongated narrow fissure (a rare entity) herniotomy in the horse and ox is both a dangerous and useless operation. In any event it is not an indication for "barn-yard" surgery and in view of the meagre result to be attained the veterinarian is foolish to risk a reputation on such unsatisfactory operations. To succeed at all there must first be an urgent demand from the owner, second, proper preparation of the patient, third, suitable appointments, and fourth, accurate surgery.

Given a patient suffering from an old ventral hernia that is submitted with the command to "kill or cure" he is first given an oleaginous purge and fed with bran for twenty-four hours after purgation has ceased. The peristalsis is suspended by giving two ounces of laudanum 12 hours before operation. During this preparatory treatment the region over and a liberal surface around the hernia is repeatedly washed and disinfected until the day of operation. When the patient is cast he is placed in a position to encourage the blood to run outward rather than into the abdominal cavity. If the bowels had not been properly emptied and the peristalsis not arrested there would always be considerable pressure against the sac to hinder the subsequent steps with the patient in this position. On the other hand if the hernia is turned uppermost the unavoidable hæmorrhage will find its way into the cavity. Between the two evils choose the former, and then there need be no delay to arrest all the capillary oozing. It is essential that all large vessels be ligated or twisted as the operation proceeds, but as the surgical position favors outward flow of blood oozing need not hinder rapid pro-

gress. The herniotomy is performed under the strictest aseptic precautions. The incision into the sac is made carefully to prevent wounding the viscera, and in a direction to favor gravity drainage during healing. When the fissure is exposed its edges are scarified with a curette and then brought into juxtaposition with catgut sutures passed completely through the wall, including the peritoneum. There is no tenable objection to the passing of such sutures through this membrane. In fact, the peritoneum always assists materially in closing the orifice. The surgical wound is then made perfectly bloodless and closed up with ordinary sutures. There is always an inclination here to cut away some of the superfluous skin, and entirely obliterate the sac. This may be done to a limited extent only, as provision must be made for considerable swelling which may rupture the sutures. A drainage opening is provided at the dependent end of the incision. The after care consists in keeping the patient quiet and in the standing position. The wound is treated as such. The sequelæ are death from septic peritonitis and chronic fistulæ.

Whenever the fissure is too wide to co-arctate with sutures, the above method is of course out of the question and the only recourse is the covered operation. To take advantage of all the possibilities of this method the patient is prepared as above mentioned, then in the recumbent position the hernia is reduced by gravity and manipulation and a steel skewer passed completely through the base of the sac. A strong cord is then passed around the tumor beneath the protruding ends of the skewer and tied tight enough to cause strangulation. The cord is left undisturbed until it sloughs off, about twenty days. The inflammatory action may be perpetuated throughout by bi-weekly injections of salt water, subcutaneously. This method does not occlude the orifice but removes the tumor by supporting the viscera. Success depends upon the stability of the adhesions produced between the subcutem and underlying textures. A large share of the old ventral herniæ cannot be satisfactorily treated by this method on account of their wide base and thickness of the sac wall. Only the hernia having a comparatively narrow base and thin wall is successfully reduced by strangulation of the sac.

Recent Ventral Herniæ offer a much more favorable field for operative interference. If treated promptly and intelligently the great majority are curable. When called immediately after the infliction of such an injury the surgeon is frequently tempted

to operate immediately, by opening the sac, returning the contents and approximating the fissure. This is always a mistake unless the skin is injured sufficiently to expose the viscera to extraneous influences. Then, of course, the life of the patient will depend upon prompt surgical interference. In all other cases herniotomy is unnecessary and dangerous. A conservative and successful method of treating recent hernia is to promptly support the viscera with a firm wad of oakum or cotton large enough to fit the orifice, and held in place with strong bandages encircling the body, until a truss can be provided to carry out the subsequent steps of the treatment. A suitable truss for this purpose is made with a rounded piece of soft wood, just large enough to fit loosely into the orifice, and nailed to a piece of sole leather and held in place with several strong elastic bands passed around the body. As fast as the orifice grows smaller the wooden piece is reduced in size until the fissure is obliterated. If the inflammatory action subsides too soon it is augmented with injection of salt water at several points around the fissure. Should a small hernia still persist after thirty days, the procedure is completed by strangulating the remaining tumor with skewer and cord as above recommended for old herniæ. An essential precaution in carrying out the steps of this method is to prevent the intestines from protruding into the sac when the truss is removed for the purpose of reducing its size. During August, 1900, we had occasion to examine an exceptionally large ventral hernia that was being treated by this method at the hospital of Dr. Derr, of Wooster, Ohio. Recently we made inquiry as to the results of the treatment, and received the following reply: "The case of ventral hernia you saw at my hospital was in a bay trotting horse, sixteen and a half hands high, eight years old, and weighing about thirteen hundred pounds. He contracted a ventral hernia July 29th by accidentally jumping astride a hitching post. The post, which was two inches by eight inches in size, penetrated the abdominal walls between the sheath and umbilicus in the median line. The horse was held fast in that position until the post was removed by sawing it at its base. When released, a sac the size of a gallon measure immediately appeared. I placed a temporary bandage around his body and had him removed to my hospital, one and a half miles away. I then made a truss out of sole leather, six by ten inches, upon which I nailed a rounded piece of wood, slightly smaller than the orifice. I then returned the bowels and adjusted the truss,

which was held in place with strong rubber webbing passed around the body, along the back and tail, so that no movement of the animal could displace it. On the morning of the 30th the abdomen was much swollen and the animal off its feed from constitutional disturbance, for which he received the usual treatment. The first four days I left the truss unmolested; as the skin was considerably bruised, I injected an antiseptic solution around and under it. After the fourth day I took it off every third day, and reduced the piece of wood with a knife, while an assistant supported the hernia. This was continued for 20 days. When swelling had disappeared, I injected salt water at four points around the orifice. In 30 days the orifice was closed. I, however, thought it advisable to keep the truss in place two weeks longer, at which time he had made a perfect recovery."

The hernia co-existing with an external wound was described under the head of abdominal wounds in preceding chapters.

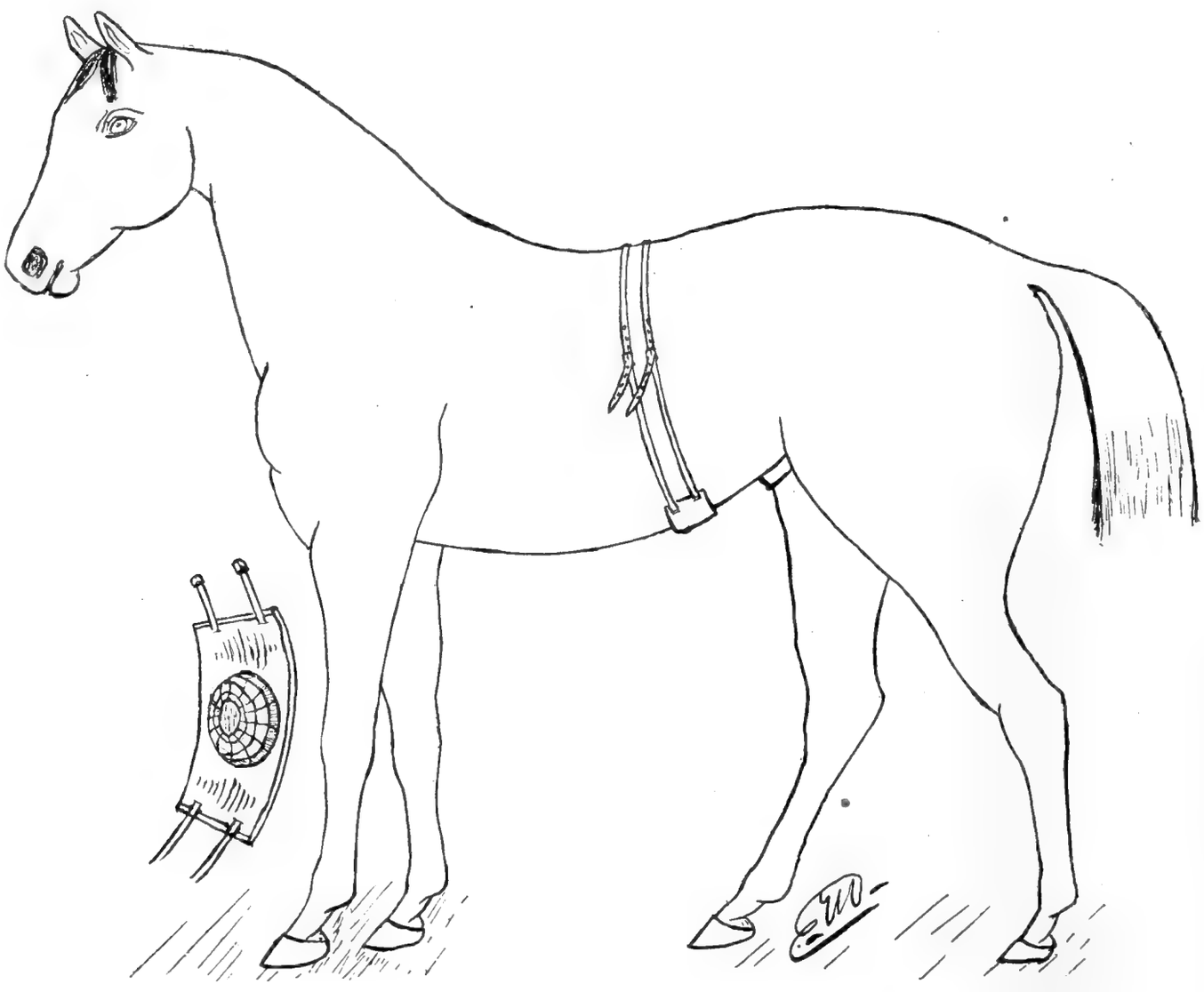


FIG. 42.

DR. DERR'S TRUSS FOR VENTRAL HERNIA.

STRANGULATED HERNIA.

In treating colics in entire horses, or even geldings, the circumspect veterinarian inspects and palpates the inguinal region. Colics of hernial origin are common in breeding districts and even in city practice, and frequently their cause is not detected until too late to resort to operative treatment. Hernia may cause mild recurrent colics which respond to ordinary medical treatment; violent abdominal pain and death in twenty-four to forty-eight hours; or a sub-acute enteralgia lasting ten days to two weeks. The strangulation may occur suddenly from coprostasis of the intestinal loop or it may be slow from gradual constriction of the hernial orifice. The lesion varies from simple pain caused by flatus or retarded fæcal matter to a fatal necrotic inflammation of the loop and adjacent tissues.

Intestinal oscheocele and bubonocele are the herniæ most susceptible to strangulation. Umbilical and ventral hernia of nominal size seldom incarcerate. All animals are susceptible, the stallion and bull more so than the smaller ones.

Diagnosis.—A regular, persisting abdominal pain occurring with local tenderness of a hernial sac is diagnostic. In the dog vomiting is a prominent symptom. As the disease progresses the hernia will increase in size, become more painful and irreducible, and the patiert will show that characteristic anxious countenance so common to many fatal afflictions. The subacute variety may last several weeks or even abort spontaneously. Such hernia although not generally referred to in our textbooks on surgery are by no means uncommon in the horse. We have observed them repeatedly, both in the entire horse and geldings. Colics in ruptured horses must always be cautiously approached. If not caused by the hernia the pressure of tympanites may cause strangulation in an otherwise innocent hernia.

Operative Treatment.—In the early stage the pain of strangulated hernia *may* be aborted by placing the patient on its back and reducing the hernia by manipulation, but in case of failure the surgeon must at once prepare for operation. Delay is a dangerous element. The parts are well cleaned with strong antiseptic, the patient rolled in the dorsal position with the posterior extremity well elevated, and an incision carefully made so as to expose the hernial contents. The bowels are then oiled and punctured with a small trocar and canula to facilitate reposition and to reduce their volume. If the contents still resist reduction the orifice is enlarged with a probe-pointed bistoury which will always permit them to slip back into the cav-

ity without further trouble. The sac is then sutured to complete the operation. If on inspecting the contents of a hernia the intestines are necrotic resection of the diseased portion and approximation of the cut ends is indicated. But we admit the step is not eminently successful in the larger veterinary patients or even in the smaller ones. Whenever the hernia is large and contains a number of loops all of which are black success can not be expected and the patient might as well be destroyed before it revives from the anæsthetic. But the surgeon must not hastily pronounce all dark bowels necrotic. Frequently such dark colored loops when released from their imprisonment will soon resume a healthy state and the patient make a surprising recovery. The post-operative treatment consists of small quantities of laxative diet, alcoholic stimulants and oleaginous laxatives.

PARACENTESIS.

In veterinary surgery the trocar and canula may be used for two purposes :

1. As a method of exploring cavities.
2. For temporary relief, by removal of contents of cavities.

1. As a method of diagnosis, an exploratory puncture often assists in ascertaining the condition of tumors, cysts, sinuses or cavities ; in most cases it is a procedure that is useless as a curative measure, its use, however, does not modify or interfere with the treatment indicated ; but in many instances it is a decided benefit in determining the true condition and making a correct diagnosis. There is no doubt that such a method of making a diagnosis often overcomes difficulties, even if the exploratory puncture is not recommended by experienced practitioners. In making an exploratory puncture the needle or trocar must be well sterilized by boiling ; the skin must be thoroughly cleansed, because epithelial tissue together with septic material may be carried into the cavity punctured by the instrument and cause sepsis. Cysts, growths, tumors, sheaths, bursæ, and vesicles have often been infected by the improper use of the trocar, therefore it is always necessary to take every precaution possible to prevent such infection when using the trocar for this purpose.

2. The use of the trocar for temporary relief. This procedure is never used as a curative measure ; to remove gas from the intestinal tract, or fluids from the peritoneal or thoracic cavities does not remove the cause that excites the accumulation of gas or fluids in these cavities ; the removal of gas from the intestine

may prevent asphyxia ; the removal of fluids from a cavity or sinus may relieve the pain by removing the pressure upon the distended wall temporarily. This is often beneficial in preparing patients for an operation but is never considered as a radical cure for the existing condition.

Paracentesis is an operation frequently used in both human and veterinary surgery, but there are more indications for it in the latter than the former. The operations of this class that belong to abdominal surgery may be considered as follows :

1. Celiocentesis (tapping the abdomen).
2. Enterocentesis (tapping the intestine).
3. Gastrocentesis (tapping the stomach).
4. Vesicocentesis (tapping the bladder).
5. Oscheocentesis (tapping the scrotum).
6. Nephrocentesis (tapping the kidney).

Besides the above mentioned surgical punctures we may mention a few more operations of this nature that do not belong to abdominal surgery, but which are frequently indicated and practiced to good advantage in veterinary surgery :

(*a*) Thoracocentesis (puncturing thorax).
(*b*) Keratocentesis (puncturing eye).
(*c*) Thecocentesis (puncturing sheaths).

1. *Celiocentesis.*—Tapping the abdomen for the purpose of removing the contents of the peritoneal cavity is a procedure that can be adopted in case of ascites, for the purpose of verifying the diagnosis, or for temporary relief. In non-ruminating animals, the trocar should be inserted on the left side of the linea alba, but in ruminants on the right side ; in carnivora, a point is selected somewhere between the umbilicus and the anterior border of the pubis, on either side of the linea alba. Large animals are tapped while standing, but small ones can be placed upon a table. The point selected must be well disinfected.

The trocar is plunged into the paries at centre of the site selected and disinfected, and the perforator removed from the canula, which allows the contents to flow through it. This will enable the operator to verify his diagnosis.

2. *Enterocentesis.*—Tapping the intestine is the most important operation of this class. Its indications are more numerous in veterinary practice than in human, and the benefits greater than those following the puncture of other cavities. Animals suffering from tympanites are relieved of pain caused by the distended paries of the viscus ; respirations are eased by removing the pressure against the posterior part of the diaphragm,

and in many cases peristalsis is resumed after the removal of gas generated in the intestine. If the operation can be deferred long enough to clean the skin at the site selected to be punctured it should be washed carefully and disinfected. In many cases this can not be done because the patient is either too restless or in such a condition that the operation cannot be postponed long enough to do so thoroughly. The operation is performed by standing at the right side of the horse, leaning against the abdomen, and holding the trocar in the left hand over the point selected in the triangle formed between the external angle of the ilium and the posterior border of the last rib and tranverse processes of the lumbar vertebra; the trocar thus held over the place selected and properly directed is driven through the abdominal walls with the right hand. It is good practice to anoint the spot with vaseline so that the hair can be parted from the point of insertion. Cutting the skin with a lance or rowelling shears is bad practice, because it leaves an open wound for infection should the patient continue to roll about again after the operation. Our particular method of tapping horses or cattle for intestinal flatulence consists of parting the hair with vaseline or any clean oil at hand, passing the instrument through the flame of a match to disinfect it and then driving it *to the hilt* at one blow. Such an operation can be repeated frequently without bad results. When abscesses form at the point

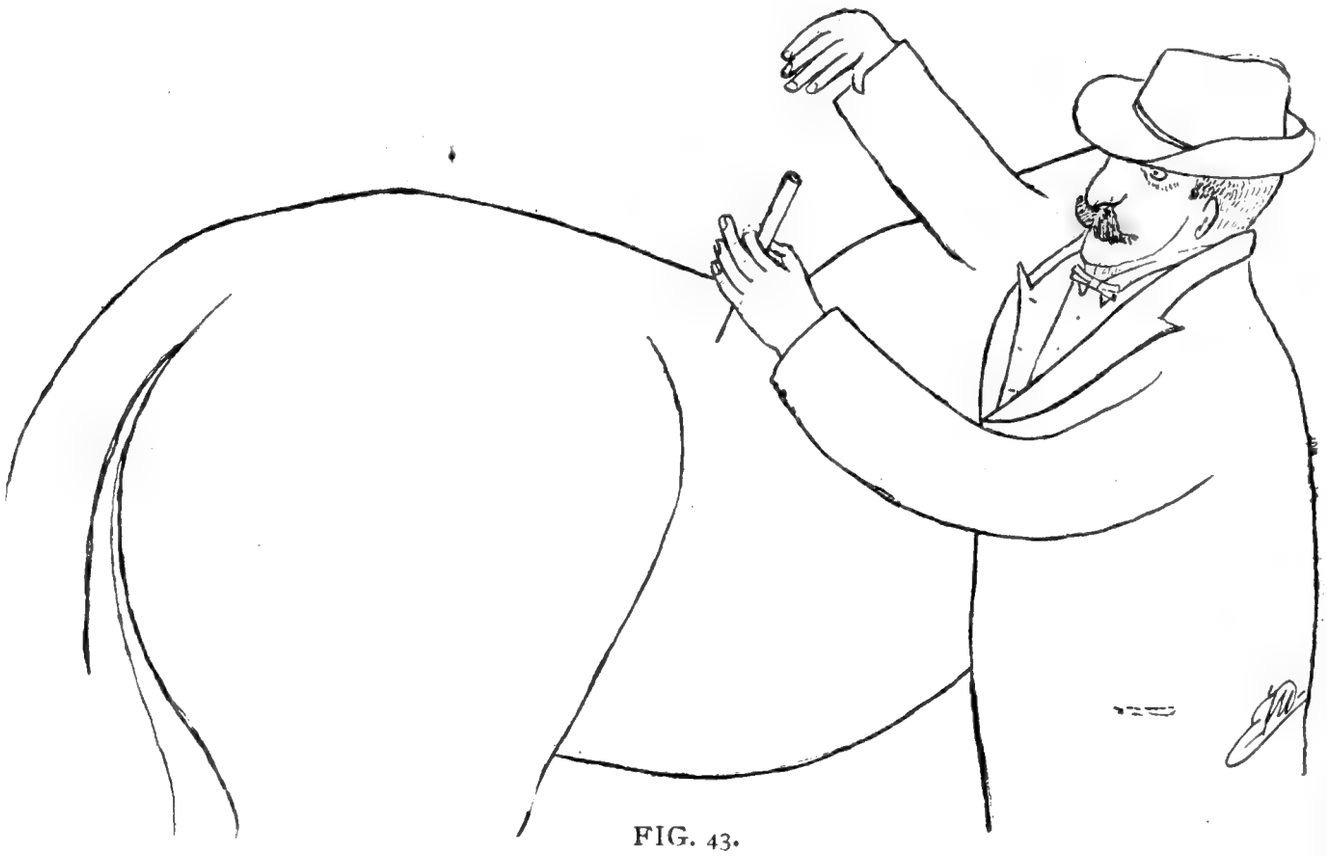


FIG. 43.
ENTEROCENTESIS.

where the trocar was inserted they should be treated surgically as early as possible, in order to prevent the formation of fistulæ (*Vol. XXIV, No. 4, Dept. of Surg.*).

It frequently occurs that tympanites cannot be relieved by tapping the cæcum; in such events the sigmoid flexure of the great colon should be tapped per rectum; this flexure can sometimes be reached from the left flank, and we often hear of veterinarians relieving tympanitic conditions by puncturing the left side.

3. *Gastrocentesis* (tapping the stomach).—This is an operation seldom practiced in the horse, but often beneficial in ruminants. The indications for puncturing the stomach of the horse are few. Its capacity being from 3 to 5 gallons, and the removal of such a small quantity of gas without removing the cause that generates it, is of no practical advantage. In ruminants however, the operation is often very beneficial. We cannot recommend the operation; we know of no one that has ever tried it upon a living subject. On the cadaver we have succeeded in searching the stomach by inserting the trocar into the last and second to the last costal space, near the costal cartilages without injuring the lungs. The experiment was made by dissecting the cervical portion of the œsophagus and attaching it to a bellows which was used to inflate the stomach, but we cannot advise any one to practice this upon a living horse. In ruminants this is a common operation. A large sized trocar should be used, and inserted into the most distended position of the abdominal wall.

4. *Vesicocentesis* (puncturing the bladder).—This is an operation that can not be repeated very often, but one that is frequently indicated in veterinary practice, especially in large animals suffering from urethral obstructions. Animals having urethral obstructions should never be cast without first examining the bladder, and if found distended, it must always be emptied before attempting to cast the patient; this is necessary in order to lessen the danger of rupturing the bladder by the fall or struggling of the patient in its attempt to free itself while being secured. In large animals, the most convenient method of reaching the bladder is through the rectum; in small ones it can be reached through the perineum or floor of the abdominal cavity.

5. *Oscheocentesis* (tapping the scrotum).—The fluid that accumulates in the scrotum as a result of dropsy of the tunica vaginalis is often removed in this way; the procedure is not a

cure for hydrocele, but a temporary relief. The conditions in hydrocele are not always the same; some cases contain fluid between the parietal and visceral portion of the tunic, while others contain fluid between the visceral portion of the tunic and other structures of the cord (*a condition common in cryptorchids*). The condition is found in the horse, bull, ram, boar, and dog, and may be complicated with varicocele or hematocele, which makes it difficult to determine whether it is a hydrocele or an inguinal hernia. Puncturing the scrotum is useful to determine the condition, to give temporary relief, and to inject irritants into the cavity to encourage the adhesion of parietes. Hydrocele of the cord is more serious than dropsy of the tunica vaginalis, and the best surgical interference in such cases is castration.

6. *Nephrocentesis* (puncturing the kidney).—This is an operation that has already been mentioned in connection with nephrotomy and nephrectomy. The curative value of this operation is very limited. The indication for such an operation is never determined primarily, but upon determining a condition requiring such interference the operator should not overlook the importance of such a procedure.

(*End of Abdominal Surgery.*)

SURGICAL ITEMS.

Sequelæ of Neurectomy.—No part of veterinary surgery attracts more attention than the so-called trophic disturbances, *i. e.*, sloughing, moist gangrene (whatever that is), breaking down, etc., following the various neurectomies. So frequently do these results occur after unnerving certain parts of the extremities of horses that they have wrought a wide and strong prejudice against nerving among the laity, and even among many veterinarians. That this prejudice is not entirely undeserving is evident from the number of cases of break-down reported in the veterinary journals. In view of the fact that the most prominent veterinarians, who have won prominence and have had a wide experience, all defend neurectomy operations in the highest terms, and report a very low percentage of bad results, we are led to the conclusion that break-downs are generally traceable to bad judgment or carelessness on the part of the surgeon. The indiscriminate application of neurectomy to all manner of conditions will ruin the reputation of any veterinarian, while the judicious resort to it as a relief for lameness will win the greatest applause. As above stated, the oldest

and most experienced surgeons report but few bad results, while the less experienced often discard the operation entirely, owing to a repetition of serious sequelæ. In looking over all of the available literature on the subject, we find a variety of opinions as to the cause of this unfortuate termination, among which are: (1) Removal of the trophic innervation, (2) Inflammation of the pedal vessels, (3) Suppurations from nail pricks, corns, and wounds which escape timely notice, (4) Mechanical violence to which the diseased part is subjected after removal of the lameness. It is our opinion that the latter is the *one* and *only* cause of break down from nerving. Whenever the lameness is removed by unnerving, the diseased part is at once required to fulfil the mission of a healthy structure. *The part is submitted to abuse which a diseased structure can not withstand, and as a result breaks down under the strain.* The dissolution may be gradual or immediate. That removal of the nerve supply has no direct effect is shown by the fact that healthy parts accidentally unnerved never undergo such processes. And, again, parts deprived of all their innervation from centric or peripheric paralysis are *entirely* immune from *similar* degenerations. A paralyzed part may atrophy from disuse, but it will never undergo an acute destructive process that bears the least resemblance to the break-down of unnerved feet. We doubt very much whether the eminent French and German writers, who refer to *phlebitis of the pedal veins* as a probable cause, ever intended that the assertion be taken very seriously. Suppurative processes from nails, corns, etc., are, of course, serious matters in unnerved feet, but not as universally fatal as is generally supposed. We have treated all manner of serious foot wounds in neurectomized feet, and find that only a small per cent. of such wounds result in loss of the foot. The wound of the unnerved foot will heal very slowly, and in some instances will refuse to heal at all, but the statement that they are frequently the cause of break-down can not be substantiated by observation. *Suppurative wounds are not a common cause of break-down in unnerved feet.* We must then look for the cause in the *original disease* for which the horse was unnerved, the disease which caused the lameness. To limit the number of serious sequelæ we would then advise strict adherence to the following rules: (1) Never operate for a lameness due to an acute or subacute inflammation. (2) Never operate for laminitis in any form. (3) Operate only upon lameness due to chronic conditions, and then work the horse according to the amount of

strain the diseased structures will reasonably withstand. (4) Keep the hoofs well shod with heels to protect the supporting structures. Examine the feet daily for wounds, or protect the sole against injury with pads. (5) Remember that an exostosis that only slightly interferes with the movement of a joint is a more serious condition for unnerving than a large one that obstructs motion entirely. The friction of an exostosis on its soft environment is one of the common causes of break-down. (6) Operate so as to encourage prompt healing, and allow a reasonable period of rest after the operation.—(*L. A. M.*)

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D.V.S., Milwaukee, Wis.

DIPHTHERIA IN THE HORSE [*Louis Cobbet*].—The history of this remarkable case is as follows: A child became sick with diphtheria; the father owned a pony, which was suffering from a bloody-pussy, nasal catarrh; there were also swelling of the glands and dyspnœa present. From the nasal discharge of the horse a culture was made, in which bacilli grew similar to diphtheria. This bacillus proved to be pathogenic in guinea-pigs, in the same way as the diphtheria bacillus. Large quantities of the virulent culture, or 100 fatal doses of the filtrate (which was taken from a bouillon culture and contained toxin) injected into guinea-pigs, was neutralized by the administration of the diphtheria antitoxin. A guinea-pig weighing 290.9 received an injection of 0.1 ccm. of the culture, and died on the sixth day; another guinea-pig of the same weight received 1.0 ccm. of culture and 0.019 of diphtheria antitoxin, and remained well. Aside from these observations the characteristics of the bacilli taken from the pony in regard to the culture, are the same as the true diphtheria bacilli, so that the author concluded that they were identical. Should it be possible to record similar cases, there would be a new step in regard to transmission of human diphtheria. The author also thinks that the facts which were observed so many times in regard to the antitoxic effects of the blood serum in horses, which were not treated for this purpose, can be easily explained in the way that the horses had already passed over an attack of diphtheria, during which the

production of the antitoxin took place.—(*Centralbl. f. Bacte. Paras.*)

THE ACTION OF IRON IN THE FORMATION OF BLOOD [*Dr. A. Hoffmann*].—In animals to which iron preparations were fed, the author could detect an enormous exuberancy of cells in the marrow of the bones, up to its most peripheral parts, which plainly proves that the marrow of the bone has to be considered as a blood-regenerator. The irritation effected by the iron produces a quicker transformation of the marrow cells into red blood corpuscles and a similar compensation of marrow cells through new production. The spleen and liver of animals fed with iron do not show any marked changes.—(*Virch. Arch.*)

TREATMENT OF PUNCTURED WOUND OF THE FOOT WITH PURE LACTIC ACID [*Guillemain and Cadix*].—The hoof is properly cleansed with a sublimate solution, and the horn surrounding the wound is removed. The lactic acid is then poured on the wound. After a few moments place a small tent of oakum which is previously sterilized in boiling water, and which is saturated with lactic acid, as deeply as possible into the wound. In cases of severe lameness, the application of a cataplasm of flaxseed meal, and a strong antiseptic solution is advisable. The following day the tent of oakum, which will be dry, is removed and the wound moistened again with lactic acid. In very severe cases the use of the oakum tent and the poultice is continued. Generally after the first two days' treatment the animal is considerably relieved, but in case there is no improvement on the third day, the same treatment should be continued. The authors claim that they have employed this treatment exclusively for a year, in more than 15 cases, with continual good results. On an average the animals were not laid up more than seven days.—[*Recueil de Med. Vet.*]

THE TREATMENT OF PARAPLEGIC HÆMOGLOBINURIA IN THE HORSE.—The author considers four forms of this disease: (1) Mild cases; (2) paralysis of one of the nerves; (3) apoplectic form; (4) paraplegic form. (1) The mild cases are characterized by profuse perspiration, staggering gait, and dark urine. Bleeding and friction with straw will soon bring about a cure. (2) Paralysis of one of the crural nerves. This form manifests itself by very difficult gait; excessive bending of the extremities, and dark urine containing hæmoglobin; in the first hours the patient is covered with perspiration. Bleeding in these cases is of doubtful value, applications of ice cold blankets to the loins, after perspiration ceases. In the case

of an atrophy of the crural muscles, the use of the perforating pointed iron is very useful. At the onset of the disease lukewarm enemas are recommended; after a few days cold ones. (3) The apoplectic form is characterized by a general severe affection; profuse cold perspiration; in the beginning marked colicy symptoms, lying flat on one side; nervous symptoms, originating in the brain. Trisimus, paralysis of the jaws, tongue and pharynx, the patient dying often in from eight to twenty hours after first manifestation of the disease. (4) The paraplegic hæmoglobinuria is the common form, beginning with a general sweating, slight colicy symptoms, dragging, staggering gait; the animal drops, is very excited, makes efforts to get up, elevating itself in the anterior part, falling back and struggling. (*a*) Treatment consists in emptying the bladder with the aid of a catheter; (*b*) bleeding; (*c*) as much comfort and rest as possible (slinging is not advisable); (*d*) administration of acetate of ammonia, which should be given right from the beginning in doses of 50-70 g., which acts as a heart stimulant, diuretic and diaphoretic; (*e*) equal parts of milk and fresh water; (*f*) the use of ice in most cases contra-indicated; (*g*) frequent lukewarm salt water enemas.—(*Bul. de la Soc. Centr. de Med. Vet.*)

Closure of the Anus in a Calf [*Buccavilla*].—On November 17th the author was called by A. to examine a calf which was only 24 hours old, in which he thought the rectal opening was absent. On examination the author found the animal continually straining to pass fæces, but without any result, as the opening was absent. The author made a deep incision in the inside of the sphincter muscle. The rectum could only be found after an incision about 8 to 10 cm. deep was made, after which the animal evacuated a considerable amount of fæces. The opening was then enlarged and packed with an oakum tent to prevent the wound from closing again. On January 7th the operation had to be repeated, as the wound had almost closed. The calf was then sold in good condition to the butcher.—(*Il Vet. di Camp.*)

ENGLISH REVIEW.

Hereditary Chorea [*By Ernest Morgan*].—The record of this case is interesting to illustrate the influence of heredity in this form of nervous disease. The author was called to give his attention to a bitch which was supposed to never have had

distemper. She was bought for breeding purposes, and found suffering with chorea affecting the head. Would her puppies have the disease? The author thought not. She had four puppies; three were healthy and the fourth at birth was badly affected in three legs and in the head. He was quite a cripple. The bitch was put to another dog and had five puppies. Three were destroyed for malformed jaws and the two remaining were suffering from chorea affecting the head and hindquarters.—(*Veterinary Record.*)

Large Fibrous Tumor in the Levator Humeri [*By E. W. Hoare, F.R.C.V.S.*].—Under this heading the author records a case of what is also commonly known as cold abscess of the levator humeri, which was of very large size, it being the largest fibroma the author had ever removed, although containing the usual small pus cavity in its interior. The tumor was hard and extended into the jugular furrow, being firmly adherent to the surrounding tissues. Other treatments had evidently been tried and failed—that is, incision, blisters, etc. The author found the growth extending a considerable depth, and almost in apposition to the carotid artery. There was considerable hæmorrhage, and one very large vessel was severed and ligatured. The animal made a good recovery.—(*Veterinary Record.*)

Gunshot Injury [*By J. A. Nunn, M.R.C.V.S.*].—There is no doubt that this case was a little out of the common, as the author says. A thoroughbred mare, in foal, was turned out to grass. She was noticed going slightly lame, but as it was difficult to catch her she was left alone, until later she grew worse and was examined. A number of small lumps were felt on the outside of the off pastern joint. The hair was clipped, the mud washed off, and it was found that the lumps were hard and movable under the skin; one was opened and a No. 5 chilled shot extracted. Eight or ten more were removed, and in a few days the mare was perfectly sound. The remarkable point in the case is that it must have been at least a month from the time the injury was inflicted until the first symptoms were noticed.—(*Veterinary Record.*)

Psammoma of the Brain of the Horse [*By A. Marshall, M.R.C.V.S.*].—With the exception that at times he had shown violent temper, would bite and kick viciously, or even refuse to work, this horse has done good work since the owner got him, about two years. When visited by the author he showed brain trouble, which, with the history of being a ravenous feeder,

justifies the idea of stomach staggers, and the administration of a good purge. After a temporary relief, the manifestations returned, and having resisted all treatment—bleeding, bromide of potassium, etc.—became such that the horse was destroyed by being bled to death. At the post-mortem all the organs were found healthy except the contents of the cranial cavity. "The brain being carefully removed, there was exposed, growing from the lateral ventricles, two large tumors, one in each hemisphere. These tumors were somewhat the shape and half the length of a sausage, and on being cut into proved to be of a firm consistence and greasy to the cut of the knife." Prof. McFadyean, who examined them, pronounced them psammoma. The author puts the question: Can not similar growths, during the various stages of their development, account for some of our vicious and bad-tempered horses?—(*Veterinary Record.*)

HÆMOGLOBINURIA OF THE FORE EXTREMITIES [*By H. G. Allen, M. R. C. V. S.*].—Azoturia affecting the anterior extremities is not often recorded. The author has seen one which he reports, with the history and manifestations, common to the affection. A cart mare, laid up for three days, ordinary working diet not restricted, put to work, goes about a mile, is found unable to progress, and is with difficulty brought home, where she drops. When she is urged to rise, her fore legs give way, power is completely gone. Her urine is characteristic, coffee color, with a "lakey" tint, when held up to the light. She got well under treatment of purgatives of aloes and linseed oil, febrifuges and diaphoretic drenches. In a fortnight, there was evident wasting of the pectoral and biceps muscles of both sides. —(*Veterinary Record.*) [Azoturia affecting the anterior portion of the body—the animal being able to support itself upon the hind extremities, giving way on the front legs—is now frequently observed and recorded by American practitioners.—R. R. B.]

EXTENSIVE DISEASE OF OVARIES AND UTERUS—OPERATION AND RECOVERY [*By H. G. Simpson, M. R. C. V. S.*]—Good three-year-old tabby has never been known to be sick, but of a sudden she stops eating, seems ill and smells very badly. She has a fœtid discharge from the vulva and a pendulous abdomen. Perhaps she has given birth to two dead kittens. At any rate the author examines her, and finds what might be the head of a fœtus in her pendulous abdomen. As long as it can not be removed through the natural channel, it will by abdominal operation. Poor tabby is chloroformed, abdomen is opened

antiseptically, and what was thought the head of a fœtus is felt, but there is no body to it. The uterus and ovaries are successfully removed, the wound dressed and minus some suppuration the old cat recovers. To examine the uterus was the next step. An incision was made into the uterus and found about six ounces of the most offensive pus, but no fœtus,—what had been taken for the head was a tumor.—(*Veterinary Record.*)

ITALIAN REVIEW.

Locomotor Ataxia in a Bull Due to Excessive Use.—The author was called to see a two-year-old bull which was said to be lame on the left hind leg. When in the stall he stood quiet, but had peculiar flexion of the hind legs, one after the other, all the muscles of the croup and thigh being affected with vermicular trembling. The animal was afraid of pressure over the loins, and if this was continued, would drop on the ground. There was constant dropping of urine. No fever, and appetite normal. In moving the hind quarters he would wobble sideways, and the hind legs would cross each other at each step. The history was that the bull had been covering cows for several months, aud for some time had shown difficult erection. The treatment consisted in absolute rest, heavy feeding, frictions over the body, nux vomica and electricity. After eight days the animal had recovered, and was able to resume his duties.—(*Il Moderno Zooiatro.*)

Œsophagotomy in a Dog [*Rosso Guiseppe*].—The subject was a Danish dog which made repeated efforts to vomit, and seemed to be in great pain. A foreign body was felt in the larynx. By pharyngeal explorations a white foreign body was observed which was protruding at every effort at vomiting. Unable to remove it with forceps, the author performed œsophagotomy, and removed a piece of the false rib of veal, six centimeters long and two wide. The œsophagus and the wound were disinfected, the skin sutured with closed stitches, taking as much of the skin as possible, and antiseptic dressing applied. The animal was fed with milk. After a few days the wound began to heal, and was complete in twenty days.—(*Il Veterin. di Campagna.*)

Botryomycosis in a Steer [*Ricardo Reali*].—To the Veterinary Clinic of the University of Perugia, a steer, aged nine years, was brought with the history that the tumors which he presented over his body had existed for some time, but were

enlarging recently. The animal was in good and apparently healthy condition, but presented three large tumors; one on the right hip and the other two in the left prescapular and scapular regions. These tumors had been treated with deep cauterization without result. They were irregular on their external surface, hard, painless, and those of the left side more or less mobile; these two were connected. At first sight they were thought to be actinomycotic growths, but microscopical examinations revealed their nature, the *botryomycosis ascoforans* was readily detected. For special reasons the treatment with the iodide of potassium was omitted, and an operation performed, in which the three tumors were removed. In removing the prescapular and the scapular growths, a large piece of skin had to be removed, as they were connected by a thick cord running from one to the other. This mass weighed 1 kil. 720 g. There was no hæmorrhage of any account. After 15 or 20 days the wound was in fair way to cicatrization.—(*Clinica Veterinaria.*)

A CASE OF INGUINAL ECTOPIA—CASTRATION FOLLOWED BY ENLARGEMENT OF THE SPERMATIC CORD [*By Carlo Baldi*].—This very unusual case relates to an animal which had been presented to the author in April last for inspection and to be castrated. The right testicle not being present the owner was advised to wait some time to see if it would make its descent. In June the animal was returned to the author, and although the right testicle was still absent it was decided to operate. When the left testicle was removed it was found enormously developed, and as the author was examining the wound, a mass bulged out through the opening and proved to be the right testicle, also enlarged but not as much as the left. It seems that the septum which separates the two dartoid sacs was not present and that on account of the size of the left testicle, the separation had not taken place. The case seemed to do well for a few days, but one morning the parts became much enlarged and an enormous champignon developed at the end of the left cord. This had to be removed with the ecraseur. Microscopic examination revealed the presence of botryomices equi. The great interest of the case rests on the absence of the dartoid septum, a probably unique case in the history of the causes of testicular ectopia.—(*Clinica Veterin.*)

A JUDGMENT against the Veterinary Service Association for $2447.94 in favor of W. H. Walker was recorded in the Kings County (N. Y.) clerk's office on March 18.

COLLEGE COMMENCEMENTS.

THE KANSAS CITY VETERINARY COLLEGE closed its most successful session on Thursday evening, March 14th, 1901, with the tenth annual commencement exercises, which were held in the college building, 1404 Holmes Street.

The following gentlemen were granted the degree of Doctor of Veterinary Science: R. Fred Eagle, Xavier I. Richmond, Charles W. Barnhart, Abram N. Reber, George D. Painter, Arthur Trickett, Arthur W. Miller, Oscar Stuart, John L. Burgett, Herman J. Timmermann, Benjamin F. Kaupp, D. V. S., Frank F. Brown, D. V. S., Charles J. Sihler, V. S. Dr. Thomas W. Watson, of Clarinda, Iowa, and Dr. George L. Buffington, of Baxter, Iowa, attended the post-graduate course. The total enrollment of students for the session was 58.

The Directors of the college gave a social dinner at the Midland Hotel to the students, faculty and friends of the institution on Thursday evening, March 7th, and this innovation proved a most enjoyable and agreeable one.

CORRESPONDENCE.

"CRITICS, WHO THEMSELVES ARE SORE."

MANHATTAN, KANSAS, March 12, 1901.

Editors American Veterinary Review:

DEAR SIRS:—In the March number of the REVIEW, Department of Surgery, Doctors L. A. and E. Merillat devote considerable space to a "lecture," ostensibly intended for me, on the Ethics of Criticism. They also indulge in much irrelevant comment, if not sarcastic innuendo, in regard to what they imagine a lack of general and technical education among American veterinarians. I am not especially interested in this part of their article, but for their satisfaction I plead guilty to the "low matriculate and graduate requirements," "little technical qualifications," "lack of experience," "little red schoolhouse" and all. Moreover, I go further and so far agree with them that, with humility and reverence, I "tip my hat" to them as "real scientists" and "store-houses of veterinary surgical knowledge." I would that I might be able to give like testimony to their success as critics, but alas!

"As soon
Seek roses in December—ice in June;
Hope constancy in wind, or corn in chaff;

Believe a woman or an epitaph,
Or any other thing that's false before
You trust in Critics, who themselves are sore."

Now, for the other part of their criticism, which to me is of infinitely more importance. The question seems to be, was I, being President of the American Veterinary Medical Association, justified in expressing disapproval of an unwarranted, and as I believed unjust, criticism of one of the American Veterinary Medical Association clinics? I agree with Doctors Merillat that "whether this clinic merited the drastic criticism it received has no bearing on the case"; but may I not ask, had that clinic any bearing on the elucidation of Dr. Young's method of operating? Was it necessary to properly describe the operation under consideration for the editors to permit Dr. Young to publicly insult the profession, severely criticise a brother operator, and reflect discredit, indirectly at least, on the American Veterinary Medical Association? There has been much covert criticism of these clinics, chiefly by those who refuse to give the profession the benefit of their overpowering genius, but this one was open, so insulting, and uncalled for, and so far out of place, in such a truly able series of articles as Doctors Merillat are giving us in their Department of Surgery, that I have no apology to offer either Doctors Merillat or Dr. Young for my comment upon it. Doctors Merillat disclaim responsibility for Dr. Young's coarse insult to those who operated at the Omaha Clinic, but by no rules of common sense or journalism can the editors of a department like theirs in the REVIEW be acquitted of responsibility for "matters of fact" appearing under their names, and the fact that Doctors Merillat replied to my comment is proof that they did not consider themselves guiltless.

I did not wish to criticise Dr. Young's "English," but a man who, in order to describe an operation, finds it necessary to criticise others, certainly displays neither skill nor good judgment, and I was, therefore, justified in my conclusion that others might be able to perform the operation as successfully as Dr. Young, even though they had neither his egotism nor his "properly appointed operating room."

In conclusion, permit me to again assure Doctors Merillat that my sole purpose in commenting upon Dr. Young's peculiar exhibition of bad taste was to resent their insult to the Omaha operator and the American Veterinary Medical Association in permitting Dr. Young's irrelevant tirade to appear under the sanction of their names; and in all that I have written, in my

former communication as well as this one, I have, with less cause, been much more "courteous" and "charitable" to Doctors Merillat and Dr. Young than they were to the operator at the Omaha Clinic. TAIT BUTLER.

OBITUARY.

ALBERT W. CLEMENT, D.V.S.

Albert W. Clement, of Baltimore, Md., who was State Veterinarian during Governor Lowndes administration, died of a complication of diseases, Sunday, March 3, at the Johns Hopkins Hospital. He had been ill about five weeks. Dr. Clement was born in Lawrence, Mass., in 1857, where he received his early education in the public schools. He then spent two years at Harvard College, Cambridge, Mass., where he took a special preliminary medical course. In 1879 he went to McGill University, at Montreal, Canada, where he graduated from the veterinary department in 1882. He remained there the following three years as a teacher. He was also employed during that time by the Canadian Government in investigating contagious diseases in animals and in the inspection of export cattle. In 1885 he went to Europe and remained for two years, studying at the London and Berlin veterinary schools, the Koch and Virchow laboratories at Berlin, the Pasteur Laboratory at Paris and the veterinary school at Alfort. He returned to Montreal in 1887, and shortly afterward went to Baltimore. For six years he pursued investigations in pleuro-pneumonia and scientific research, conducted at the Johns Hopkins Hospital laboratory. He was also connected with the United States Bureau of Animal Industry.

He was a member of the Maryland Club, the flag of which was placed at half-mast in his memory; Elk Ridge Fox Hunting Club, Pimlico Driving Club and the American Veterinary Medical Association, of which he was formerly president. Dr. Clement is survived by a widow and a brother, Mr. George H. Clement, of the United States Treasury Department in Washington.

At a special meeting of the Maryland State Veterinary Medical Society, held on the evening of March 7, 1901, the following resolutions were adopted:

WHEREAS, The untiring zeal and energy of our lately deceased associate and friend, Dr. Albert W. Clement, as pertaining to professional

matters in general were so well known to the veterinary and medical professions, it needs no eulogy to express the esteem in which he was held, and

WHEREAS, It has pleased Almighty God to call away our lamented colleague in the pride of youth and at the zenith of his professional career, and

WHEREAS, The Maryland State Veterinary Medical Society keenly realizes in his death the loss of one of its most active and useful members, and

WHEREAS, Our duty as creatures leads us to bow to the Creator's allwise dispensation, and

WHEREAS, It is our duty and privilege to tender our deep commiseration to the afflicted,

Therefore be it

Resolved, That the sincere sympathy of this Society be extended to the bereaved widow and family, and

Resolved, That an engrossed copy of these resolutions be tendered the widow, that a copy be spread on the minute book and that a copy be inserted in a daily paper and the journals of the profession.

WM. H. MARTENET, D. V. S., *Secretary*.

SOCIETY MEETINGS.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The nineteenth semi-annual meeting was held at the Hotel Folsom, Bloomington, February 12, 1901, and was called to order at 10 A. M., with President T. J. Gunning in the chair.

The following members responded at roll-call: Drs. A. G. Alverson, Bloomington; T. J. Nattress, Delavan; T. J. Gunning, Neponset; E. J. List, Havana; John Scott, Peoria; W. J. Martin, Kankakee; C. E. Hollingsworth, La Salle; E. F. Frye, Naperville; J. Stahlman, Pontiac; Clarence Mills, Decatur; W. H. Welch, Lexington; F. H. Ames, Canton, and F. W. Corkery, Urbana.

The applications of Drs. F. W. Corkery, of Urbana (vouchers, Drs. Martin and Gunning), and Dr. F. H. Ames, Canton (vouchers, Drs. Scott and Gunning), were received. On motion of Dr. E. J. List, seconded by Dr. W. J. Martin, the candidates were duly elected.

Under the head of new business several delinquent members liquidated.

Drs. Nattress, Scott and Martin were appointed an auditing committee and the usual bills were allowed. The meeting then adjourned for dinner.

After dinner the meeting was called to order and listened to

a most interesting paper by Dr. E. J. List, of Havana, entitled "A Peculiar Disease Affecting Horses."* This was an able description of a brain or spinal disease in the horse caused by the feeding of swamp hay from the river bottoms. It brought out an interesting discussion.

Dr. A. G. Alverson then read his paper entitled "The Advantages of a Post-Graduate Course to a Practitioner." Dr. Alverson had just returned from taking a post-graduate course at McKillip Veterinary College, and was very enthusiastic in regard to the good derived from the same. In this day of rapid advancement of our profession, we need to make use of every opportunity to keep abreast of the times. A post-graduate course refreshes our memories, gives new ideas, and sends us forth with renewed vigor and confidence.

Dr. C. E. Hollingsworth, of La Salle, now reported several cases † that had come under his observation, and proved of much interest to the association. One was a ruptured uterus in a Jersey heifer from dystokia, one a case of acute indigestion, another a fractured scapula in a canine, which showed the ingenuity of the Doctor in enclosing the scapula in a plaster cast, rendering it immobile and the patient making a nice recovery.

Dr. W. J. Martin, of Kankakee, now read a very interesting report of "A Penetrating Wound of the Lung," ‡ which made a nice recovery.

The meeting then adjourned to meet in Chicago in November at the call of the President. W. H. WELCH, *Secretary.*

VETERINARY ASSOCIATION OF MANITOBA.

The annual meeting of this association was held in the City Hall, Winnipeg, on February 19, the President, Mr. J. G. Rutherford, in the chair. The following members were present: J. G. Rutherford, S. A. Coxe, W. E. Martin, J. Welch, W. J. Hinman, J. J. Irvine, J. G. Cruikshank, R. E. Monteith, A. E. Williamson, H. J. Johnston, W. A. Hilliard, W. A. Dunbar, J. A. Stevenson, W. R. Taylor, J. W Routledge, J. D. McGillivary, G. Hilton, W. Swenerton, J. H. Lipsett, J. Golley, W. S. Henderson, H. J. Elliott, C. Little, H. D. Smith, W. H. Smith.

After routine business, the report of the Secretary-Treasurer and Registrar was presented, showing the association to be in a

*Published elsewhere in this number.

†Will be published in May REVIEW.

‡Published in the department of "Reports of Cases," in this number.

flourishing condition. During the year the membership had increased to a total of 71. The finances were in a satisfactory condition, showing a balance of $461.91 to the credit of the association. The auditors, Messrs. Little and H. D. Smith, reported having examined the books and vouchers and found everything correct. The reports were adopted.

The meeting then proceeded to the election of officers, as follows:

President—W. A. Dunbar, Winnipeg.

Vice-President—S. A. Coxe, Brandon.

Secretary-Treasurer and Registrar—F. Torrance, Winnipeg,

Council—W. Swenerton, J. G. Rutherford, W. E. Martin. W. H. Smith.

Examiners—W. A. Dunbar, W. E. Martin and F. Torrance.

The President reported an interesting case of injury to the flexor tendons of the hind leg. Both perforans and perforatus tendons had been cut through in a runaway accident, and some time elapsed before he was called in, another practitioner having been first in attendance. The leg was found enveloped in a plaster of Paris bandage, and when this was removed the wound was discovered to be in a septic condition, with sloughing edges. Fever was high and the animal suffering greatly. A more rational treatment was adopted, consisting of placing the parts at rest by means of a very ingenious splint devised for the case by the doctor, and by the application of antiseptic dressings. Under this treatment the horse had steadily progressed to recovery and was now able to resume his severe work of galloping to fires and trotting from them.

In the discussion which ensued many members took part and Mr. Dunbar was warmly congratulated on the ingenuity of his splint and the success of his treatment.

Mr. Rutherford then presented a paper on "Intestinal Lesions in the Horse." The great experience of the essayist enabled him to deal with this subject from a practical rather than a theoretic standpoint, and the members present enjoyed a treat in listening to his paper. It led to animated discussion, in which many took part, and several curious and instructive experiences were related.

Dr. Elliott, of Brandon, followed with a paper on "Influenza in Dogs," giving his experience in a recent outbreak of the disease in Brandon and detailing the treatment which he had found most successful. In the following discussion, attention was called to the frequency of strychnine poisoning in dogs and

the best mode of treating it. In the opinion of the meeting nothing better than chloral hydrate was known.

Mr. Stevenson asked Dr. Torrance to give some account of the research into the pathology of "swamp fever" which Dr. Bell and he had undertaken.

In reply Dr. Torrance said that he hoped at a future date when the investigation had reached more definite results to make a written report on the subject. At present he would only briefly refer to the work that had been done. A small sum of money had been granted by the Government for this research, and they had purchased two horses, upon which they had made experiments by inoculating them with pure cultures of the large bacillus which had been discovered in several cases of this so-called swamp fever. In one horse they had been partially successful in producing a modified form of the disease, but the other had proved refractory. This might have been owing to natural immunity, or to attenuation of the virus from artificial cultivation. They had also made several post-mortem examinations, had made temperature charts of cases for long periods of time and had made numerous examinations of blood as well as blood counts. In conclusion he pointed out the importance of continuing the investigation into a disease which is probably the greatest menace to horse owners in this province, and asked the co-operation of the members in securing a further grant for this object, and in contributing their experience with the disease.

Several members spoke on the subject, and all agreed as to the importance of the investigation. It was moved by Mr. C. Little, seconded by Mr. Stevenson, and carried unanimously, that this association petition the Government to make a further grant to Drs. Bell and Torrance for the purpose of continuing their research into swamp fever in horses.

It was moved by Mr. Coxe, seconded by Mr. Martin, that the sum of fifty dollars be given to Dr. Torrance for his services in this research. Carried.

On motion of Dr. Hilliard, seconded by Mr. Stevenson, it was decided to hold the semi-annual meeting in Brandon, the date to be fixed by the council.

Votes of thanks were passed to Dr. Bell and Dr. Torrance for their investigation, to the essayists for their valuable contributions, and to the City Council for the use of the room as a place of meeting. The meeting then adjourned.

F. TORRANCE, *Secretary.*

AMERICAN VETERINARY MEDICAL ASSOCIATION.

Under date of March 19, Secretary Stewart writes as follows:

"With the approach of the Spring and its invigorating influences, the Secretary of the A. V. M. A. would reach out to every member of the association with an invitation to consider what each may do towards making the annual meeting to be held in Atlantic City next September a power for the uplift of the association and the profession in general. Under the impulse of the vigorous new growth in all nature at this time, he trusts that each member will be enthused and stimulated anew in behalf of this organization, and that he may be favored with an early notification of papers to be offered for the program.

"It is a large task to solicit each member by personal letter, and I trust that this will not be necessary. The forum of the A. V. M. A. is one which should be enticing to every member as a place where he may present the results of his earnest efforts and best thinking, and the privilege to have part in the program should be eagerly sought. To date the members have been rather backward in this matter, and but few papers have been listed. Drs. D. P. Yonkerman, Kalamazoo, Mich.; Geo. W. Dunphy, Quincy, Mich.; Wm. McEachran, Windsor, Ont.; C. A. Cary, Auburn, Ala., and W. H. Dalrymple, Baton Rouge, La., have signified their intentions to offer papers for the coming meeting.

"The time at the command of the association for this meeting will afford ample time for the presentation and discussion of several times the number of papers offered, and it is earnestly desired that the members will promptly notify the Secretary that they will contribute to the program.

"The reports published in the veterinary journals as to the advanced preparation made by the local committee of arrangements indicates that a most valuable clinic will be offered, also that the social pleasures will be all that one could desire. Cheap transportation is assured, and with these prosperous times a very large attendance may be expected, and, in fact, is certain. Members on the Pacific Coast are writing that they are now planning to attend; members located in the Central West are inquiring if it is certain that a low rate of transportation from Buffalo can be counted upon, so that even now the outlook is most encouraging for a large attendance from the regions just mentioned.

"The report of the proceedings of the Detroit meeting was printed and distributed about December 1st, 1900, and a copy

was sent to each member, both old and new. The numerous inquiries received as to whether or not the proceedings have been published leads me to suspect that in numerous instances the report was not delivered. If any of the members who read this failed to receive a copy, they should notify me at once in order that the missing copy may be looked up and delivered."

MICHIGAN STATE VETERINARY MEDICAL ASSOCIATION.

The nineteenth annual meeting was held at Lansing, Feb. 5 and 6, 1901, President William Jopling presiding, when 13 applications for membership were favorably acted upon, making a total of 80 members in good standing. The reports of all committees were very thorough, showing that the work had been earnestly and carefully done. The results of this meeting showed that the members of the profession are working together harmoniously, not only among themselves, but with the State Board of Health and the State Live Stock Sanitary Commission.

Roll-call showed 45 members present, and most of them brought the ladies of their families with them, for which a good programme of entertainment was arranged. A banquet was provided for the evening of Feb. 5, at which the ladies were present and participated, Dr. H. F. Palmer acting as toastmaster.

The Treasurer's report showed a comfortable balance ($204.21).

The papers, which were of a high order, and freely discussed, were as follows :

"The Veterinarian as a Sanitary Officer," Dr. James Drury, of Ypsilanti.

"Methods of Inspecting Dairies," Dr. Charles E. Marshall, M. A. C., Lansing.

"Ovariotomy Bovidaes," Dr. H. S. Smith, Albion.

"Treatment of Wounds," Dr. W. S. Hamilton, Chelsea.

"Infection," Dr. George A. Waterman, M. A. C. Lansing.

"A Contagious Disease Affecting the Eyes of Cattle," Dr. W. M. Burdick, Chesaning.

"The Veterinarian as a Municipal Officer," Dr. J. A. Dell, Ann Arbor.

"Benign Growths," Dr. H. F. Palmer, Detroit.

"Parturient Apoplexy and Its Treatment," Dr. H. M. Gohn, St. Johns.

"Healthful Legislation," Dr. H. B. Barker, Secretary State Board of Health.

"The Veterinarian in Politics," Dr. G. W. Dunphy, Quincy.

"Strongylus Contortus and Strongylus Ovis Pulmonalis and Successful Treatment by the use of Toxaline," Dr. J. J. Walkington, Mt. Pleasant.

The following officers were elected for the ensuing year:

President—J. J. Joy, Detroit.

First Vice-President—H. F. Palmer, Detroit.

Second Vice-President—H. M. Gohn, St. Johns.

Third Vice-President—James Harrison, Maple Rapids.

Secretary and Treasurer—W. A. Giffen, Detroit.

Directors—J. Black, Richmond; J. W. Brodie, Pontiac; D. G. Sutherland, Saginaw; H. S. Smith, Albion; J. J. Walkington, Mt. Pleasant; A. McKercher, Lansing.

The following committees were appointed:

Intelligence and Education—H. F. Palmer, chairman, Detroit; George A. Waterman, Lansing; U. S. Springer, Grand Rapids.

Diseases—H. M. Gohn, chairman, St. Johns; G. W. Dunphy, Quincy; Thomas Farmer, Grand Blanc.

Finance—W. S. Hamilton, chairman, Chelsea; J. C. Whitney, Hillsdale; James Drury, Ypsilanti.

Legislation—W. A. Giffen, chairman, Detroit; F. C. Wells, Warren; J. Black, Richmond; G. W. Dunphy, Quincy.

W. A. GIFFEN, *Secretary.*

KANSAS CITY ASSOCIATION OF BUREAU OF ANIMAL INDUSTRY INSPECTORS.

The veterinarians employed by the Bureau of Animal Industry at Kansas City have just completed an organization with the above title. The purpose of the association will be to discuss subjects which relate to meat inspection, with a view to securing the greatest possible efficiency and uniformity in the service. Meetings will be held on the first Monday evening of each month at 7½ South James Street, Kansas City, Kans.

The following are the officers for the current quarter: President, Dr. S. E. Bennett; First Vice-President, Dr. H. H. George; Second Vice-President, Dr. W. U. Neil; Secretary-Treasurer, Dr. J. S. Grove.

J. S. GROVE, *Secretary.*

NEW HAMPSHIRE VETERINARY MEDICAL ASSOCIATION.

The old association was reorganized and incorporated Feb. 20, 1901. The first meeting was held in Manchester, with Drs. Bailey, Ebbett, Clark, Dodge, Dunton, Maguire, Hart, Burchsted, Bodwell, Hyne, Russell, Loring, Wadsworth and Pope present.

The following officers were elected for the ensuing year: President, Dr. G. R. Chesley; Vice-President, Dr. G. E. Bailey; Secretary-Treasurer, Dr. L. Pope, Jr. Executive Committee—Drs. Bodwell, Loring, and Burchsted.

The old constitution was adopted with but few changes.

Dr. Pope read a paper on "Azoturia," and general discussion followed.

A previous step taken toward legislation necessitated considerable discussion at this time, and a committee was appointed to act with our attorney.

Adjourned until the first Friday in April, meeting to be held in Manchester. LEMUEL POPE, JR., M.D.V., *Secretary.*

NEWS AND ITEMS.

DR. ELISHU HANSHEW, of Brooklyn, N. Y., has been confined to his home for two months from an attack of capillary bronchitis.

DR. C. E. STEELE has been transferred from the quarantine division to the meat inspection division of the B. of A. I., and stationed at Omaha.

DR. ADOLPH EICHHORN, of New York, having successfully passed the Civil Service examination for assistant inspector B. A. I. has received his appointment and been assigned to duty at Milwaukee, Wis.

THE veterinarians of the Bureau of Animal Industry at Kansas City have organized an association, which meets monthly, for the purpose of discussing topics in relation to meat inspection.

SECRETARY OF AGRICULTURE WILSON gives out the information that 2,500,000 doses of blackleg vaccine were distributed by his department during the year 1900, and that over $6,000,000 worth of young live stock throughout the country were saved.

DR. A. G. HOPKINS has resigned his position at the University of Wisconsin to accept a position upon the *Farmer's Advocate*, an excellent agricultural paper published at Winnipeg, Manitoba. His first article appeared in the Christmas number, and was entitled "Nineteenth Century Progress in Veterinary Science."

AT the final examinations of the New York-American Veterinary College, held the last of March, the following gentlemen were recommended to the Council of New York University for the degree of Doctor of Veterinary Surgery: Messrs. Bose, Johnson, Jones, Morris, Miller, Serling, Werner, and Wertheimer.

DR. J. F. WINCHESTER, of Lawrence, Mass., reported an interesting circumstance at the banquet of the Alumni Association of the Veterinary Department of New York University. Having a cat brought to him he diagnosed tuberculosis, which was verified by laboratory examination. Another cat, owned by the same lady, was found to be suffering from the same disease. It transpired that the two felines had probably contracted the disease from their mistress, who had fondled them continuously while an invalid from consumption.

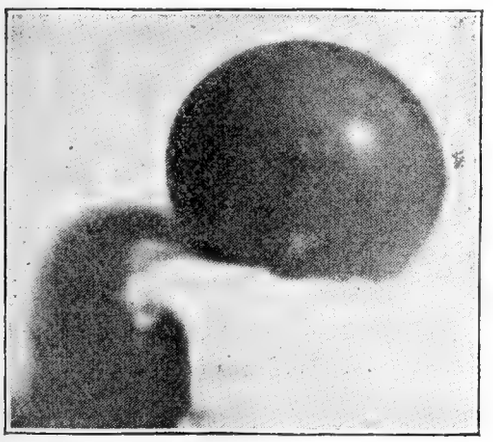
DR. HAL C. SIMPSON, Denison, Iowa, has returned from Manila, P. I., having been in the United States Transport service and made one trip. Before that he made a trip to South Africa in charge of a transport of horses and mules. He reports his total mileage for the year as 38,500. In his first trip he experienced an exciting shipwreck off the coast of Hayti, in which 580 mules were lost. An account of his travels is promised the readers of the REVIEW.

DR. RICHARD JAMES DUNGLISON, an editor and author of many medical works, is dead at his home in Philadelphia of dropsy. Dr. Dunglison was a son of Professor Robley Dunglison, of Jefferson Medical College. He was graduated from Jefferson College in 1856, and was the author of Dunglison's Medical Dictionary and Dunglison's History of Medicines. Dr. Dunglison was in the federal service from 1862 to 1865 as acting assistant surgeon.

THE banquet of the Alumni Association of the Veterinary Department of New York University (New York-American Veterinary College), held on the evening of April 1, was one of the most successful events of the kind we have ever attended, great interest being manifested and the most loyal support guaranteed to Alma Mater. Chancellor MacCracken and Dr.

Munn represented the University, and expressed the greatest pride in the Veterinary Department. A letter from Dr. Liautard was received with great enthusiasm, and his health was drank in loving friendship. From Philadelphia came Dr. Hoskins, from Massachusetts Winchester and Howard, from Baltimore Wm. Dougherty, from New Jersey the two Lowes, and most all classes were represented. Prof. Chas. A. Doremus, who holds a warm place in the hearts of every veterinarian who had the good fortune to receive chemical inspiration at his hands, was in his best mood, and so were the other speakers. A full account of the delightful event will be given in the May number.

A Large Intestinal Calculus.—Messrs. Higinbothom & Wood, Hamilton, Bermuda, send the following interesting item: "We take much pleasure in enclosing herewith a photograph of an interesting intestinal calculus, which was taken from the abdominal cavity of a horse a few weeks ago, and being of an exceptionally large size thought it may be of interest from a scientific standpoint to have a description of it published in your veterinary journal. The stone was formed in the stomach of a horse seventeen years of age, and ruptured through, causing almost instant death. The weight is 9¼ pounds, and circumference 21 inches, being almost perfectly round. We should be glad if you can inform us of any larger specimens of this kind being found."



The Automobile in Kansas City.—During the past year the manufacturers of automobiles have endeavored to establish a field of usefulness in Kansas City, but in vain. The last experiment resulted in the agent scaring a farmer's horse, and having to pay all damages, which amounted to $75. In place of an increase in the number of cycles, and in the absence of automobiles, the horse is coming into still greater prominence. Driving clubs are enlarging their membership and increasing their facilities for the pleasure to be derived from the roadster. The horse owners' influence is being brought to bear upon the Park Boards, and boulevards and fine drives are being pushed to completion.

Governmental Veterinarians at Kansas City.—

The following is a list of the veterinarians stationed at Kansas City, in the meat inspection service: S. E. Bennett, W. R. Cooper, C. H. Davies, B. F. Kaupp, J. C. Milness, W. R. Andress, G. W. Browning, S. H. Caldwell, C. H. Cranfield, T. W. Carnachan, H. B. Chaney, C. A. Clawson, W. J. Fretz, H. H. George, J. S. Groves, D. C. Hanawalt, W. T. Lavery, A. Long, W. N. Neil, I. W. O'Rourke, J. L. Otterman, T. W. Scott, N. B. Smith, A. W. Swedberg, R. H. Thomas, N. L. Townsend, J. D. Cooper. The following is a list of veterinarians whose official headquarters is Kansas City, but who are stationed out in the various parts of the country between the Mississippi River and the Rocky Mountains, carrying out quarantine regulations: H. B. Adair, A. R. Wake, Frank T. Shannon, Louis Metsker, Thos. Castor, Howard M. Burgess, Arthur M. Rork, Monroe B. Miller, T. A. Bray, H. D. Paxson, L. J. Allen, Murray J. Myers, R. J. Blanch, Wm. G. Shaw.

Brave Words from Michigan.—In the course of a private letter from Secretary Giffen, of the Michigan State Veterinary Medical Association, the following paragraphs occur: "We were very sorry to learn of the unsuccessful termination of the grand effort made by the American Veterinary Medical Association's Committee to obtain favorable legislation [for the Army]. However, we hope the committee will keep up the good work. I think the veterinarians of Michigan gave all the assistance they could to the committee, and we'll try to do more next time. We Michigan veterinarians pride ourselves a good deal upon our 'gameness.' * * * It took us 17 years to obtain favorable legislation in this State, but we kept at it, and in 1899 we succeeded in having a very good law passed, and we are back again this year with an amendment to the veterinary act establishing a standard similar to that required by the American Veterinary Medical Association for veterinary schools that are to be recognized; also, a provision cutting out the privilege of an examination by the State Veterinary Board of non-graduates or graduates of schools that are not recognized after May, 1902. * * * The veterinary convention in Detroit last September did us a great deal of good, and there will be a good delegation from Michigan to Atlantic City next September."

New Jersey Represented.—Delegates, Dr. L. P. Hurley, of Hopewell, N. J., Dr. Chas. E. Magill, of Haddonfield, N. J., and Dr. H. W. Read of Freehold, N. J. were in attendance at the annual meeting of the Pennsylvania State Veterinary Med-

ical Association held at the University of Pennsylvania, Philadelphia, March 5th and 6th, as well as several other well known practitioners of New Jersey. President Lowe, of the "Veterinary Trust," was also a visitor at Philadelphia during the meeting and told of some of the interesting features of the forthcoming National Convention of the American Veterinary Medical Association to be held at Atlantic City the first week in September. The attractions of Atlantic City as a seaside resort alone will undoubtedly draw a large attendance. He said that it is expected that the Atlantic City meeting of the A. V. M. A. will be the largest attended meeting of any ever held in the history of the national organization, and the profession of New Jersey is proud of the honor of welcoming the veterinary hosts within its borders.

To Give up Autos.—After seventeen months' trial by the Illinois Electric Vehicle Transportation Company the electric cab, as a public conveyance, is declared to be a failure, and the directors of the company have voted to go into liquidation and sell their assets. The directors reached this conclusion a week ago last Saturday, and have called a special meeting of the stockholders, to he held in Jersey City, April 4, when it is expected the action of the directors will be ratified. The official reason given for going out of business is embraced in a paragraph in a notice sent by President Insull to the shareholders, as follows: "Your board is of the opinion that, owing to local conditions and the consequent high cost of maintenance, the vehicles now owned by the company cannot now be operated in the city of Chicago on a profitable basis." The local conditions referred to are the streets of Chicago. The heavy vehicles, in lurching about through ruts and rotten pavement, pounded the machinery to pieces. There are not miles enough of good pavement in Chicago to render profitable electric transportation. The cost of operation was extraordinarily large, being equal to 194 per cent. of the gross receipts. So that for every $1 taken in the company had to spend $1.94. It began doing business Sept. 13, 1899, and up to Feb. 1, 1901, the operating results were as follows: Gross receipts from passengers, Sept. 13, 1899, to Feb. 1, 1901, $137,106.90; operating expenses, $265,885.37; expenditures over receipts, $128,778.47; percentage of expenses to receipts, 194. The showing of total receipts and expenditures in addition to operating expenses indicates that the experiment of running electric cabs in Chicago has cost local and Eastern capitalists about $475,860, this being a dead loss. The

company has outstanding 158,620 shares of stock of the par value of $10 each. Aside from 120 shares of this number, the amount paid in was $5 per share. It is estimated that in one way and another there may be realized for the stockholders, $2 per share, leaving three-fifths of their investment a loss. The vehicles cost the company about $3500 each, and it now owns 109. The depreciation, of course, will be severe. The cabs will probably be sold in other cities where the conditions are more favorable to operation. The Illinois Electric Vehicle Company is an off-shoot of the Electric Vehicle Company of New York, from which the local company purchased vehicles. It agreed to pay the New York concern 2½ per cent. of the gross receipts, and to give it 20 per cent. of the local company's capital stock. These two contracts have been canceled by Mr. Insull, so that in the distribution of assets only stock on which money has been paid will receive any returns. The company has had the best of management, and the board of directors was made up of prominent local and New York capitalists. The directors are: Samuel Insull, C. F. Kimball, Robert T. Lincoln, C. K. G. Billings, Edward L. Brewster, Levy Mayer, Robert McA. Lloyd, Martin Maloney, and Harry Payne Whitney.—(*Chicago Inter-Ocean, March 5.*)

Removing a Horse's Lung.—Remarkable Operation of a Local Veterinary—Animal is Now as Frisky as a Colt.—The following article is taken from a Springfield (Mass.) newspaper, and is published without comment: "At the horse hospital of Dr. E. C. Switzer on Jefferson Avenue is a frisky big-boned draft horse whose liveliness would seem to belie the fact that rude hands had penetrated his innermost being and abstracted a section of his breathing apparatus. The operation was not only the means of prolonging to a good old age the life of a valuable horse, but it marks a new era in the field of veterinary surgery, being the first operation of its kind of which there has been any record. The horse that was a short time ago relegated to the grave is now fattening up and champing in a stall impatient for its release, despite the fact that the greater part of its left lung has been removed. The horse was sent to Dr. Switzer by its owner, suffering with what had previously been diagnosed an abscess formation in its stomach. There was seemingly no hope for the animal and the owner was willing that it should be condemned to the rendering works, but Dr. Switzer was of the opinion that the horse's life could be saved, with its usefulness unimpaired, and he

prepared for an operation, the first of its kind and directly contrary to the accepted teachings of the veterinary cult. The horse, a big bay, whose weight had been terribly reduced by sickness, was barely able to stand up in the operating room. Dr. Switzer and his assistants prepared the animal for the ordeal by copious injections of eucaine. After making an incision in the side at the spot where the trouble had been located with the subtlety of human surgery, the 13th rib was bared and a section of about six inches in length was sawed out. Extending the opening until it was about four inches square it was possible to directly work upon the diseased lung. In the meantime an entrance had been made through the horse's throat to the trachea, where an irritant solution was passed into the lungs, effecting the work of clearing the foreign matter from the organ and facilitating suppuration. At the line of demarkation dividing the healthy portion of the lung from the part where disease had fostered the knife was quickly brought into play and while the horse, though conscious, suffered not even a twinge of pain, the diseased lung was entirely removed and the cavity cleared of the corruption. The operation took place three weeks ago and the horse immediately began to mend, getting restive if his modicum of oats and hay were not promptly served and exhibiting no ill effects from the remarkable operation. Day by day the interior of the animal has been carefully washed and the wound closed gradually by natural granulation, until now there is an opening in perfect process of healing scarcely more than an inch in diameter where the doctor had been able to pass in his hands freely. Every day the horse is taken out into the open for a little canter, and he cavorts and tugs at his halter like an unbroken colt. It is certainly a remarkable case of veterinary surgery and will command widespread attention in the ranks of the vets. The spectacle of a horse's lungs in operation through a convenient opening in his side is a little gruesome, but in a short time the wound will be perfectly healed with nothing to indicate that the horse is not all there."

HEAVY FINE FOR EXPOSING GLANDERS.—Dr. William J. Finn, a veterinary surgeon at 285 Jay street, Brooklyn, N. Y., was fined $250 yesterday in the Court of Special Sessions for cruelty to animals. The charge was brought by the Society for the Prevention of Cruelty to Animals. The charge on which the surgeon was convicted was that he had allowed a horse suffering with glanders and farcy to be led through the

streets, thereby endangering the health of the community. The disease glanders is contagious and is one of the worst diseases that a horse can contract.

The society regard the winning of the case as most important. It is the first instance in the history of Brooklyn that a veterinary surgeon has been convicted of a similar charge. For that reason the court was lenient, stating that if Dr. Finn or any other surgeon was again convicted for the same misdemeanor the limit of $500 fine and one year in the penitentiary would be imposed.

The horse in question was owned by Nathaniel Terrel of 41 Water Street, Manhattan. On March 9 he sent the horse to Dr. Finn. Three days afterward Dr. Finn telephoned to Terrel that the horse had contracted glanders. Terrel replied that he could dispose of the horse in any way that he saw fit. On the same day Dr. Finn engaged William J. Canavan of 78 Atlantic Avenue to take the horse to Maspeth, Queens County, where the animal was to be disposed of. For this service Canavan was to receive 25 cents.

He had gone as far as North Oxford Street and Flushing Avenue on his way with the horse when the animal fell completely exhausted. Canavan could not get the horse up. After considerable delay he telephoned to the office of the Society for the Prevention of Cruelty to Animals and notified them of the facts of the case. Officer Nicholas Grace was sent from the office to investigate. When Grace made his investigation he found that beyond a doubt the horse was suffering from glanders and farcy. He communicated with Inspector F. O. Clarke, who ordered him to secure warrants for the arrest of Dr. Finn and Canavan, the former for allowing the horse to be led through the streets in such a condition and the latter for leading it. The two men were arrested on March 15 on warrents issued by Magistrate Teale. When they were brought up for hearing before the magistrate they both waived examination and were held for the action of the Court of Special Sessions.

The case was tried yesterday, Judge Fitzgerald presiding. Lawyer John A. Anderson appeared for Dr. Finn and Canavan, while George F. Elliott looked after the interests of the society. The first witness who was called was Terrel, the owner of the horse.

Among the witnesses present were Dr. George H. Berns, of 74 Adams Street; Dr. Roscoe R. Bell, of Seventh Avenue and Union Street; Dr. E. B. Ackerman, of Lee Avenue and Clymer

Street, surgeon for the Board of Health; Dr. Samuel Achison, of 787 Herkimer Street; Dr. Goubeaud, of Atlantic and Carlton Avenues, and Dr. H. Brotheridge. Each in turn testified that although he had not seen the horse the symptoms described were those of glanders and farcy.

Dr. Finn produced his assistant surgeon, Dr. Hayes, who said that he had been present when the horse was first brought into the stable. He said that he had examined it thoroughly, but had found no sign of glanders.

At this point Judge Keady asked the witness, Dr. Hayes, if he was practicing veterinary surgery under a license. The witness replied that he was not.

The next witness on the stand was Dr. Churchill, of Morristown, N. J. He said that he had examined the horse in Manhattan before he had come to Brooklyn. He testified that he saw no signs of glanders. He also was asked if he practiced under a license of the State of New York. He replied in the negative. He as well as Dr. Hayes was reprimanded by the court.

There was some excitement when Dr. Finn made the statement in his testimony that when Officer Grace served the warrant on him the officer made the proposition to him to settle the matter then and there. Grace promptly arose and accused the doctor of testifying falsely. Judge Fitzgerald rapped for order and said that he put confidence in the word of Grace, as he had been in the court a number of times previously and had always been found reliable and honorable.

When the testimony was all in the court had a consultation. As the result Dr. Finn was fined $250 or three months in the Penitentiary. He paid the fine. Canavan was found guilty, but sentence was suspended.—(*Brooklyn Eagle, March 28.*)

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AMERICAN VETERINARY REVIEW.

MAY, 1901.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

OXYGENATED WATER.—Probably the use of oxygenated water in the dressing of infectious wounds has not found extensive or even any application in veterinary practice. Its advantages are, however, very great, and many human surgeons have taken advantage of its properties. However, while these are quite important, the use of this water is not without inconvenience or even danger; such as, for instance, the danger of explosion, the alteration of the parts of instruments made of rubber or of leather, which are used to apply it; or, again, and this is most important, the great and long pain that patients endure by the irrigation.

Besides all of these objections, which might be overlooked in veterinary surgery, there is another which a Corresponding Member of the Royal Academy of Medicine of Belgium, Mr. C. Moreau, has a tendency to consider as a great danger, not yet recognized, but which he says may put the life of a patient in danger. This objection has been the cause of sudden death in a patient, whose thigh had been amputated and in which the stump had a frightful secondary hæmorrhage, eight days after the operation. Taking into consideration the destroying influence of oxygenated water, the gentleman thought that perhaps the accident was due to that influence upon the catgut which had been used to ligate the large vessels and to the subsequent disorganization of the obliterating clots.

Having failed to examine the stump of the leg of the patient after death, Mr. M. placed pieces of catgut similar to those which had been used in the operation, one in a tube containing artificial serum, another in a tube containing oxygenated water. In the first the catgut remained in perfect condition, while in the latter it was disorganized.

The conclusions to be derived are quite positive: (1) There is danger in irrigating wounds of amputation (or any other, we should think) with oxygenated water when in those wounds ligatures with catgut have been applied; (2) if for any reason such irrigations are to be resorted to in the course of a treatment, it will be prudent, during the operation, to ligate large vessels with other means than catgut, thick braided silk, for instance.

***

A FORTUNE FOR A CURE FOR TUBERCULOSIS.—Perhaps our memory is serving us poorly, but it seems to us that when we were young we heard of enormous prizes offered for successful treatment of some contagious diseases, and among them we think rabies and glanders were those for which the biggest rewards were offered. Rabies, if not curable, is, thanks to Pasteur, now preventable. Glanders—well, Nocard has proved to us that in some cases glanderous horses malleined several times would at last stop reacting, and at post-mortem would be found free from glanders. Did Pasteur and Nocard receive the prizes we heard of in our youth? We do not know; but still the idea of stimulating scientific labors is not extinguished, and as our friend Pion says in the *Semaine Veterinaire*: "Physicians and veterinarians have urgent reasons other than glory alone to stimulate them in fighting the universal and fatal contagion of tuberculosis. The following prize is indeed worthy of consideration: '*François Joseph Audiffred Prize.*—An income title of 24,000 francs (say $5000). This prize shall be given to the person who, without distinction of personality or profession, will in the length of twenty-five years from 1896 discover a curative or preventive, considered efficacious and

sure, against tuberculosis, by the Academie de Médecine of Paris.' "

This will certainly stimulate the courage of many workers, and the bacillus of Koch will have to look out very close if it wishes to escape the enormous army of searchers and bacteriologists which all over the world will conspire against it.

* * *

SEROTHERAPHY is the method of treatment which borrows its agents and therapeutic means from natural or artificial serums: *natural*, such as that of the physiological blood, that of the blood from cured or convalescent individuals, that of immunized animals; *artificial*, although this expression is scarcely properly applied, for saline solutions which do not resemble, even roughly, the complex composition of the serum of the blood. But debatable as it may be, it is admitted, and will probably stay in ordinary nomenclature.

Of the natural serums used in veterinary practice, but little can be said, as, perhaps, with the exception of the antitetanic serum, which is considered essentially as a preventive, they have found but little application in veterinary medicine. It is true, however, that the antistreptococcic serum of Maroneck has been used with more or less satisfaction; perhaps, also, that of Calmettes, and I believe also attempts have been made with the antidiphtheric serum. The typical among the artificial serum is the secretion of chloride of sodium (ordinary salt), although there are others made of various saline solutions, but which have somewhat the same essential properties. The medicated serums are simple serums to which various drugs have been added.

The type of the artificial serum, the solution of common salt, so-called physiological, is quite extensively used in human medicine, and the benefits which have and are obtained by its use are matters of record in many medical journals in Europe. In a previous article we have already briefly alluded to the subject, and a discussion which took place lately at the Société

Centrale de Médecine Veterinaire in Paris, brought the question of serotheraphy to the front, and explains the present remarks of our "Chronicle" of to-day.

Pleurisy and its natural sequela, effusion, was discussed, and while the general opinion sustained by such old clinicians as Nocard, Trasbot, Leblanc and others, that pleurisy was and had always been a very serious affection, more commonly followed by death than by recovery, younger members were quite in number who claimed that the prognosis of the affection had lost a great deal of its severity, by the more frequent application of thoracentesis, which, with the antiseptic measures of the present surgery, was no longer a dangerous operation, and since serotheraphy was added to it.

In the *Repertoire*, a journal published by Mr. Laquerriene, a series of articles have appeared from a military veterinarian, Mr. Brocheriou, in which the subject is extensively treated and eight cases of serious pleurisy with abundant effusion are recorded as owing their radical recovery to thoracentesis, and to the injection of artificial serum. The result is too great to be ignored, and the addition to the ordinary treatment too simple not to deserve a trial.

The artificial serum is readily prepared. Seven and a half parts of chloride of sodium are dissolved in one thousand of water. The injection is more ordinarily done subcutaneously, but has also been used by Mr. Brocheriou in the veins. To inject, the solution is placed in a closed vase hanging 9 or 10 feet above the patient. The vase is provided with a rubber tube, at the end of which is the trocar. The flow is regulated by a small brass cock. The injection must be made very slowly, four hours being required to inject about 3 litres of serum. Minute antiseptic measures are required. The subcutaneous injection is made on a level and a little back of the cartilage of the shoulder. The jugular is used when venous injection is resorted to. The quantity of serum to inject seems to vary according to the case, 2, 3, 4 litres have been injected under the skin, 1 litre and a half in the jugular, at a time. Some

of the patients received only 11 litres altogether, others more; one had 23, of which 3 were in the veins.

How does the injection act in those diseases? According to some authorities, while the use of the artificial serum is indicated in hæmorrhages, the various forms of collapse, some infections and intoxications, they are contraindicated in cases of renal, cardial, pulmonary and arterial lesions. However, when one takes in consideration that artificial serum, very much like the washing of the blood, is an active stimulant of the nervous system, that it stimulates principally the cardial and vaso-motar nervous system, reinforcing the tonicity of the blood vessels and the energy of the heart; and, again, that the effects which are recorded of very abundant diuresis following their uses, there can be but little doubt that great benefit can be derived by them when combined with the mechanical relief obtained by thoracentesis and assisted with the ordinary internal form of treatment.

* * *

ELECTROCUTION.—If, as the REVIEW has always held, the dangers to veterinary practice likely to occur from automobilism are not to be taken as seriously as some pessimists would have us, it must be acknowledged that the use of moving factors to take the place of horses has made enormous progress within the past ten years, and to-day, instead of horses to roll heavy tramways or cars, we meet with the assistance of that force obtained by compressed air, steam, and last, but not least, electricity.

These, however, have their objections, and to speak only of the last, I may mention that the subject of electrocution is the one which occupies at present the close attention of veterinary practitioners in some capitals on the Continent. In Paris, principally, the subject is very seriously considered, and has given occasion to one member of the Société de Médecine Veterinaire Pratique to present a long paper upon the accidents resulting from the use of electricity on some of the tramway lines of the "Gay Capital." The Thomson-Houston or trolley system, either above or under ground, is not very extensively used, but

the system Diatto is, and on several streets where it is applied accidents which have varied in intensity from partial paralysis to complete electrocution and death have been observed in quite sufficient number (some 34 in a month, I believe, on one line) to create severe disputes, lawsuits, refusal of payments by insurance companies, etc.

Of course, the subject is full of interest, and veterinarians are very much perplexed, as the effects of such electricity are not very minutely known, the symptoms which result from an interrupted or from a continuous current the characteristic brain, if any, that excite all these are points of great importance, and it is with the hope of their explanation that a committee has been appointed to carry out a series of experiments on horses which would be placed as near as possible in the conditions met in the street by those traveling upon a track upon which the Diatto system of electricity is employed.

Being a member of the Société de Médecine Veterinaire Pratique, I have had the honor to be named as one of the committee and to assist in the first experiments which were carried out on two horses, and to witness the post-mortem examinations which were made at the laboratory of the chair of pathological anatomy at Alfort.

As that first experiment was only a preliminary, and is to be followed by others, I will postpone to a later day the minute description of the manifestations exhibited by the horses when they were submitted to currents of 550 and 650 volts; but for the present I will only say that one of the horses stood six applications before he was killed by a seventh, having received 550 volts at each time, and that the second horse received first a shock of 650 volts, a second of 700 and a third of the same number, which killed him.

The post-mortems were made the same day and witnessed by a large number of veterinarians. But as stated in the conclusions of previous experiments made by MM. Prevost and Battelli, there were no characteristic lesions—in fact, it may be said that there were none.

In a later communication I will send the REVIEW the minute description of the symptoms presented by the two electrocuted and report the result of the post-mortem examinations.

* * *

THE AGRICULTURAL SHOW.—Quite a change, was it not? The Great Palace, one of the finest, if not the finest, among the buildings of the Exhibition in Paris, has changed destination, and instead of the pictures and sculptures which it contained a few months ago, it gave lately shelter to the show of fat animals, or the agricultural show. This exhibition is usually very large, but this year it has failed to have the same importance, probably due to the limited space which was allowed for the reception of the animals. Breeding stocks and live fowls were excluded, and on that account the event lost a great deal of its attraction.

The exhibition of fat animals was the most important part and was composed of the finest samples of various bovine, porcine and ovine races. Among the principal animals, I noticed a Chardlais steer which weighed 1199 kilogs.—nearly 2500 pounds; then another crossed Chardlais and Durham which turned the scales at 1157 kilogs., and one Normandy with 1122 kilogs.

There were also a very handsome gathering of milch cows—among which the Normandys carried many prizes.

The largest pig weighed 298 kilogs.—over 500 pounds—the others, which were quite handsome specimens, weighed on the average 250 kilogs.

The general arrangement of this show was comparatively good, but I do not know if I am prejudiced; one glance several years back when I visited some of the cattle shows in the States, it seems to me that they were more complete, more thoroughly organized—perhaps I was more familiar with those than I am here; but, with all that, the figures of the weight of some of the animals tell certainly of their right claims to admission at a fat cattle show with justifiable expectation of carrying prizes.

A. L.

FELINE DIPHTHERIA.

We are not sure but that the case of diphtheria in a cat, recorded in this number of the REVIEW, in the department of "Reports of Cases," is the only authentic instance of this disease occurring in private practice in the city of New York. In this case the diagnosis was confirmed by a culture taken from the throat of a suspect and submitted to the Board of Health for microscopical and inoculation tests. The report of the microscopical examiner is that "the culture shows the presence of organisms morphologically identical with the Klebs-Loeffler bacilli," while that of Dr. Park, of the Research Laboratory, emphasizes the correctness of the diagnosis by saying that "the bacilli proved to be fully virulent and true diphtheria bacilli," further remarking that "this is the only case that I have been able to get the bacilli from." Diphtheria has in many instances been artificially inoculated into the feline species, with virulent results, and their susceptibility has for a long time been unquestioned; but here is a case of extremely virulent bacilli inoculated by contact with some affected animal, whether of its own species or the *genus homo.* When the close companionship between the family cat and the young members of the household is considered the danger of transmission can be appreciated, and as the nocturnal perambulations of cats is probably the most prolific source of infection, the operations of castration and ovariotomy may be classed among the most efficient prophylactic measures.

THE lengthy correspondence which has appeared in the pages of the REVIEW for the past few months between Dr. James Robertson, of the Illinois Board of Veterinary Medical Examiners, and Dr. S. H. Swain, of the Illinois Veterinary Medical and Surgical Association, is further added to in this number by the latter gentleman. As the controversy has become narrowed to expressions of personalities, and as no public good can follow its continuance, the REVIEW must ask that the subject be closed so far as it is concerned. Having accorded to

each space for two communications, it assumes that no fault can be found with its desire to see fair play.

MONTANA has secured a model law protecting her food supply, mainly through the efforts of State Veterinarian M. E. Knowles. When a State in the far West can accomplish so much through the single-handed energy of one enthusiastic veterinarian, populous Eastern commonwealths should not longer remain benighted. We congratulate Dr. Knowles on being a veterinarian, and the profession on possessing him as an honored member—but we cannot advocate Helena for the meeting of 1902.

NEBRASKA is in line with a State Veterinarian and deputies. The members of the profession in that commonwealth are placing a scotch behind every turn of the wheel of progress, and they are deserving of the best laws that can be enacted.

ORIGINAL ARTICLES.

OXYGEN AS A THERAPEUTIC AGENT.

BY DR. J. CAMPBELL, CHICAGO, ILL.

Read before the Chicago Veterinary Society, December, 1900.

Oxygen was discovered by Priestly in 1774, the honor of its discovery being divided with Scheele. He demonstrated the fact that dogs, rabbits and other animals, immersed in an atmosphere of oxygen became more lively, active and brilliant; that the dogs could endure greater hardship and a longer chase when allowed to breathe the gas for a short time before the start than similar animals not thus prepared. Later, these results were confirmed by Lavoisier, who still further demonstrated the fact that the muscles of animals repeatedly subject to the influence of oxygen gas became decidedly firmer than the muscles of those who were not subject to the influence of the gas. Among the earliest investigators of repute were Dr. Beddoes and Sir Humphry Davy; they were also assisted by some of the most emi-

nent scientists of their day. These men, after spending much time and money, were forced to abandon it on account of the difficulty and expense in preparing a pure article and making it available. These men were followed in turn, in 1820, by Drs. Hill, Thornton, Gavallo and McCormack somewhat later.

The difficulty and cost of producing oxygen and making it available rendered their efforts in introducing it as a therapeutic agent of no avail. Following these were various men of note in the profession in Europe, such as Goolden, Birch, Alexander, Erichson, Richardson, Demarquay, and others. All of these men have investigated the subject, have used oxygen, and without exception admit its potency in the treatment of disease.

Demarquay's reports to the Academy of Medicine in 1866 at Paris were considered conclusive as far as the subject was covered by him; his reports have never been reproduced in America. Dr. McCormack published a small volume on this subject in London in 1856. Dr. S. B. Birch published a monograph on the subject of oxygen as a curative agent in 1857. The second edition, published in 1858, was the first to command any degree of attention. On page 148 the author says "that oxygen artificially prepared is a powerful, really scientific, and agreeable curative agent, is capable of far more extensive range in its application to the rational treatment of chronic diseases than perhaps any other remedy—is preëminently nature's own therapeutic, affording assistance in her own way without opposing the intentions of her ever present *vis medicatrix*, and is entitled to the position of a curative in a variety of intractable diseases, otherwise incurable by any other known means. It is occasionally the remedy, and the only one worthy the name, in certain contingencies where life must be (and frequently is) sacrificed by neglecting a fair trial of it." He adds also, "that sooner or later oxygen will be universally admitted as one of the most valued remedial agents." This sanguine prediction, made by Dr. Birch, of Manchester, England, in 1858, has not yet been attained on account of the insuperable difficulties of mak-

ing the treatment generally available in private practice.

In this country we have several men of some reputation who have given the subject considerable attention. Dr. A. H. Smith, of New York, who wrote a prize essay on oxygen, published in the *New York Medical Journal* of April, 1870, after large experience and many cases of various kinds treated, says: "It is contrary to the economy of nature that the blood should have the capacity for absorbing more oxygen than nature can supply, under circumstances involving the greatest physiological demand for oxygen." Dr. Smith gives a record of a large number of cases treated, with the results in each case. Following Dr. A. H. Smith was Samuel S. William, A. M., M. D., of Bloomingdale, New York, in four articles published in the *New York Medical Record:* first, October 27, 1883; second, November 10, 1883, September 13 and September 20, 1884. Dr. William had an experience extending over 20 years; after 16 years' experience he says:

"The physiological relations of oxygen are definite and limited, while its nature and potency as a therapeutic agent, as yet not fully understood, is entirely unlimited"; he says, "nor do we yet practically realize the fact, that there is no antiseptic known of equal potency with pure oxygen, or that there is no antiseptic compound which does not contain this vital element." Should this presumption prove to be well founded, it devolves on this microchemic age to devise methods for the convenient and successful use of the real and safe factor, to the exclusion of the noxious, carbonized elements at present so largely composing antiseptic mixtures and thus forever do away with carbolics, salicylic and all other antiseptic septæmia. Pasteur has demonstrated that any form of germ, cultivated in an atmosphere of oxygen, will lose all its virulence.

Among the general profession, from some unknown cause, a sort of chronic impression prevails, based on neither science, reason nor experience, that the therapeutic use of oxygen has been tried and failed. This, however, is not the case. You can trace the entire line, from the discovery of oxygen in 1774

down to the present, and you can find no well authenticated case where it has been properly used and failed. However, the shortcomings of impure and carelessly manufactured gas, have done more than all else to bring the use of oxygen into disregard and discredit and prevent its timely use by the profession in many cases. Still, the use of oxygen as a gas can never come into general use by the profession, on account of the impracticability of moving the generating apparatus around from one patient to another, or of carrying in a suitable receptacle the gas already generated. While vast improvements have been made in the *modus operandi* of obtaining pure oxygen, yet the impracticable part has not and cannot be removed so long as we deal with oxygen in the gaseous form; the fact, however, that oxygen as a gas has been found to be impracticable, does not in any way lessen its therapeutic value, when a means has been discovered by which it can come into practical use. In considering this subject there are a few facts which it will be well for us to bear in mind:—first, a healthy adult, at active exercise in the open air, inspires daily one thousand gallons of oxygen diluted with four thousand gallons of nitrogen. Oxygen from the air is readily absorbed by the blood in the pulmonary circulation, and in the general circulation the oxygen is given up to the tissues and carbon dioxide takes its place in the venous blood.

According to Professor Dalton, carbon dioxide is given off in the pulmonary circulation and oxygen absorbed, while in the general circulation the reverse takes place; oxygen is given up to the tissues and disappears and is replaced by carbon dioxide in the venous blood.

Burdon-Sanderson has further shown that the red blood cells are the main carriers of oxygen and that the condition in inflammation, in its earlier stages, essentially consists of a sluggish and finally immobile condition of the white blood cells, from want of a due and regular supply of oxygen; and, further, that the activity of the white blood cells is in exact proportion to the amount of oxygen present. This effectually refutes the

idea held by some, that an over supply of oxygen to any part necessarily induces an inflammatory condition.

The carbon dioxide, which is always found in much larger proportion in venous than arterial blood, is the result of the decomposition of the cell tissue ; this is retrograde metamorphosis and is a condition that continues without interruptiom from birth until death. Therefore, imperfect or impeded metamorphosis is disease, while arrested metamorphosis is death.

Oxygen is the chief, and decidedly the most important element, in the process of tissue building. It is a fact that cannot be successfully controverted, that oxygen is a constructive agent rather than a destructive, as taught by many. Any one who has given this subject that careful consideration to which it is entitled, must arrive at the inevitable conclusion, that the primary action of oxygen contributes directly toward constructive rather than destructive metamorphosis.

Instead of continually breaking down tissues by oxidation, as many suppose without thinking, the fact is that oxygen, and oxygen only, by supplying in itself an essential element toward such repair, and by stimulating and correcting at every step the assimilative process, is the only agent that can bring about and consummate the reparative process. While this is true, yet it is also true that oxygen is the chief agent in the work of destructive, retrograde metamorphosis ; this is its secondary action within the economy. In order to fully understand the physiological and pathological conditions that obtain within the economy, it is of the utmost importance that we fully understand and realize the true action of oxygen, and the part it plays in relation to the problem we designate as life and death.

What is life, and how is it sustained—and what is death? These are questions that might be properly discussed in this connection, but as a discussion of these points would be purely metaphysical and of no practical value to either the physician or surgeon, we pass them by and confine our remarks to that which is practical. Oxygen and carbon dioxide both exist in the blood ; in arterial blood, in the proportion of about 1 to 2 ½,

while in venous blood the proportions are materially changed; here we find the proportions about one to four, showing a large increase of carbon dioxide.

The venous blood, in its passage through the pulmonary circulation, gives off its carbon dioxide and receives a fresh supply of oxygen; this new supply of oxygen is in the general circulation given up to the tissues, for the purpose of supporting, strengthening and building up any destroyed and broken-down part of the economy that may exist. This process of building up and tearing down is a continuous process, beginning with life and only ending with death. Therefore, any condition which will interfere with a full normal supply of oxygen being received by the economy will result in disease. So also impeded or retarded metamorphosis will mean the same thing—disease.

Fully realizing and understanding the above conditions, we are better prepared to combat disease, which is the result of the derangements of some of the conditions before stated, which may be aggravated by the existence of some specific germ of disease.

Take an average man in good health weighing 160 pounds, with moderate exercise in the open air during the day, he will absorb into the blood, during its passage through the pulmonary circulation, 160 gallons of oxygen from the air; to obtain this amount of oxygen he is obliged to inhale about 5000 gallons of air; 4000 of it being nitrogen and 1000 oxygen. The amount inhaled varies very considerably, depending on conditions—the amount of exercise taken, etc. But for practical purposes, we will assume that from 10 to 20 per cent. of the oxygen inhaled into the lung is utilized by the blood, which will give us very close to one gallon of oxygen for each pound the man weighs; this will be the normal supply for 24 hours. With that amount of oxygen absorbed by the blood in its passage through the lungs, in addition to what may be utilized through the stomach, etc., the man will retain a normal amount of health.

In a normal condition we can assume that the circulation of the blood is uniform and regular throughout the body; this being true, it will require about one gallon of oxygen for each pound of the body on an average, and it is only on the average supply that we can base our figures. Under certain conditions and under certain circumstances, however, this will very materially change. As we have before stated, carbon dioxide is the result of retrograde metamorphosis of the tissues; in venous blood, it is in about the proportion to oxygen of one to four; this seems to be the limit set by nature where the work of reparation can take place. While that may be the proportion in the general venous circulation, yet there are local conditions where the amount of carbon dioxide is much increased, and we must remember that when the proportion of oxygen to carbon dioxide is increased beyond that point, the work of reparation is slow, and as the proportion of carbon dioxide increases, the reparative process stops altogether. For the purpose of fully demonstrating the point I wish to make, suppose we select from the great variety of wounds and old sores that are met with in practice, the class of sores generally known as indolent. While there are many varieties of sores that yield readily to almost any kind of proper treatment, and even some that are called indolent may also yield to good treatment, yet the special condition of sore to which I refer has no tendency to heal; in fact, it cannot be healed by any treatment now generally known to the medical profession. For this reason it has been called the "Opprobrium Medicorum." All the varieties of caustics and cauteries have been used without avail—the acid, alkalies and metallic caustics, as well as the actual cautery, and the only result, as a rule, so far obtained, has been to increase the size without in any way changing its indolent character. The medical profession for many years have recognized the fact that this indolent condition was brought about and maintained by an imperfect or impeded circulation to the affected part; consequently, all their efforts have been directed to acquiring a means by which the impediment to the circulation could be

removed, fully believing that a full and free circulation to the affected part would very soon change the indolent character of the ulcer; that being accomplished, the sore would rapidly heal. It has long been held by many in the profession, and is still held by some, that the free use of caustics or the actual cautery, by setting up a local inflammation in the part, will attract a full circulation and maintain it until the solution of continuity has been repaired. While this mode of treatment looks well from one standpoint, and from that standpoint appears rational, yet we know that in practice it is an absolute failure in the conditions to which I refer. The reason becomes very plain to us when we study the conditions that are necessary to produce and maintain an indolent sore.

I agree with the general teaching, that this condition is produced by a diminished circulation to the part, but I do not agree with the generally accepted statement that the diminished circulation is *per se* the cause. I believe, as I shall fully demonstrate to you, that the quality of the circulating medium and not the quantity is responsible for the conditions. If you examine the blood in an ulcer or wound of this kind, you will find that the proportion between oxygen and carbon dioxide is considerably increased beyond the ratio of one to four. This being true, we understand at once why the sore will not heal: we know why the application of any cautery is perfectly useless and why the general antiseptics at present in use are of no avail. This brings us to a consideration of the cause or causes which produce this condition and the means by which the cause can be eliminated. As to causes, they are both general and local. Anything that will decrease the normal supply of oxygen in the blood must necessarily increase in the same ratio the amount of carbon dioxide. In this paper it will only be our purpose to deal with local causes; and, first, we believe the primary cause is a lack of oxygen in the blood, generally local; this produces a sluggish movement of the white blood cells; a little more oxygen removed from the blood and they become immobile; this produces a congested condition which results in

exudation into the cellular tissue; this in turn produces more or less swelling and induration; thrombosis obtains and death to the affected part. To assist in bringing about this condition, there may or may not be a direct injury to the part; if an injury be received, then it might be termed the primary cause of the sore, but an injury would not result in a sore, unless the blood supply to the part was deficient in oxygen. The congested condition of the capillaries often extends for some distance around the central point of injury, or the thrombosis; in either case, the tissues are cut off from a normal supply of blood.

(*To be Concluded in June Number.*)

ACUTE HÆMORRHAGIC ENCEPHALITIS PREVALENT AMONG HORSES IN MARYLAND.

By S. S. Buckley, Veterinarian, Maryland Agricultural Experiment Station, and W. G. MacCallum, Resident Pathologist Johns Hopkins Hospital, Baltimore.

Although a considerable literature on acute encephalitis in horses is to be found in the German and other veterinary periodicals, numerous cases in this country have apparently not been recognized. There has occured recently in Maryland an enzoötic form of cerebral affection which was commonly diagnosed and spoken of as cerebro-spinal meningitis and which was very fatal. The outbreak was preceded by another some months before, and, indeed, several other such outbreaks have occurred in previous years, the disease being thought by most observers to occur when the fodder crops had been bad and it was necessary to feed the animals with mouldy fodder. Experimental investigation is of course necessary before any such statement can be definitely accepted.

The present note, therefore, is intended to call the attention of practitioners to certain changes which have been found at autopsy in the cases examined during the recent outbreak, in order that further observations as to the constancy of the lesion

in such cases may be made. In most of the cases reported as cerebro-spinal meningitis, with symptoms resembling those to be described for this outbreak, the results of autopsies have been said to be negative or lesions were found which were quite insignificant in comparison with the severity of the symptoms.

The symptoms, while fairly constant in their general character, vary greatly in intensity. Cerebral disorder is evident early in the attack. The acute symptoms are sometimes preceded by a gradual falling off in flesh and general "unthriftiness," although this is not always the history. There may be drowsiness associated with an impairment of sight, partial or complete paralysis of the pharynx, twitchings of the muscles of shoulders and thighs, coldness of the extremities, and a general condition of unsteadiness and weakness. In motion the tendency is to walk to one side, or a staggering, objectless gait, possibly depending on the presence of unilateral or bilateral cerebral lesions respectively. The pulse is usually normal—the temperature varies between 96 and 103° F. An elevation of temperature usually indicates secondary complications.

A comatose or delirious condition may follow, death resulting in a great majority of the cases after an illness of from three to four hours to a week. The average course of the disease is very rapid, the animal succumbing after 48 to 72 hours. Cases which recover often become "dummies," the name indicating a permanent cerebral affection with loss of intelligence. It is differentiated from the ordinary purulent encephalitis by its occurrence in an enzoötic form.

Post-mortem Appearances.—At autopsy nothing especial has been noticed in the thoracic or abdominal organs—some inflammation of the nasal mucosa has often been observed. In the central nervous system, however, the lesions have been quite definite and constant, as far as could be judged from four brains from autopsies on horses dying after an acute attack of the disease, which were brought to the laboratory with one from a so-called "dummy" which had died from another cause after having recovered from an acute attack several months before.

In the first four brains the meninges were perhaps somewhat congested, but there was no trace of inflammatory exudate. The brain, however, was not uniform in consistency and soft fluctuating areas could be felt. Section of the brains shows these fluctuating areas to correspond with cavities in the brain substance, filled with a softened pulpy greyish yellow mass of necrotic tissue and a glairy, somewhat opalescent fluid. The necrotic material is in large part mixed with dark blood, and there are very numerous hæmorrhages in the adjacent brain tissue. If a section be made through such an area after first hardening the brain in formalin, the fluid described is found to be coagulated into a gelatinous mass like agar, in which lie shreds and masses of greyish brain substance. The adjacent tissue is somewhat greyish and opaque for a distance of about three mm., and is studded with hæmorrhages. In other such areas the greyish, opaque, crumbly brain substance shows only small bands of the gelatinous material, but in all cases the hæmorrhages are prominent.

The blood vessels in the region of such foci were carefully traced, but no occlusion of their lumen could be found.

The situation of the lesion varies—in one brain there were cavities symmetrically placed in the superior portion of the anterior lobes of the cerebral hemispheres—in front of the motor region and above the lateral and olfactory ventricles, which show no obvious alterations. On one side the cavity measured about 1x2 cm.—on the other side about 5 cm. in diameter; they extend about to the line between the grey and white matter of the cortex, leaving the grey matter as a sort of roof. In another brain there was a large cavity in the white substance of the anterior lobe and a second smaller one in the temporal lobe of the same size, while the opposite hemisphere showed no lesion. A third case showed a lesion in the occipital lobe as well as in the anterior.

Microscopically sections through such a lesion with the adjacent brain substance show a complete disappearance of nervous elements in the immediate neighborhood of the cavity.

The neuroglia cells persist however, and there is a moderate exudation of leucocytes, which are scattered about in small groups. In this marginal zone the walls of the small vessels are generally infiltrated with leucocytes and round cells—they are often occluded by hyaline thrombi—others are distended with blood, which also fills and widely dilates the surrounding lymph sheath, often breaking through and lying in the tissue. Such areas, densely infiltrated with extravasated blood, are very numerous and correspond with the hæmorrhages so conspicuous macroscopically. As we pass toward the centre of the lesion the brain substance disappears entirely and is replaced by a granular pink-staining débris interspersed with a clear homogeneous material which stains pink and is very highly refractive. This, the gelatinous material described above, gives only the general micro-chemical reactions of hyaline bodies.

Bacteria were searched for in the sections with negative results, and cultures from the fresh brain as well as inoculations of the softened material into animals were similarly negative.

The fifth brain, that of the "dummy," presented on section a greyish, translucent ramifying scar in the substance of the anterior cerebral lobe on one side—microscopically showing only a loose fibrous tissue; this was evidently a healed lesion. From these cases it would seem that we are justified in concluding that the disease recently so prevalent is an enzoötic form of acute hæmorrhagic encephalitis rather than cerebro-spinal meningitis.

TARSAL TENOTOMY.

By Robert Dickson, D. V. S., New York City.

Read before the April meeting of the Veterinary Medical Association of New York County.

It is not with the idea of presenting to you a new operation, nor a specific in the treatment of exostosis of the hock, but to present an old operation which has been abused in the past, and is now considered by the majority of practitioners as a useless

operation. The reason why the operation has reached its present position is that at the time of its introduction it was proclaimed a "cure all"; the actual cautery was laid aside, and every horse with a spavin was subjected to it, without regard to the location, condition and character of the enlargement, and because it failed to relieve every case, whether favorable to the operation or not, it was condemned, and to-day is, comparatively speaking, an unknown operation.

I contend and will present to you my reasons for believing that it is a most useful operation when performed in cases where the symptoms indicate it. In these cases the percentage of recoveries are much greater than you will get from the actual cautery.

The operation consists in dividing the internal branch of the flexor metatarsi, or curean tenotomy.

Liautard, in his work on "Operative Veterinary Surgery," says that the operation was first recommended by Abildgaard and Viborg, and later performed by Lafosse, Mantal, Grad and Dieckerhoff, stating the operation was commonly performed on this continent, and as all operations upon their introduction were abused and did not receive the credit to which they were fairly entitled, stating that it is indicated for the relief of the pressure which this cunean branch of the flexor metatarsi makes upon the distended periosteum of the more or less enlarged tarsal exostosis, and when the exostosis is, strictly speaking, the only lesion of the hock, it will prove beneficial, but if some articular disease accompany the exostosis the result is uncertain.

The operation as performed in the past and as recommended by Liautard, is as follows:

Instruments necessary: Scissors, straight and convex bistouries, forceps, curved director and a curved tenotomy knife.

The animal is cast on the side of the leg to be operated upon; the upper leg is now carried forward and secured on the upper forearm. The hair is next clipped over the tract of the tendon, which can be readily located and identified by the oblique groove running across the upper part of the bony enlargement.

An incision two and a half inches long is now made with a convex bistoury, either parallel to the tendon or slightly oblique and across its direction, this incision extending down to the bursa. The tendon can now be felt and outlined. The bursa is now raised up with the forceps and opened, exposing the tendon; this is raised up by a curved director and divided with the tenotomy knife, the wound being closed with one stitch and an antiseptic dressing applied, which completes the operation.

At the present day we have improved upon the method described, and in my practice the following method has given the best results.

Instruments.—Scissors, convex bistoury, curved director, and neurotomy band or two blunt tenaculums.

Preparation of Patient.—The operation is performed standing, the patient being placed upon the floor in a good light, and if possible good antiseptic surroundings, standing with the leg upon which you wish to operate eight inches in front of the opposite. The front foot of the affected side is held up by an assistant, and a twitch applied. The hair is closely clipped from the inside of the hock, and the operating surface rendered as near aseptic as possible.

Technique.—A dram of a ten-per-cent. solution of cocaine is now injected over the tendon at the point of operation, and when the part has responded to the cocaine an incision one and a half inches long is made in a downward and forward direction directly across the course of the tendon, this incision extending through all tissues down to the bursa. The neurotomy band or tenaculums are now brought into use and applied so that the lips of the incision are held wide apart and the bursa exposed, which is raised with the forceps and divided with either scissors or bistoury, exposing the tendon, which is now raised with the curved director and divided with the bistoury. The wound is closed with one stitch, a heavy thick layer of collodion is applied over the incision, a layer of antiseptic cotton over that, and all held in place by bands of adhesive plaster. The wound is dressed on the following day and continued until cica-

trization is complete, which will be in from one week to ten days.

By this method of operating the hæmorrhage is slight and will subside with no treatment in time for you to apply your dressing, and very little swelling follows the operation.

Some practitioners advise the removal of a section of the tendon, which I believe unnecessary, as it only complicates and delays cicatrization and does not have any bearing upon the result.

According to all authorities, the only exostoses giving the desired result from the operation are those situated high in the tarsal region and forming a pronounced projection from the hock, or, in other words, a high and prominent spavin.

While I will admit that the results in these cases are more pronounced immediately after the operation, I believe that in all cases where the tarsal groove is at all involved, the result will be satisfactory and equal to the actual cautery, for you not only relieve the pressure caused by this tendon, but also create a counter irritation greater and far more effective than that caused by a blister or fire-and-blister.

I will answer the argument that it is useless, where you have the articular surface involved, in Yankee fashion, by asking, "How many cases with articular complications do you relieve with the actual cautery?" In my practice I confess articular lameness is not a specialty.

I will submit to you a brief report of a few cases that I have operated upon during the past year:

No. I.—Bay gelding, ten years old; a large prominent exostosis, situated high; this horse had been fired and blistered three times, and blistered alone six times during the past two years, and never went sound. Tarsal tenotomy performed on January 10, 1900, the horse being very lame at the time. Cicatrization complete and going sound in ten days; has worked steadily since that date at all kinds of work, including hansom, and has never taken a lame step since.

No. II.—Bay gelding, 16 years old, very large spavin with

more or less anchylosis, very lame, only touching the toe on walking and unable to trot. Operated on March 10, 1900; improvement slow for about two months, when he was able to trot and work, but still showed some lameness in trotting, due to anchylosis or mechanical lameness.

No. III.—Bay gelding, six years old; small spavin, very slight enlargement. Operation May 16, 1900; cicatrization complete in two weeks, with no improvement in lameness. Being a work horse, was put to slow work, and two months from the time of operating was going sound, and is at the present time.

No. IV.—Brown gelding, eight years old; high, prominent spavin. Fired and blistered twice during past year, with only temporary relief; operated on Jan. 6, 1901, when very lame; cicatrization complete in ten days and going sound; is at present only receiving light exercise, and shows no lameness. Am unable to say what he will do when put to work.

No. V.—Black gelding, ten years old, lame for the past three years; large low spavin, with only a part of the groove involved. Operated on July 21, 1900. After recovering from the operation showed decided improvement, and has maintained the improvement since that time, being able to work every day, and now seems to continue to improve slowly.

No. VI.—Black pony, five years old, lame since a three-year-old and unable to work; a high spavin involving the whole extent of the groove; operated on May 10, 1900; on trotting immediately after the operation went sound, and has continued to work and go sound since that date.

One point upon which I am cloudy is, does the spavin enlarge after the operation as a result of the traumatic periostitis? In three cases I believe a slight increase in development followed, in the others it did not.

INFECTIOUS ULCER OF THE VULVA OF CATTLE.

By Dr. C. Miller, St. Louis, Mo.

Read before the Missouri Veterinary Medical Association, October, 1900.

In presenting this short paper on the above mentioned disease my object is not to add anything particularly new or important, although this may be to many of those present, to the domain of veterinary pathology, but rather to assist, if possible, in furnishing some reliable literature on a disease, though so far uncommon, yet sufficiently important to demand our studious attention.

In contributing this article, therefore, the object will be twofold: 1st. Following out the oft-repeated adage that a careful observer makes a skillful practitioner, but his skill dies with him unless by recording his observations he thus adds to the knowledge of his profession in general, and thereby assists by such facts in building up a strong edifice of veterinary science. 2d. By giving a somewhat accurate description of the disease in question, and my limited experience with it, I hope to not only make it easy for other members of the profession, especially the younger members, who may chance to read this article, to recognize the affection immediately, but to intelligently treat the malady with professional accuracy and certainty, and not be left as your humble colleague to diagnose, instruct and treat a disease which he had not even heard of or seen before; hence without any previous knowledge or assistance of any kind. I well remember the embarrassing position I was placed in, and it is with a view of preventing you from being caught in a similar circumstance that I present this paper at this particular meeting. To the best of my knowledge, and I have made some considerable inquiries along this line, there is only one article on this disease on record, and that is a paper contributed by our worthy colleague, Dr. S. Stewart, and read before the M. V. M. A. in the summer of 1898 at their meeting in Kansas City. Doubtless many of you have seen or heard more or less of this affection, especially those of you who were practising during the

winter of 1898 in the Central Western States. This peculiar disease, as I have learned since, was quite generally distributed over four or five States, namely, Iowa, Missouri, Kansas and Nebraska. Other States may have been visited, but not to my knowledge; if so, however, I would be glad to hear the reports of any who may have come in contact with it. In giving a short history of this disease, I don't wish it to be understood that I take issue with Dr. Stewart in the particular name applied.

I have called the affection by the above name simply because in my judgment and experience it best suits the pathological conditions as I found them.

My attention was called to this outbreak in the month of February, 1898, while practising in Ottumwa, Iowa. Several outbreaks occurred in the neighborhood of Blakesburg, and several stockmen came to me for information regarding its nature and probable outcome. I was simply unable to give them any real satisfactory information on the subject, and expressed a desire to go out and see the cases with my own eyes and for my own benefit. On close examination and further inquiries into the history of these particular cases, I still found myself in about as deep water as ever as to a proper scientific name for the affection. I frankly admitted my ignorance of the real nature and importance of the trouble, but promised the parties if there was any literature on the subject I would certainly look it up and be ready to give them some much needed information on my next visit. On returning home I sought wisdom and information from my esteemed brother, who had practised in the State some thirteen years, but without much success, for after exhausting the whole curriculum of veterinary terminology we came to the conclusion it must be a new disease, and hence our duty to give it a name.

The term used in this article was our mutual and final decision, as a fitting appellation of this so far unknown disease, and I will leave it to your judgment as to its correctness or otherwise. The history of the first herd in which I found the

disease is as follows: The herd consisted of twenty calves, thirteen of which were heifers, ranging in age from ten to fourteen months. These calves were highly fed, with open shed for shelter, all in fine condition; in fact, were fat, but had fallen off perceptibly during the siege.

These thirteen heifer calves were all more or less affected when I saw them some eight days after the first appearance of the ulcer. The first thing noticed by the owner one morning was a wound slightly reddened on the lower portion of one of the vulval labia.

No attention was paid to this, however, thinking the old sow had done the mischief while the calf was peacefully asleep under the shed. Not until eight of them were visibly affected was his attention sufficiently aroused and an investigation desired. At this juncture my services were summoned. On the morning of the 8th I arrived at his home and made a hurried examination. We secured several of the affected calves in the stable and made a careful examination of the parts affected.

The first one showing signs of the disease had one lip of the vulva almost entirely eaten off, while the other labia showed a large ulcerous wound, involving the greater portion of its surface. The vulval tissues were so nearly displaced that one could hardly distinguish the animal from a male.

The remaining twelve were all more or less affected, each showing different stages of the same pathological process.

In the remaining five he had not noticed being affected, the ulcers were so small as to escape the attention of a casual observer.

I shall not attempt to give you a lengthy or elaborate description of the distinctive pathological characteristics of this specific ulcer, or endeavor to describe the nature and appearances of the particular micro-organism causing it, but simply and briefly describe its macroscopical appearances as they occur to my memory. This ulcer presented some marked peculiarities, namely, its tendency to spread rapidly, and in the destructive agent confining its action exclusively to the vulval tissues.

The infective agent seemingly having found the proper pabulum and feasted liberally thereon, had no appetite or relish for the rich pastures which lay in such close proximity.

The ulcer in almost every case started in a mere abrasion the size of a pin-head, usually on the internal surface of the labia near the border of the inferior commissure, gradually eating its way through until it appeared as a much larger denuded surface on the outside.

The central part of the ulcer was of a somewhat yellowish color, surrounded by a reddened zone with very irregular borders. On irritating the surface blood would flow quite freely. The temperature of several was taken, but no appreciable disturbance could be detected. The owner said they had not been eating quite so well as usual, and this doubtless accounts for their present falling off in condition, otherwise they seemed perfectly well.

The treatment of these cases could not be considered of very great importance, as I found these ulcers would readily yield to even simple remedies, and not by any means obstinate to heal. However, I will recite the form of treatment adopted in these cases and leave others to profit by its use if they choose. Using carbolic acid as an antiseptic, I took hot water and cleansed the parts, tail included, thoroughly, after which I applied a strong solution of the ordinary white lotion, using a piece of cotton in applying it to the affected parts. The tail, where it came in contact with the vulva, was covered with vaseline, also the parts of the vulva not involved by the ulcer. In those cases where the ulcer was small I touched with a pencil of silver nitrate, which had the effect of arresting the action of the micro-organism at once. In fact, all the ulcers in whatever stage responded immediately to this form of treatment, and commenced healing slowly from the first application. These applications were made for four consecutive mornings, when the healing process was so far advanced that further treatment was deemed unnecessary, and within ten days they were nearly completely healed, with no traces of the disease except in those

cases where the vulval tissues were so nearly completely destroyed before any application was made.

Another farmer some ten miles from this place had a herd of some thirty calves in which the disease made its appearance. He became somewhat alarmed and immediately disposed of them at considerable loss. In a few days he went out and purchased a like number in the surrounding country, placing them in the same yard and feeding them on the same rations. In about ten days these calves showed symptoms of the same disease, and in a few days he was aware that they had contracted the disease. Hearing of his neighbor's experience, he came to me for advice and information. It is useless to tell you I was loaded, and soon relieved him of his anxiety, prescribing the same remedies as before, and sent him on his way rejoicing. I make mention of this latter outbreak simply to establish more firmly the infectious nature of the offending agent.

CHOREA? WHAT IS THE CAUSE?

By D. F. Luckey, Veterinarian Missouri State Board of Agriculture, Columbia, Mo.

On March 22d last, at the request of Dr. A. D. Knowles, of Nevada, Missouri, I accompanied him to the ranch of Mr. David Arnold, Walker, Missouri, to investigate a disease among Mr. Arnold's cattle. On that day we found six or seven head of yearlings convalescing and two sucking calves acting as follows:

Symptoms.—Riding out into the pasture with Mr. Arnold I noticed that the cattle all appeared in a natural condition. They were grazing naturally, ruminating, etc., as one would expect, and seemed to be contented. We gave our attention to a calf which was known to be showing the symptoms in their worst form. When this calf first noticed us it appeared to be slightly afraid. As soon as it was molested it began to manifest the symptoms. The first thing noticeable was a nervous motion of the head from side to side and slightly in an ellipti-

cal direction. The calf standing facing us, it could be seen that the respirations were double the normal in number. The eyes glared. I jumped at it, and in its haste to get away it rapidly lost control of its muscles, going for a short distance in a very awkward, stiff and spraddled gait. A little more excitement which I furnished by jumping at it again and it went down to its knees. Moving along for a few paces, struggling to get back on its front feet, it pitched forward on its neck with its head turned to the right. The hind quarters were still in a standing position. It then fell over on its right side, the head being turned under its body. Another violent effort and it got up to its knees with the head straightened out, but immediately fell over on its left side. As long as we were near enough to cause it any uneasiness it lay there in a helpless and pitiful condition, appearing very much like it might have had an over dose of strychnine. The temperature taken at this time was normal. We walked away about fifty yards and the calf began to recover self-control. During the violent attack of nervous symptoms it was lying flat on its side. It first straightened up to a natural recumbent position, and a little later with some caution rose to its feet. We were absent from the pasture about two hours, looking at some sheep which had shown the same symptoms, and on our return the calf was nursing its mother in a very contented fashion.

These symptoms were shown by all of the affected animals.

During the course of this disease the functions of all the organs except the motor nervous system seemed to go on normally. The general condition of the affected animals was as good as of those showing no symptoms. There was only one death and that in all probability was due to the fact that the yearling, which was found dead, fell into a ditch and died from exhaustion.

History and Surroundings.—Mr. Arnold has constantly on hand an average of two hundred and fifty head of cattle. They are pure bred and high grade Aberdeen-Angus. He has twelve pastures, containing from forty to one hundred and sixty

acres each, all of which are set in grass. They were nearly all set in blue grass, but some in timothy, and all are unusually free from all kinds of weeds and brush. A search for any weed which might be poisonous revealed nothing. The pastures are well drained, well watered, and in every respect almost ideal.

The yearling and two-year-old cattle seemed more subject to these attacks than mature cows or young calves, and do not recover as promptly.

All those showing the symptoms have improved rapidly when put on dry feed, and in from two to four weeks in every case recovery has apparently been complete. However, those which have once been affected and have been cured by feeding on dry feed show a great tendency, on being returned to the blue grass pastures, to become affected again.

From Mr. Arnold I obtained the following interesting history of the disease:

The disease was noticed in about five or six head in 1896, in the fall of the year. A few head became affected each subsequent fall. In the fall of 1898 it was noticed during the dry weather. It never occurred in the winter or spring of the year until 1901, when in March about twelve head were affected. During Christmas week, 1900, about twenty-five head were showing the symptoms, this being the greatest number that was noticed to be affected at any one time. It commonly occurred in October and November. In March, 1901, in a field seeded to timothy and clover, but one corner of which, containing about five acres, was not mowed, a few calves in a herd became affected. On being removed to another pasture all recovered. Cattle in the adjoining pasture, which was set in timothy and clover and had all been mowed, were not noticed to be affected. The disease has not appeared on pastures that have been mowed.

One pasture of forty acres was not used in the summer of 1900. It was kept for winter pasture. In November, Mr. Arnold turned into this pasture about sixty steers, and five became affected inside of a week, when they were all turned out. The

five affected steers were put on dry feed and in a week or ten days showed improvement. Later on they were turned to the blue grass and the symptoms returned in a severe form. On March 23d, after having been on dry feed for about two weeks, the symptoms shown by these five head were not very marked.

On this same forty acre pasture, on the 24th of December, 1900, eighty cows and about twelve calves were placed. In three days as many as twenty cows and calves began to show symptoms. This herd was immediately driven to another pasture, where in the course of two weeks the symptoms became unnoticeable. About the 5th of March they were returned to the-forty acre pasture mentioned above, and on March 23d, 1901, two six-months-old suckling calves had violent symptoms. In these two cases the symptoms returned in about five days after they were put back into this pasture, or on the 10th of March. They persisted and were plainly evident until March the 23d.

Two steers developed like symptoms on a pasture of timothy, clover and blue grass two miles from Mr. Arnold's ranch.

Mr. Arnold has a large flock of well-bred sheep which are kept on the part of his farm devoted to sheep raising. The ground on which they pasture is hilly and of a limestone soil. It is well set in blue grass and contains some wild grass. During the winter of 1900–1901 fifteen of the yearling lambs developed exactly the same symptoms as those shown by the cattle. The flock of sheep was driven through a gate into an adjoining pasture and in two weeks all were entirely well. At my request, on March 23d Mr. Arnold returned eight lambs to the pasture where the disease originally developed among the sheep to await results.

No post-mortem was held. I advised potassium bromide in ounce doses twice a day as a treatment for the cattle whenever the symptoms became alarming. Up to date I have not heard from the result of the treatment nor whether the lambs became diseased again.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

A CASE OF DIPHTHERIA IN A CAT.

By Roscoe R. Bell, D. V. S., Brooklyn, N. Y.

Authenticated cases of true diphtheria existing in the cat are seldom recorded outside of the laboratory. Having had the good fortune to meet the disease in this species, and having fully verified the diagnosis by microscopical and inoculation tests, I herewith present the facts in the case, without embellishment of any kind.

April 2, 1901, at about 9 A. M., a maltese male cat was brought to my office in the arms of a maid, who was accompanied by a young lady living in the vicinity. The lady stated that the animal had been a pet of the household for more than a year, and had been healthy until some three or four days previously, when it appeared sick, refusing food and water and sitting around in a listless manner. It appeared to get rapidly worse, developing a distressing cough, which caused it to gag and make efforts at vomiting. The impression of the family was that it had attempted to swallow a fish bone, which had become lodged in its throat, and it was for the purpose of having this foreign body removed that the cat was brought to me.

The animal was placed upon an operating table, the mouth opened, and a speculum used to examine the throat. This procedure caused such a fit of spasmodic coughing and gagging that shreds of white necrotic membrane were thrown out into the fauces, and the animal appeared as about to asphyxiate from choking. Suspecting a specific trouble the temperature was taken and found to be 105.5° F. I informed the lady that the animal displayed such grave symptoms of diphtheria that I would advise her to have the family physician visit my office and witness the post-mortem, when he could, if no other explanatory cause was found, make a culture of the exudate in the throat and determine the true nature of the disease. The physician, however, did not see fit to accept the invitation, and I proceeded to do so upon my own account. Securing a culture set from a convenient station [the Board of Health furnishes gratuitously these culture sets, and for the convenience of physicians deposits them at designated drug stores throughout

the city]. I destroyed the animal with chloroform and immediately opened the pharynx, where an ulcerated patch about the size of a dime was found, filled and surrounded by a considerable amount of exudate, together with adherent and detached pieces of the membrane. A thorough examination of the entire intestinal tract, as well as all other organs, was made, but no ocular lesion other than the pharyngeal ulceration could be detected. I made the culture in accordance with the directions, and took it to the office of the Board of Health.

The next day I received the following report:

DEPARTMENT OF HEALTH, CITY OF NEW YORK,
S. W. COR. 55TH ST. AND 6TH AVENUE, BOROUGH OF MANHATTAN,
NEW YORK, April 3d, 1901.

Dr. Roscoe R. Bell, D. V. S., Seventh Avenue and Union Street, Brooklyn:

DEAR SIR:—The culture taken on April 2d from a cat shows the presence of organisms which are morphologically identical with the Klebs-Loeffler bacilli. The culture tube has been sent down to the Research Laboratory, at the foot of East Sixteenth Street, in order to have the bacilli tested for virulence. When the report of the same is received we will forward it to you. Respectfully,

LE ROY W. HUBBARD, M. D.,
Medical Inspector.

On the 17th the report from the Research Laboratory was received, of which the following is a copy:

DEPARTMENT OF HEALTH, CITY OF NEW YORK,
CENTRE, ELM, WHITE AND FRANKLIN STREETS,
BOROUGH OF MANHATTAN, NEW YORK, April 16, 1901.

Dear Doctor Bell:

The bacilli from the cat proved to be fully virulent and true diphtheria bacilli. I should consider it a great favor if you would tell me anything you can about the sickness of the cat and the throat conditions, and where the cat obtained it. This is the only case that I have been able to get the bacilli from. Very sincerely, WM. H. PARK,
Research Laboratory, foot East 16th St., New York City.

I. CHOKE IN A HORSE DUE TO PARTIALLY MASTICATED APPLE—INJURY TO THE ŒSOPHAGUS IN PASSING THE PROBANG—FATAL INHALATION PNEUMONIA FROM ATTEMPTED DRENCHING WHILE CHOKED—REMARKS ON THE HANDLING OF CHOKE.

By W. L. WILLIAMS, Professor of Surgery, New York State Veterinary College, Ithaca, N. Y.

Patient, an aged bay mare of ordinary breeding, was presented at the college clinic at 3 P. M., Jan. 5, 1901, with the history that while eating apples at about noon she snapped at the owner while passing near, the sudden movement being immed-

iately followed by symptoms of choking. In an effort to relieve the choke the owner attempted to force the patient to swallow water by means of drenching with a bottle.

The obstruction being firm all attempts at deglutition were necessarily ineffective and the liquid with chance pieces of solids must return to the pharynx to be expelled through the nose or mouth or be inhaled into the lungs. When presented, the animal seemed much distressed, the general expression was one of anxiety, the respiration was hurried and shallow, the pulse weak and rapid. An effort was made to pass an ordinary leather probang, while the animal was standing (secured in stocks), but it met with firm obstruction at the anterior part of the thorax, which with the resistance of the animal rendered the operation impracticable and unsafe.

She was then placed upon the operating table with intent to anæsthetize, but when placed in lateral decubitis, water was seen to run from the nostrils, and surmising that the œsophagus was filled with liquid anæsthesia was discarded for fear of inhalation of regurgitated œsophageal contents.

Opening the mouth widely with the incisor-tooth speculum, the probang was again passed down to the obstruction and by gentle pressure the obstacle gave way and finally was pushed into the stomach. The animal was returned to the stall and muzzled. There was a marked absence of the improvement which should be noted after relief from choking, the expression was still haggard, the respiration shallow, rapid and painful.

Jan. 6. Condition unchanged. Refused water in the morning, drank about two liters in the evening.

Jan. 7. Condition worse; drank a little water; breath very fœtid; pulse imperceptible; respiration rapid and shallow; temperature, 103.7° F. Inhalation pneumonia feared; but an examination of the chest revealed no marked abnormal sounds. Sp. æth. nit. administered per anum.

Jan. 8. Fœtor of breath greatly increased; dark red nasal discharge; patient drank eight liters water; no appetite for food. Tracheotomy was performed, and the trachea and bronchi flushed with normal salt solution, to which hydrogen peroxide was added. The patient died early in the evening.

Jan. 9. Autopsy revealed: 1. A laceration in the œsophageal mucosa in the anterior mediastinal region, beginning approximately at the point of obstruction and extending toward the stomach a distance of 20 cm. The œsophageal tube was

not perforated and the lesion not necessarily serious. 2. A considerable amount of a dark-red serous exudate in the pleural cavity. 3. Diffuse broncho-pneumonia. 4. In some of the deeper-seated central bronchi small bits of apple skin. 5. The stomach contained large pieces of apple, but no entire fruit.

General Observations.—The case is illustrative in many ways.

It is unusual to injure the œsophagus in pushing an apple onwards with the probang with ordinary care. In this instance, however, it appears that the apple had been partly crushed when the patient snapped at the owner and unintentionally swallowed the broken but unmasticated fruit. The apples being unsalable culls were hard, and probably the laceration was caused by a sharp projection of the apple core. It emphasizes the possible dangers in using the probang, even in cases apparently well adapted to this form of treatment.

More important is the teaching in reference to the use of fluids during choke whether given by force as a drench to relieve the choke or taken voluntarily by the animal. In either way there is a constant danger of inhalation pneumonia, and we have repeatedly observed the fatal effects of this "water cure" so highly recommended by influential authors. *We regard such use of liquids in choking as highly dangerous and wholly unwarranted.*

That liquids may be used safely and advantageously in some cases of choke and under proper technique we have no doubt. In cases of choke due to the impaction of dry food, like oats or hay in the cervical region, the insertion of a hypodermic syringe needle into the lower or central part of the bolus and the injection into the mass of warm soda solution would doubtless cause a breaking up and passing onward of the dry mass.

We could also safely try the forcing of water into the œsophagus *per os* if first the precaution be taken to perform tracheotomy accompanied by proper care, but its application is of doubtful value. With a hollow probang a small tube could be pushed through it and water forced through this against the obstruction, any detachable pieces flowing back through the probang. Or by laying the œsophagus bare, grasping and compressing it against the probang to prevent the return of fluid along the outside, water could be forced through it under pressure and foreign bodies forced onward by hydraulic pressure, which would be gentler, and by dilating the œsophagus, possibly better in rare cases than direct pressure by the probang.

Not alone in our judgment should liquids not be forced into the pharynx nor the patient be permitted to attempt swallowing them voluntarily while choked, but the practice followed at times of causing the animal to attempt to swallow liquids immediately after the passage of the probang or the withdrawal of a foreign body from the pharynx should not be countenanced. It is given frequently as a test to determine that the œsophagus is open. We have strangled animals fatally in this way after the choke had been properly relieved.

The case further illustrates the value of Möller's observations that a large percentage of chokes become spontaneously relieved if let alone, even after a duration of three or four days. We observed one case of spontaneous relief in case of obstruction, believed to be due to impacted hay, after the duration of six days. In this case we repeatedly tried to pass the probang without result, even under complete anæsthesia.

A NUMBER OF INTERESTING CASES FROM ILLINOIS.*

By C. E. HOLLINGSWORTH, La Salle, Ill.

I will bring before you to-day a brief history of a few cases that are, or may be seen in any every-day practice. It is our humble opinion that more real benefit is to be derived from such reports than if writing about cases that are seen but once in a lifetime, if at all, and thus are of very little practical value to the majority of us. You will all agree with me when I state that it is practical information that we want most—good hard practical facts, right to the point—not long drawn out fine-spun theories. Nor do I think it is to the best interests of the society to bring before its members a protracted account of many marvelous cures with not a single failure. It is true that occasionally something very unusual occurs with all of us, and, perhaps, to our surprise. After it is all over, we wonder how it happened. If a sober second thought shows it to be worthy of consideration, or proves to us that it will be of value to our colleagues, let us report it. If, on the other hand, there is something in it that we cannot fathom, by all means bring it before the association, for others may be able to enlighten us. Frequently there is more to be learned from a failure than a success, either in studying over the case ourselves, or in seeking the advice of our brothers in the profession, some of whom may have had more experience in that particular line than ourselves.

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* Read before Illinois State Veterinary Medical Association, Feb. 12, 1901.

Let us tell of our failures as well as of our successes—the bad with the good, the bitter with the sweet. Because in honestly confessing our inabilities (and we all have them), and earnestly seeking for advice and enlightenment, there is much to be gained if we receive that information in the proper spirit, for none of us are so wise that others can teach us nothing.

Ruptured Uterus in a Jersey Heifer.

In June, 1900, I was called to attend a Jersey heifer of medium size, and in fair condition, to deliver her of a calf. She was in the pasture near the house, overnight, and next morning was found unable to relieve herself. I made an examination and found a very large calf, with the hocks presented, the feet being forward. I used the repeller, got both feet in proper position, when it was soon delivered, much traction being necessary, but requiring very little time.

While removing the fœtal membranes, I found a rupture in the superior wall of the uterus, just anterior to the os, about four inches in length. Finished the task by injecting antiseptic solution, taking care that none should enter the abdominal cavity. Advised owner of the discovery ; left directions to inject antiseptic solution twice daily. Returned on second day, and found some fever present, but very little discharge from uterus. Left a few doses of febrifuge medicine, and continued the injections three or four days longer, when treatment was discontinued.

Degenerated Liver a Cause of Acute Indigestion.

In November, 1900, I was called to a case in Peru. Found a team horse, 12 or 14 years of age, in fair working condition, and weighing about 1300 lbs., that was used for coal hauling. It was showing symptoms of an aggravated case of acute indigestion, with inflammatory tendencies. It had been sick for several hours, and the usual doses of nitre, etc., had been given, but without any benefit. Not much tympanites present, but was insufficient peristaltic action, so gave a dose of barium chloride at once. As I had to go ten miles farther to another case, I left some sedative and anodyne medicine to be given. Returning at 6 P. M., I found patient much improved, though still suffering some from pain. It was raining hard, and cold, and I didn't want the horse taken to my hospital, a mile away, so left fluid extract gelsemium, with directions to watch the horse until midnight, giving the medicine every hour, or two hours, according to the pains.

Next morning here came the owner leading the horse, he

having sat up all night watching it. I found a weak rapid pulse, head hanging and ears drooping, cold at tips, and otherwise showing symptoms of general depression. No peristalsis. Prognosis was unfavorable. The pulse gradually became weaker, other symptoms of early dissolution more pronounced, and he passed away calmly and peacefully at 1 P. M.

Post-mortem revealed slight inflammation of the intestines, but the lower half of right lobe of liver was badly inflamed, broken down, capsule destroyed, and in almost a gangrenous condition.

Compound Comminuted Fracture of Scapula in a Dog.

In December, 1900, was called to see a young dog, about full grown, and of questionable parentage, which had that morning been savagely attacked by a bull dog, and crippled in right shoulder. The owners desired to have the dog treated, not on account of its intrinsic value, but because it belonged to their little boy. I found a compound fracture of the scapula. In fact, it was literally shattered. I took a piece of stout unbleached muslin, cut it in a triangular shape, to correspond with the form of the scapula, and had strong muslin strings sewed to each corner, long enough to reach around the dog's body. Near the apex I made an opening large enough to allow the passage of the foot and leg, so as to fit snugly above the elbow. I then mixed some plaster of paris, covered this piece of muslin all over except around the opening at the apex, and put a second piece of muslin of corresponding shape on top of the plaster of paris, thus forming two coats of muslin, with the plaster between. I now passed the foot and leg through the opening at the apex, and fitted the cast firmly to the outer surface of the scapula, and tied it there by means of the aforementioned strings, tying them around the body, neck, and criss-cross between the fore legs. In this way I soon had a hard, perfectly fitting cast of the shoulder, which held the broken pieces in apposition until union took place. I left directions for this to be worn for a month, but learned afterwards it was removed in about two weeks. Was still some lameness at the end of three weeks, but in a month was practically well.

Mouldy Corn a Cause of Death.

In January, 1901, was called to see a shaft mule belonging to a coal company. No special symptoms of disease were present; appeared tired, languid, and worn-out more than sick, although it was in fair physical condition. Was told it had never done much hard work for them, as it always seemed to

tire so easily. For three or four days prior to my visit it had worked hard, the same as the other mules, owing to a shortage caused by the death of one of its fellows a few days before. I always remember the advice of Josh Billings in regard to how to approach the genus asinus, and more especially the coal shaft variety; so sometimes I don't give them a real scientific examination. Acting upon the supposition that the few hard days' work had exhausted him (there being no special symptoms to the contrary), I gave him a full dose of fluid extract of nux vomica, and left. All the afternoon he improved, and seemed to be getting all right again; so I heard nothing more until next morning, when they called me to come and see him again. I arrived just in time to see him kick for the last time. (This phrase has far more meaning when applied to a shaft mule.)

For some time the mules had been fed on shredded corn fodder, baled, instead of hay. The moisture in the pit soon caused it to heat and consequently mould, rendering it unfit for food. When asked to what I attributed the peculiar death, I replied that from the mule's history there was some internal lesion of long standing that could not be detected from the outside. Also, that the mouldy corn fodder was in part to blame.

The post-mortem revealed pleural adhesions on the right side, and the left kidney was completely destroyed, functionally, it being simply a mass of broken down, pulpy, kidney tissue.

The mule that had died a few days previous to this one was all right when fed at night, and dead in the morning. I had no opportunity of holding a post-mortem on it.

An immediate change of feed was ordered, and there has been no more sick mules.

DERMOID CYSTS.

By C. J. MULVEY, D. V. S., Mooers, N. Y.

The case I describe was brought to my office some months ago, and as I have never heard of or seen any such described or reported have intended giving an account of it, but it has passed until now, and I trust it may be of interest.

There was a small enlargement of irregular shape, but "V" shaped as near as could be described, situated on the left side of the neck a few inches anterior to that occupied by the collar. On examination it was movable, just beneath the skin, and seemed like those growths or accumulations often found similar to this, but the absence of any cicatrix, the statement of the owner that it had not increased in size since he owned her

(about 18 months), and his urgent request for its removal, and the results, follow in a short succession of time.

On cutting down upon the contents I found them to be contained in two small sacs or envelopes, communicating with each other, and on cutting through this covering found each to contain an elongated roll of hair, perfectly white, each roll about the length of three inches by one inch in diameter. There was also a small quantity of fluid, among which floated white granular particles, also bleached in appearance, but did not have the appearance of pigment or broken down structures.

I removed the sacs and contents and the parts readily healed, and the last time I saw the owner and patient there was nothing to show to a casual observer any sign of there having been any difference in either side of the neck.

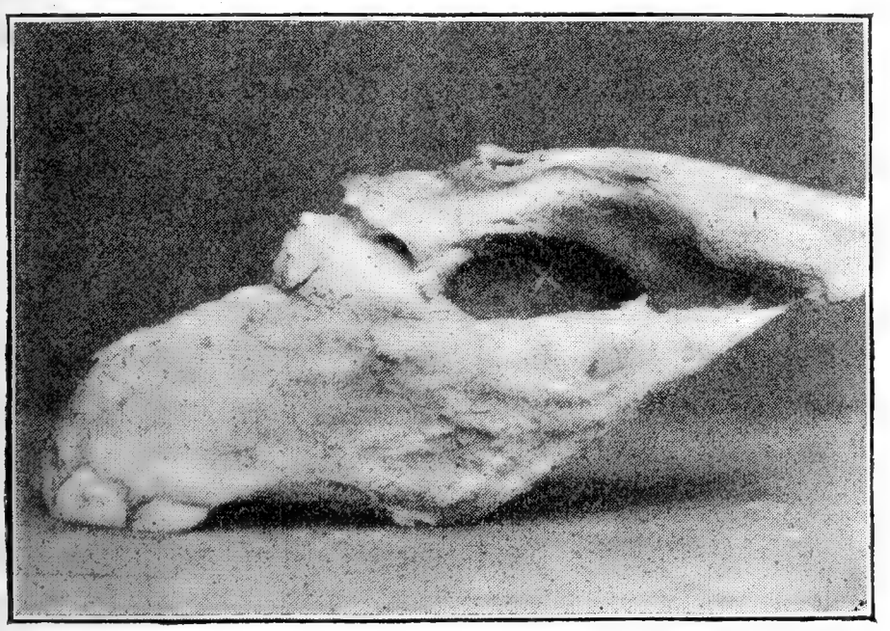
The patient was a small bay pony, without any white markings, and coming four years old.

I could not learn any history as to this having been congenital, as she had been obtained of a trader and her birthplace unknown.

COMPLETE PERFORATION OF NASAL SEPTUM BY GLANDERS.

By J. P. FOSTER, V. S., State Veterinarian, Selby, South Dakota.

I send you under separate cover a photo of a specimen, taken from a horse, or rather a two-year-old colt, I destroyed, that was affected with glanders. You will notice the complete perforation of the nasal septum, caused by the ulceration. Although all the other symptoms of glanders were present in this colt, as well as in nine other head on the same farm, I applied the mallein test to the entire lot, and this colt's temperature rose from a preliminary temperature of about 100.2° to 106.5°, and hovered around that point for nearly twenty-four hours.



PARTURIENT PARESIS—SCHMIDT TREATMENT.

By W. L. West, V. S., Belfast, Me.

January 13, 1901, at 8 o'clock A. M., I was called to see a two-year-old native cow, presenting the following symptoms: Decubitus; head turned persistently to left side, moaning, temperature 99° F., pulse 50, respiration 20; not comatose, and with a history of having had an easy parturition twenty-four hours previously. Diagnosis, parturient apoplexy or paresis. Prognosis unfavorable. Treatment—Gave per orem magnesium sulphate, 1 lb.; gamboge, ℥i; aqua, Oji, which she swallowed easily and naturally; milked her and cleansed the udder thoroughly with 1 to 20 creolin solution, and infused with constant massage, potassium iodide 10, aqua 1 litre, at 107° F. Propped patient on sternum and left instructions to keep patient covered and massage udder every hour.

Jan. 13, 5 P. M.—Cow about the same, moans constantly, gave another infusion of potassium iodide, 5, aqua, half a litre, at 107° F.; drew the urine.

Jan. 14, 8 A. M.—Cow seems brighter, moans less, still in decubitus, drew urine, infused potassium iodide, 10, aqua, 1 litre, at 107° F., with massage.

Jan. 14, 5 P. M.—Cow shows no change except the bowels have moved freely.

Jan. 15, 8 A.M.—Cow about the same, drew urine, gave copious enema of salt solution, gave fluid extract of nux vomica.

Jan. 15, 5 P. M.—No perceptible change, except the cow grows weaker; gave another dose of fluid extract of nux vomica.

Jan. 16, 8 A. M.—Cow very weak, pulse 70, temperature 103° F.; advised the owner to destroy her, which he did.

SERIOUS CONSEQUENCES OF CRUELTY TO HORSES.

By Francis Abele, V. S. Quincy, Mass.

Horse, driven by a foreigner for a gentleman's estate, had been stopped on the street by agents of the Society for the Prevention of Cruelty to Animals. Horse was hanging back, crosswise in shafts, as far as he could. The driver in trying to urge him used his boots. Horse's belly was very dependent from forelegs back. Some one had diagnosed a rupture. Diagnosed peritonitis probably due to kicks. Applied hot blankets bandaged around abdomen for external treatment and potassium iodide for internal. The horse was then turned out. Made good recovery. At same farm was called to horse that had three tines of

pitchfork run into his ribs to stop him from running out doors. With treatment no bad result followed. I might add, new help was secured on that farm.

STOMACH ENGORGEMENT IN A SOW.

By Francis Abele, V. S., Quincy, Mass.

Well bred sow, mother of eleven little pigs a week or two old. Foreman knew she was past help, but did not want her to die without treatment. Sow was down on side, delirious, kicked spasmodically with all four feet as if struggling to get up. From her plump condition decided that brain symptoms were due to engorged stomach. Gave aloin and oil by mouth, glycerine and water per rectum, and rubbed a stimulating liniment on her back, rolled her against side of box to get her feet under her. Next day she was perfectly well.

DEPARTMENT OF SURGERY.

By L. A. and E. Merillat,
2127 Indiana Avenue, Chicago, Ill.

THOROCENTESIS.

Thorocentesis.—Tapping the thorax is a very common operation in veterinary practice, and is used as a curative and diagnostic measure; its most common indications are:

1. Hydrothorax.
2. Pleurisy with effusions.
3. Hemothorax.
4. Morbid growths on pleura.
5. Hydatids of pleura.

1. *Hydrothorax* as observed in domestic animals is generally a sequel of other diseases. The pathological anatomy is marked by a change in the pleura and pleural cavity. The pleura becomes soft, smooth and spongy by its contact with the exudate. The cavity contains a greenish, or reddish yellowish fluid, which generally is free from fibrin. The intercostal muscles are bulged outward; the diaphragm loses its convexity; the lungs become flattened, leathery, airless and bloodless; their specific gravity is greater than one. The compressed lung may become the seat of sclerosis, necrosis or some other degenerative change. Pleuritic adhesions are often found, but their presence may not be of recent origin.

Ætiology.—As has already been mentioned, hydrothorax is

always a secondary condition, but it does not always result from the effect of inflammation. It may be accompanied by anasarca and ascites, or may exist alone, but never exists as the only malady. We may mention in a general way that it is liable to arise under the following circumstances:

1. As a sequel of acute pleurisy.
2. From "quiet" pleurisy.
3. When the whole circulation is impeded, and the venous pressure is increased, *e. g.*:
   (*a*) Mitral or tricuspid insufficiency.
   (*b*) Diseases of the orifice of mitral or tricuspid valve.
4. When venous stasis is due to local causes, viz.:
   (*a*) Localized swellings or tumors over veins.
   (*b*) Thrombosis.
5. When renal diseases lessen the elimination of the watery portion of the blood.
6. When the parietal and visceral lymphatic glands are enlarged and indurated; and when the functional activity of the stomata of the pleura is impaired by inflammation or otherwise.
7. When the quality of the blood is changed by disease; or the circulation impeded by cold or other general influences which favor exudation of serum from the blood vessels.

Diagnosis.—In the horse hydrothorax is always bilateral, while in other animals it may be unilateral. The diagnosis is generally easy unless the fluid is confined to a portion of the thorax by pleuritic adhesions. Dyspnœa is the most important symptom. By auscultation a dull section is found extending along the lower portion of the thorax (*longitudinally*) and terminating abruptly above; the line of demarcation between the portion filled with fluid and the empty part superiorly will vary as the position of the patient. Sometimes the recognition of other dropsical conditions is very suggestive. When the symptoms point to hydrothorax the trocar should be used to verify the diagnosis. The fluid, if entirely non-inflammatory, appears as a greenish or reddish transparent fluid; it does not contain clots, nor coagulate in the vessel. It contains a little albumen, and its specific gravity varies from 1005 to 1010.

The presence of corpuscular precipitates; a tendency to coagulate; or any turpidity of the effusion, is suggestive of inflammation. When it is streaked with blood, the condition is an indication of venous stasis or arterial degeneration. The cavity may contain pus, cretified pus, with or without secondary

abscesses. The pus finding its passage in the direction of least resistance, pierces through the lung or thoracic wall, forming pulmonary or costal fistulæ. Chyle is sometimes found in the thoracic cavity, mixed with the effusion (*chylothorax*) ; this, however, is always accompanied by intra-thoracic growths, or results from pathological alterations caused by morbid growths.

Treatment.—Hydrothorax is not formidable in itself ; in many events it is observed in the last few days of the animal's life. The treatment should be dietetic, medicative and surgical. The patient must be fed upon dry food and given but a small quantity of fluids. The medication should consist of diuretics, hydragogue purgatives and tonics. Surgical interference should only be used when the fluid rises to such an extent as to harass the breathing, in such an event it must be removed by *thorocentesis*. The operation is a simple one, and with the proper surgical cleanliness there is no danger of unfavorable sequelæ following it as a result of infection.

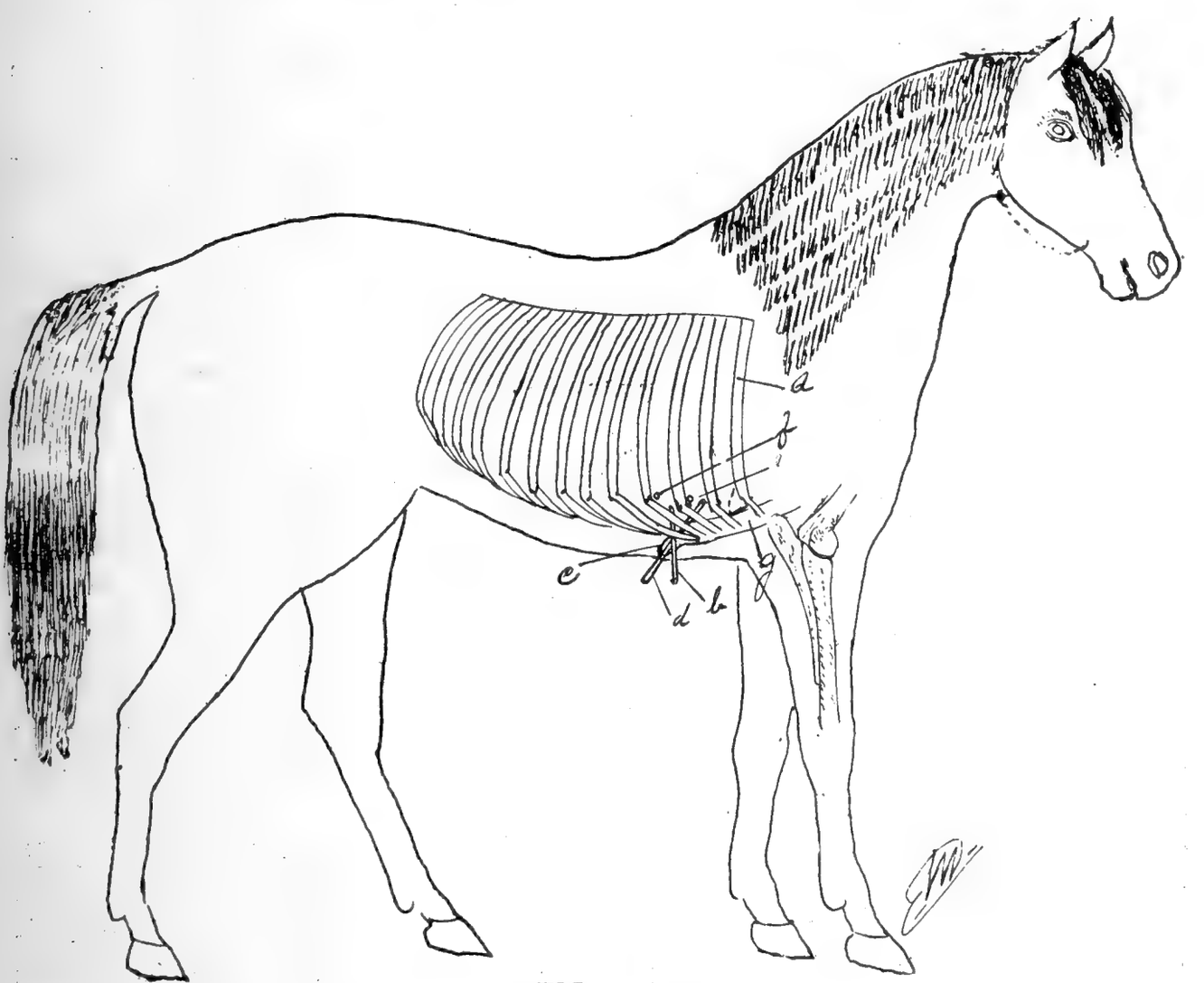


FIG. 44.
THOROCENTESIS.

a, sixth rib ; *b*, improper direction of trocar ; *c*, ensiform cartilage ; *d*, proper direction of trocar ; *e* and *f*, point selected by some operators ; *g*, sternum.

There are several sites selected for this operation: Moller recommends a point between the xyphoid cartilage and the costal cartilage (*Fig. 44, b*). Williams (W. L.) selects a point in the sixth intercostal space on the right side, and in the seventh on the left side (*Fig. 44, b*). (See *Pfeiffer–Williams' Surgical Operations.*)

The most important thing to avoid in the procedure is the admission of air into the thorax (*pneumothorax*); this can be prevented by placing the finger over the end of the canula during inspiration, by using Billroth's trocar, or by attaching a rubber tube to the end of the canula and immerse the distal end of the tube in a bucket containing water.

Before inserting the trocar into the thorax the site of puncture must be scrubbed with soap and hot water, and washed with a strong solution of bichloride of mercury; the hair is then parted by the use of vaseline and the trocar inserted into the wall of the thorax at the part in the point selected, and the perforator removed from the canula. If the flow is arrested by the accumulation of fibrinous material, cretified pus, or clots of any kind in the canula, the perforator must be introduced into it to remove such obstructions. Before removing the canula the perforator should be introduced into it to prevent drawing foreign or septic material into the wound.

Paracentesis, without some other treatment, is not a cure for hydrothorax, but a procedure that should not be used promiscuously; the removal of a large quantity of fluid has a debilitating effect; therefore, the rational treatment of such cases is to encourage absorption, and only perform thorocentesis when the accumulation of fluid interferes with respiration. The treatment that we would recommend in addition to what has already been mentioned is the application of a good cantharides blister (1-16) and the removal of fluids by puncturing only when necessary.

2. *Pleurisy with Effusions.*—We consider two forms of pleurisy that terminate in hydrothorax; the first form is sthenic, and the second is asthenic. The first may be considered the same as acute pleurisy, which, when neglected, terminates with effusion. It is characterized by high temperature, pain, dyspnœa, restlessness, short cough, ribs fixed, elbows turned out and forelegs are held apart. When the effusion begins to collect the temperature begins to lower gradually; pain becomes less intense; restlessness is diminished, but dyspnœa continues.

The second form is sometimes called "quiet pleurisy." It

begins mildly, and, in fact, is often unnoticed until the thorax is filled with fluid; pain, if any, is very slight; fever is very low and seldom noticed, even if the thermometer is used by the owner or attendant. The thorax, slowly filled by the effusion, accommodates itself to the condition, and but little inconvenience is experienced therefrom until the cavity is almost filled. When the effusion comes on slowly and gradually the patient may lie down, and if it be an animal that can have unilateral hydrothorax, it will lie upon the side affected to relieve the pressure upon the mediastinum. Most of these cases are brought to the veterinarian on account of dyspnœa following the slightest exercise and general debility, and upon making a careful physical examination the condition and symptoms presented point to asthenic pleurisy with effusion; this then can be verified by making a tentative puncture. The treatment in such cases is the same as already mentioned under hydrothorax.

3. *Hemothorax.*—Blood-stained effusions may result from simple pleurisy, but more commonly from tubercular, carcinomatous or some other like condition. Bloody effusions may come from wounds to the thorax or its viscera, or from within by the rupture of an aneurism, sanguineous cancer or a hematoma. Blood in the pleural cavity resulting from extravasation should be allowed to remain in it to be reabsorbed, but if this does not suffice it must be removed by tapping. If the effusion is ichorous it may require additional surgical interference. It should be remembered, however, that the thoracic cavity of the horse cannot be opened (*sic*); other animals in which the pleural sacs do not communicate the surgeon can resort to major operations of the thorax and its viscera.

4. *Morbid Growths of the Pleura.*—The pleura of domestic animals is not free from sarcomatous, carcinomatous, actinomycotic or tubercular invasions. Growths of the first two varieties are comparatively rare, but those of the second are more common. They may cause effusion by impeding circulation (*dropsy*); if septic material escape into the cavity it soon becomes putrid and causes septic infection. Blood may also escape from highly vascular formations. The diagnosis in such cases is impossible without a tentacular puncture, and the course of treatment adopted should be governed by the information gained therefrom.

5. *Hydatids of the Pleura.*—Hydatids of the pleura of domestic animals are not often diagnosed during life. When the

cysts are unbroken it is impossible to determine the condition that causes the disturbance observed, but when they rupture into the pleural cavity a puncture made tentatively, with a history of the case, may give rise to a chain of evidence that will lead to some definite conclusion.

KERATOCENTESIS.

There are certain conditions of the eye which can be successfully treated by tapping the anterior chamber, either to remove injurious bodies or material contained therein, or to reduce the pressure upon the cornea or walls of the anterior and posterior chamber of the eye. The removal of the aqueous humor is often followed with very good results, such as stimulating the functional activity of its secreting membrane (*Desemet's membrane*); encouraging the absorption of substances which cause opacity, haziness, cloudiness or loss of transparency of the cornea and anterior surface of the lens; and also preventing absorption of the cornea, which is always followed by escape of humors and complete destruction of sight.

Keratocentesis has its indications and contra-indications, *e. g.*, it can be used to a good advantage in aplastic iritis, but

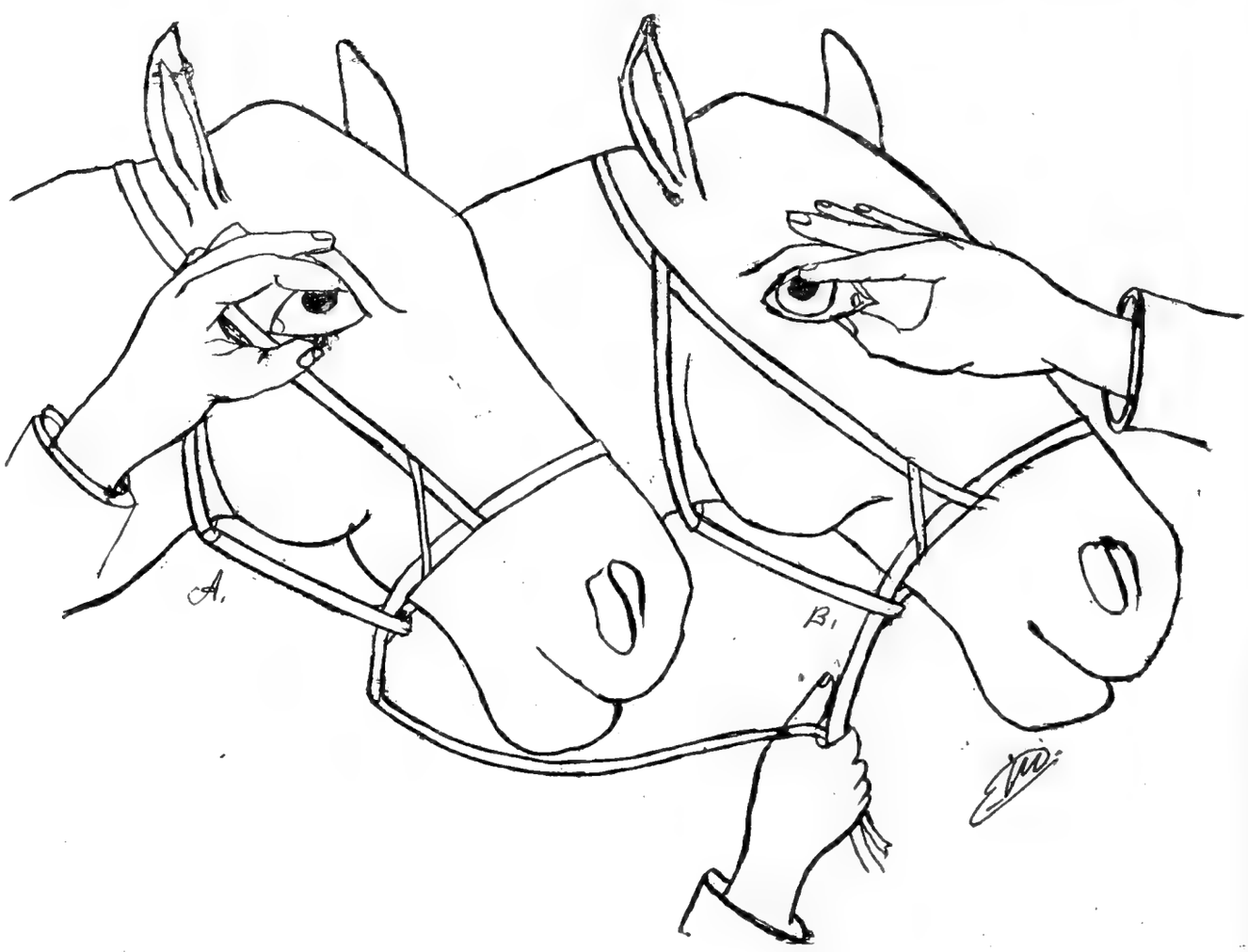


FIG. 45.
METHOD OF EXAMINING THE EYE.

should never be used in plastic iritis ; so with many other conditions. Before resorting to such surgical interference a proper diagnosis must always be made, and to accomplish this it is necessary to make a thorough examination of the eye.

Examination of a Horse's Eye.—The conjunctiva and external surface of the eyeball can be examined by parting the eyelids with the thumb and forefinger. (*Fig. 45.*) When standing in front of the horse, the right hand is used to examine the right eye (*Fig 45–B*), but when the examiner stands to the side of the horse's head, the right hand is used to examine the left eye and the left hand for the right eye (*Fig. 45–A*). The membrana nictitans is brought to view by pressure applied to the eyeball with the forefinger and thumb.

The conjunctiva of the eyelid can be thoroughly examined by catching the eyelashes with thumb and forefinger of one or both hands and inverting the eyelid over a lead pencil, thermometer case or some other object of that shape. If the eye or its appendages are very sensitive, a little cocaine may be injected into the eye between the ball and the lids before making the examination.

To examine the antro-internal part of the eye, the patient should be taken to a dark room or stall and the eye illuminated with a candle placed in front of it. A thorough examination necessitates the use of mydriatics, administered a few hours prior to the examination.

A normal eye will reflect images of the candle light ; one large and two small ones. The first large image of the light is observed in its normal position, and is reflected by the cornea ; the second is smaller, in an upright position as the first, and is reflected by the anterior part of the lens ; the third is a small inverted image of the flame reflected from the posterior part of the lens. When the eye is normal all the images are well defined ; but when either of them presents an indefinite outline it is an indication that there is some abnormal condition of the anterior part of the eye. When the first image presents an indefinite outline, the trouble is in the cornea ; when the second one is hazy or indefinite the lesion is in the aqueous humor or the anterior part of the lens ; and when the third is indistinct it is in the lens. (*Fig. 46.*)

The ophthalmoscope is an instrument that should be more generally used by veterinarians. The belief that it is an instrument difficult to use to a good advantage is erroneous ; an hour's instruction will enable any veterinarian to acquire good com-

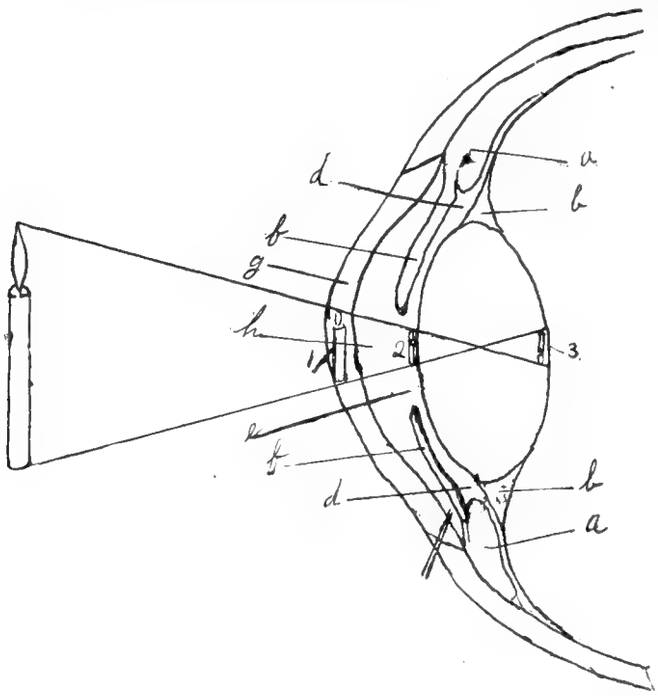


FIG. 46.
TRANSVERSE SECTION OF THE EYE; LOCATION OF IMAGES REFLECTED.
a, ciliary muscle; *b*, canal of Petit; *c*, lens; *d*, posterior chamber; *e*, pupil; *f*, iris; *g*, cornea; *h*, anterior chamber; 1, 2, 3, images of flame.

mand of its technique; and moderate practice with strict adherance to important rules will soon widen the field of its employment. The veterinarian that wishes to become proficient in the use of the ophthalmoscope must learn to detect abnormalities that need attention and class them into as few groups as possible. The novice should not expect to succeed in all cases, especially when the conditions are such as to try the patience of or even baffle an expert. He should commence with easy cases and learn to diagnose these with few failures, which will gradually make him more proficient.

It is not necessary to have an elaborate and costly instrument designed for a great diversity of ophthalmoscopic work, even though such an instrument is naturally preferred. A very good improvised ophthalmoscope can be made with a piece of looking-glass having a small round hole scratched in its silvering; a small round pocket mirror fixed in this manner is a very good improvisation. "The mirror is the essential part (of an ophthalmoscope), everything else being accessory."—(*Van Mater's Veterinary Ophthalmology.*)

The object in encouraging its use is to enable the veterinary oculist to increase his percentage of good diagnoses. Many of the clients of the present veterinarian are men that have a good knowledge of biology, zoology, anatomy and physiology, and will not "stand" for the old-time veterinary diagnoses, or those made "on the run"; each one must be accompanied by a logical chain of evidence leading to a plausible cause of the condition

in question, and followed by well-grounded prognosis. A surgeon's ability to acquire a reputation depends upon the care exercised in discriminating when to and when not to operate, and his proficiency in determining indications and contra-indications.

The success following this operation (*tapping the cornea*) will depend upon the operator's ability to determine its indication. Any condition that will cause intraocular pressure which is not accompanied by plastic exudates is an indication for paracentesis, and in this consideration of the operation only a few of the most common conditions that will produce such a disturbance, in addition to a few conditions that incidentally occur in connection with the diseases of the anterior part of the eye which may be benefited by such interference, will be mentioned, with a brief review of each, in the order of their importance, viz.:

1. Staphyloma.
2. Descemitis.
3. Diseases of the iris.
   (*a*) Aplastic iritis.
   (*b*) Parenchymatous.
4. Anomalies of anterior chamber:
   (*a*) Hydrophthalmos.
   (*b*) Intraocular tumors.
   (*c*) Hypopyon.
   (*d*) Aplastic irido-cyclitis.
5. Parasites in the anterior part of the eye:
   (*a*) Filaria papillosa.
   (*b*) Cysticercus fistularis.
   (*c*) Pentastoma tænioides.
   (*d*) Filaria oculi.

(6.) Diseases of cornea:
   (*a*) Pannus.
   (*b*) Ulceration of cornea.
   (*c*) Suppurative keratitis.
   (*d*) Superficial "
   (*e*) Vesicular "
   (*f*) Parenchymatous keratitis.

(*To be continued.*)

N. B.—All correspondence with Surgical Department should, after May 1, 1901, be addressed to L. A. M. or E. M., 2127 Indiana Ave., Chicago, Ill.

SURGICAL ITEMS.

Chloretone is a local anæsthetic that is receiving some attention in human surgery, and those that have used it claim for it an absence of all the unpleasant and dangerous symptoms common to cocaine and eucaine. The local anæsthetic effect is sure and safe in result.—(*E. M.*)

In the *Journal of the American Medical Association*, April 13, 1901, appears a very interesting article, by J. Rilus Eastman, of Indianapolis, Ind., on the subject of permanent catheterization. It contains some very important reports of cases subjected to retention of catheter for a period varying from twelve to sixty-five days. The author states that "The practice of permanent catheterization fell into disrepute before the advent of clean surgery." * * * That, "inflammation of the bladder may occur during retention of catheter as a direct extension of urethritis, or from decomposition of urine which always moistens the intravesical portion of the catheter." To prevent cystitis the bladder is irrigated twice daily with a solution of boric acid (4 per cent.); and, to prevent urethritis a 1 to 5000 solution of potassium permanganate is injected between the catheter and the mucous membrane of the urethra; this is continued until the discharges of the urethral membrane cease. In two cases of lithotomy, no attention was paid to irrigation of the bladder and mucous membrane of the urethra, and no cystitis or urethritis followed. The following deductions can be made from the writer's observations: 1. That the dangers following retention of catheter have been overestimated. 2. That large catheters should be used in preference to small ones. 3. That large catheters are retained more easily than small ones, and that they do not irritate the mucous membrane as small ones. 5. That after the catheter has been in contact with the mucous membrane of the urethra for a time it develops a tolerance for the instrument. —(*E. M.*)

Susceptibility Increased by Individual Prophylaxis.—As a matter of common observation, pus infection seldom occurs when wounds are located where cleanliness is not possible. Wounds upon the hands of bricklayers, stone masons and mechanics seldom suppurate, while those of lawyers, doctors and ministers' hands are very susceptible to pus infection, and often open an avenue to general infection. Localized abscesses, septicæmia and pyæmia, together with other infectious diseases, are more common in well-bred animals of the same species than among those that have been subjected to the common law

of evolution—"*The survival of the fittest.*" Well-bred horses and cattle surrounded with all the comforts that can be given to them by good, clean, hygienic stables, and always protected against the inclemency of the weather need more nursing and veterinary attention than those that have no comforts and receive less care. The same thing is noticed in animals of different species with different environment, *e. g.*, wounds of the hog are seldom followed by the formation of pus or abscesses.

The effect of dirt and filth may be considered by the veterinarian as twofold: 1. In sanitary science, it is considered as being an element of bad hygiene. 2. In surgical and infectious diseases, as being a conveyance of infection to wounds or the economy. Pus cocci are generally incorporated in dirt and filth; suppurating conditions are usually enzootic; and the association of the living animal with these organisms and such conditions, has a tendency to increase the resisting capacity of the economy exposed. This capacity is the same as any other endurance; it does not differ from the muscular capacity or lung capacity of an animal, and is developed by exposure to infection, and diminished by protection against infection. We often notice the wounds of horses that are kept in filthy, ill-ventilated stables yield to the most rudimentary cleaning, while other wounds resulting from the same cause, in horses that are always well groomed, kept in good stables, thoroughly cleaned, well ventilated, and comfortably heated, are treated by cleanings that are far more thorough, yield very inefficiently.

This illustrates the many failures in antiseptic treatment of wounds that are often hurled at its advocates by those that can not understand the importance of clean surgery. The veterinarian that is successful in treating neglected stock is often very unsuccessful in treating stock owned by fanciers, and a useless party on stock farms, stocked with well-bred animals, simply because he is inclined to think that anything is good enough for a horse, ox or dog.

The progress in the stock industry of the United States encourages better breeding, better feeding, better care and environments, and as a consequence of this improvement, the demand is better veterinary attention and surgical methods.—(*E. M.*)

DURING the year 1900 there were reported to the Cattle Commission of Massachusetts 849 cases of glanders, of which 699 were killed and 150 released. This is largely in excess of any previous year.

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D.V.S., Milwaukee, Wis.

THE FORMATION OF LYMPH [*G. Moussu*].—Older physiologists explained the lymph production as a filtration under the influence of the blood pressure. This hypothesis was already opposed by Heidenhein, who considered the lymph as a secretion of the capillary endothelium. Moussu made a careful study of the influence of the blood pressure on the lymph circulation. He produced a lymph fistula in the region of the neck on a horse, so as to establish, first, the amount of the normal production, and then the increase or decrease, as the case may be. He elevated and reduced the blood pressure of the head, by severing or stimulating the cervical cord of the sympatheticus, and came to the following conclusions: (1) The blood pressure plays a part in the formation of lymph. (2) A local reduction of the blood pressure and a slight dilatation of the vessels, reduce the production of lymph, and the lymph current. (3) A local increase of the blood pressure, and contraction of the vessels, increases the quantity of lymph, and the lymph current. And finally, to prove the effect of the tissues on the formation of lymph, the author proved that while the horse was taking up food, and during the process of mastication, salivation and deglutition, the quantity of lymph was increased 5-10 and often 15 times the amount as when at rest. This increase could not be traced back to the arterial pressure, as when this is raised in the carotid, it falls in the smaller arteries of the muscles (muscles of mastication). Therefore he proved that the total activity of the tissues produces a considerable amount of lymph. The question arises now, how much of this is to be credited to the activity of the muscles, and how much to the salivary glands? Moussu decided on this question, by producing a salivary secretion, when the muscles are in a state of rest. For this purpose, he injected in a horse pilocarpin, and in a cow he stimulated the secretory nerve of the parotid. In spite of the considerable activity of the glands, the lymph current did not show any marked change; therefore, the activity of the muscles play the most important part in the formation of lymph.—(*Soc. Biol.*)

THE TREATMENT OF WOUNDS OF THE HOCK JOINT [*A. Hink*].—Traumatic wounds of the hock joint, with synovial

discharge, as known, are prognostically in many cases unfavorable. The quicker the closure of the wound is accomplished, the better the success in the treatment. For the closing of the wound different agents are employed. The application of a useful compress bandage is at this point very difficult. After testing most of the recommended agents, he obtained the best success with the iodoform paste (iodof. 5.0, mucilage, gum arabic and glycerine āā 10.0, bol. alb. 20.0.) The wound and the neighboring parts are thoroughly cleansed and disinfected; then the paste is applied in a thick layer, covered by a layer of cotton. It forms a firm plaster, and all that is necessary to be done is to apply every two days a little more paste and some fresh cotton. The plaster is to remain until it falls off by itself, which generally does not occur before the closure of the wound. Naturally, the patient has to be tied up in a way not to be able to get at the wound with the mouth.—(*Deutsch. Thier. Wochensch.*)

Tetanus in Cattle [*A. Hink*].—While most of the cases of tetanus in cattle can be traced to some traumatism of the uterus (tetanus puerperalis), the author observed in a 1½-year-old heifer tetanus without being able to see or prove any external injury. The disease commenced at the muscles of mastication, and gradually spread, developing in a way that the tail was curved very much to one side, and finally the muscles of the leg became very much affected. The patient about eight days before the first manifestation of the disease appeared, was on a pasture which contained thorny bushes, and by picking the grass in all probability the buccal or pharangeal mucous membrane was injured, through which the tetanus bacilli gained entrance. The animal recovered; sixteen days after the beginning of the disease a slight improvement of the spasmodic condition was noticeable, she was able to lie down, and beside the gruel it received during the disease, kicked for some food. But before the patient could be discharged as cured, four more weeks elapsed. The therapeutics consisted chiefly of rectal injections of a solution of chloral hydrate, frequent offerings of nutritive drinks, dark stall and the most possible quietude. The temperature all through the disease remained normal; the pulse was 64 to 70.—(*Deutsch. Thier. Wochenschr.*)

A New Method of Examining Blood [*Dr. L. Baruchello*].—The author performed a long line of experiments for the purpose of studying the microbes living in the blood. He made use of a method which may be of interest to all practitioners, especially to those living in the country, and who wish to send

suspicious blood to a laboratory of a neighboring city. To examine the blood of a living animal, the author opens the jugular vein, and collects the blood in a sterilized bottle, having a flat bottom. The bottle is then carefully closed, and the blood is allowed to coagulate in a slightly elevated temperature ; after this the serum is poured off, and the blood clots placed in alcohol. On the following day they are cut with a knife into small squares, and placed back in the alcohol. Before one can proceed with the microscopical examination, these squares are passed first through alcohol, and then through alcohol and ether. This is followed by an enclosure into collodion, after which they are cut with the microtome, and stained by a suitable method. In spite of the delicacy of the cuts, they possess a strong cohesion, and do not suffer in any way by the staining. Under the microscope the red blood corpuscles appear as regular mosaics ; also the white blood corpuscles are very slightly changed. To prevent the blood clot from infection by foreign microbes a sterilized eprouvette is filled with blood, and closed immediately with cotton. After coagulation it is placed in a dish filled with alcohol, and the coagulum is expelled by shaking or breaking of the eprouvette. For examination of the blood of dead animals, this method will be found still simpler : A short while after death, a large blood vessel is opened, the coagulum taken out and placed in alcohol, which should be renewed two or three times. On the following day the coagulum can be cut in squares. This method as stated by Baruchello has the following advantages : (1) The coagulated blood cut in squares can be kept in alcohol for any length of time, whereby the examination can be made at any suitable time. (2) The entrance of foreign microbes can be easily prevented, which by the general method is not the case, where a drop of blood is taken on a coverglass by puncturing the skin, and this is left drying in the air. (3 The blood taken directly from a large blood-vessel is much more uniform in regard to the composition of its morphological elements than that obtained by puncturing the skin. (4) When the microbes in the circulation are not numerous they may escape the blood taken by a puncture, while they could not remain unnoticed in a number of sections: (5) This method is very simple, and does not require any special instruments.—(*Il Moderno Zooitaro.*)

DRS. JAMES L. ROBERTSON, W. J. Coates and H. D. Hanson, of New York, attended the banquet of the New England Alumni Association of the A. V. C., at Boston, April 19th.

FRENCH REVIEW.

PSEUDO-MENINGITIS DUE TO A PREVERTEBRAL ABSCESS OF THE NECK [*By Prof. Cadéac*].—Very unusual and interesting record of an animal which shortly after being bought has strangles, complicated with paresia of the facial muscles of both sides, more marked on the right than the left. Taken back by the dealer he is brought to Prof. Cadéac, when the affection makes rapid progress. He refuses food, stands immobile in his stall; constipation is hard, and resists even repeated purgatives. The walking is painful; there is paresia of the right lateral biped; there is photophobia, the pupil is contracted, the ears are stiff, the masseters also, the membrana nictitans covers the eye as soon as the hand is raised toward it. Is it lockjaw? The head can neither be raised nor lowered, the neck is stiff and the skin of the region very sensitive; the animal is very rebellious to any examination of the upper part of the neck, near the poll. A diagnosis is made of meningitis, nearly all the symptoms of which are present. One morning a fistula of the superior border of the neck is discovered, discharging very freely. The animal is cast; the tract of the fistula, which is deep, irregular and extends to the cervical vertebræ, is cut freely; necrosed cervical ligament is removed and a counter opening made to allow the pus to escape. The wound is thoroughly disinfected and the animal left free. Almost all of a sudden all the previous manifestations of the meningitis have subsided, and the animal could be considered as cured were it not for the wound of the neck. There remains, however, a certain deviation of the tip of the nose, which is of old and no doubt different nature.—(*Jour. of Zootechnie.*)

CHRONIC HEPATITIS [*By M. Chauvain*].—This affection is imperfectly known in our animals on account of its rarity and the difficulty of diagnosis. The author records two cases, the diagnosis of the second being made through the manifestations shown by the first—manifestations which had been very mild and insufficient to call medical attention. The first case was in appearance in good general health, and was able to do his work, that of a hunter, very well. Nothing on him caused suspicion that he had disease of one of his principal organs. One day he hunted with possibly less ardor, and was found dead the next day in his stall. Minute inquiries about him of his condition previous to his dying revealed that, for a month or two before he had been less vigorous, did not start galloping so willingly,

preferred short trotting, groaned when he galloped, objected to be saddled, was sore and groaned when the surcingles were tied on him, moved about when his rider was going to mount him, and when he was once on his back he seemed to fear the pressure of the rider's legs, and groaned when touched with the spur. Still he ate well, but did not gain flesh; he dunged frequently, his fæces being hard first, then soft and of yellow color and at the end diarrhœic. Lastly, he seemed to be asleep, disliked moving, and when made to trot he had to be stimulated with the whip. While those symptoms were not constant, they occurred by intermissions, and seem to justify that one must look out for horses which are tender on the loins and their backs. At the post-mortem of this horse, all the organs were sound, except the liver, which was three times its normal size and weighed 21 kilograms—that is, five times the average weight of a healthy liver. The liver presented a bosselated appearance, with hard tumors of different sizes. It was of a pale, greyish color, hard to cut, and presented in its substance numerous little abscesses, containing a yellowish, thin, odorless suppuration. In the second case, although the animal was lost sight of, the presence of the symptoms observed in the first animal satisfied the author that both had the same ailment, and that the second subject was also one of chronic hepatitis.—(*Rec. de Med. Vet.*)

DIABETES, WITH COMPLETE ATROPHY OF THE PANCREAS IN A DOG [*By Prof. Almy*].—A four-year-old fox terrier slut had a litter of three pups, which she was unable to suckle and which died. Shortly after she became ill, losing flesh rapidly, and had manifestations of polyphagy, polydipsy and polyuria. She is placed under diabetic diet. She shows 20 and 18 grammes of sugar in one litre of urine, which is brought down to 17 grammes by careful diet. She still keeps on losing flesh, becomes very weak, and ultimately dies. At her post-mortem all the organs of the abdomen were found healthy, except the liver and kidneys, which were yellowish and somewhat soft. At the region where the pancreas ought to be found pigmentary deposits are found, and the gland is only represented by a small series of whitish, hard granulations. In the thoracic cavity the left lung was œdematous, and the pericardium and heart were healthy. The remarks made by the author are: "The post-mortem shows an entire atrophy of the pancreas. What is the cause of it? It seems that it has followed parturition. Has there been puerperal infection with pancreatic lesions? The

form of diabetes exhibited by this patient has been pancreatic; acute progress of the affection, intestinal troubles, rapid emaciation of the subject."—(*Bull. Soc. Cent.*)

OSTEOMA OF THE GLUTEAL APONEUROSIS OF A HORSE—REMOVAL—RAPID RECOVERY [*By Prof. Almy*].—A gelding had a hard, painless swelling of the external face of the thigh. It interferes with its sale and must be removed. The animal is in good condition and not lame. On the external face of the thigh, the hairs are staring, and on palpation a hard bony plate is felt of peculiar shape. It is superficial and its outlines can be readily made out. The animal being thrown and the region well disinfected, an incision 25 centimeters (10 inches) long is made, following its greater axis, with the bistoury. The cellular tissue under the skin is isolated and the borders of the plate are defined. With strong nippers it is raised and loosened from the muscles underneath, isolated and removed. The edges of the skin were brought together by stitches. The wound was entirely closed in ten days almost without any suppuration. The plate measured 25 centimeters in length, 10 in width; thin at its borders, it is 5 or 10 millimeters thick in its centre. Under the microscope it shows Haversian canal and osteoblasts well formed. It is certainly an osteoma and not simple calcification.—(*Bull. Soc. Cent.*)

RUPTURE OF THE LIVER DUE TO AN OSTEOMA OF A CHONDRO-COSTAL ARTICULATION [*By M. Remond*].—Ruptures of the liver are not rare, but they generally occur on the right and middle lobes. In this case it was on the left and middle lobes that the seat of the hæmorrhage existed. The cause of it, however, is only problematical. An Arabian horse is found one night dying in his stall and succumbed before the author had time to reach him. Death had taken place without great struggles; the bedding is not disturbed, there had been no colics, and the animal had eaten his night meal well. At the post-mortem the visible mucous membranes seemed pale; the abdomen contained about fifteen litres of uncoagulated blood. The left lobe of the liver was only a mass as big as a child's hand, formed of clots of blood and hepatic remains. At its convex border the capsule was torn by a rupture measuring 7 or 8 centimeters. The middle lobe was the seat of subperitoneal hematomas; it was soft and easily torn. The right lobe is entirely bloodless, covered with a normal capsule, and seems to have undergone amyloid degeneration. Its structure is very soft, puffy in consistency and gray-yellowish in color. On the seventeenth right rib, at the

chondro-costal articulation,there is a tumor plunging into the abdominal cavity, which after maceration in boiling water is as big as the fist, weighing only 40 grammes and made of bony, spongious, rarefied tissue; it surrounds the articulation entirely. What was its nature? Did it act mechanically on the right lobe? Did it press on any of the large blood vessels? All those are questions that cannot be well answered.—(*Rec. de Med. Vet.*)

BELGIAN REVIEW.

SULPHUR AS PURGATIVE FOR DOGS [*By G. Hébrant*].—It seems that it is a common occurrence for people in Brussels to give sulphur to their dogs as a purgative. It is an old habit, which is very difficult to eradicate. The author, with Mr. Mosselman, has already related several cases of intoxication in horses after the administration of too large doses of sulphur, and records a case which occurred in a dog which very fortunately recovered by the administration of carbonate of iron, nux vomica and emollient drinks. The symptoms observed were as follows: At first colicky pains, indicated by groans and restlessness; nauseas and vomiting—later semi-liquid fæces, mixed with dark excrements of very offensive odor; respiration accelerated, great dullness, and comatose condition quite marked. The fæces and vomitings took place at intervals, and were more or less mixed with blood. The pupil had been slightly dilated, pulse quick. There was no odor of sulphurous hydrogen well marked.—(*Annales de Bruxelles.*)

TWO CASES OF OBSTRUCTION OF THE ŒSOPHAGUS IN BOVINES—AN IMPROVISED PROBANG [*By Ed. Conradt*].—The first was a heifer, which presented all the symptoms of choking, and in the pharynx at the entrance of the œsophagus there was a potato which could not be removed with the hand or the means the author had at his disposal. It was then that he resorted to the use of a piece of wire bent in a peculiar way, with which he succeeded at last in having the foreign body coughed up. Not well satisfied with the working of this instrument of impromptu fabrication, he had endeavored to have one made by some makers working on the same plan, but had not succeeded when a second case gave him the opportunity to make one which gave him full satisfaction. This time it was a cow, choked by an apple. All kinds of manipulations were tried and nothing succeeded. Mr. Conradt then asked for a piece of iron wire, 1 m. 75 long (that of a straw or hay bale answers).

He bent it in two and made a loop about the size of the apple, arranging the branches of the curve so as to form a circumference about the dimensions of the foreign body. These branches were then twisted together as far as the ends of the wire. Not without difficulty, the loop of the new improvised probang was slipped back of the apple. After two or three attempts it seemed the instrument would not work, but at the last time, as it was withdrawn, the cow was noticed chewing. She was crushing the apple. She was allowed to drink and swallowed without trouble.—(*Annales de Bruxelles.*)

PROTARGOL IN VETERINARY MEDICINE [*By T. Hendrickx*]. —This is a powerful antiseptic recently used in human medicine and also in veterinary, principally in Italy. The author has had opportunity to try it in two cases with excellent results. In one, a heavy draught horse, had a deep wound of the hock. Severe arthritis, impossibility to use the leg, swelling of the hock, escape of synovia, great suffering, loss of appetite, pulse quick, artery full, temperature raised—all indicated a serious case. The treatment consisted in small tent of solution of sublimate in collodion introduced in the wound. Carried out for three days this treatment gives no result; on the contrary, the case is worse; continued irrigations are then prescribed. After twelve days, no change for the better. The case seemed desperate. It was then that protargol was resorted to. For three consecutive days about 30 grammes of an aqueous solution of protargol, 3 per cent., was injected. The second day improvement was noticed; on the fifth day he was able to walk, and his general condition was improved. A week after the first injection the synovia escapes no more and from that day the animal entered upon convalescence. In the other case a hunter received a wound on the external cartilage of the right fore foot. Wound was deep, irregular, more or less ragged, the corresponding cartilage was involved in three quarters of its thickness. There was repulsive odor. The hoof was loose at the heel and the pus collected under it. There was besides the condition that the horse had been wounded on that foot six months previous. Treatment: removal of the loose horn, dressing with 3 per cent. solution of protargol, changed every day. From the third day the wound improved, cicatrization started and was complete in a month. The same dressing was used by the author in a case of canker, but did not obtain good results. —(*Annales de Bruxelles.*)

PECULIAR LAMENESS OF CATTLE DUE TO SUBSCAPULAR

ADENO-TUBERCULOSIS [*By J. Hamoir.*]—This lameness is caused by the tuberculous hypertrophy of the brachio-scapular lymphatic glands. The author records a number of cases of this nature. The true cause of the lameness had not been recognized until the post-mortem, but in the others the lameness allowed the diagnosis, exact and rapid, during life. *Case* 1. Right shoulder lameness. Post-mortem, thoracic and abdominal tuberculosis well marked; right brachio-scapular glands hypertrophied. *Case* 2. Same location of lameness; pulmonary and hepatic lesions; brachio-scapular glands on the right tuberculous. One is as big as a large nut and full of caseous matter. *Case* 3. Lameness left fore leg, located in the shoulder. Pulmonary lesions, also in the liver. One of the left glands is enlarged; contains caseous tubercles; left olecranon muscles atrophied; corresponding joint healthy. *Case* 4. Lameness left anterior, since three months. Location the shoulder. Autopsy, pulmonary, pleural, bronchial and mesenteric tuberculosis. The three axillary glands are tuberculous. Brachio-scapular glands diseased; articulation sound. *Case* 5. Lameness left anterior; location shoulder; autopsy, pulmonary tuberculosis (parietal and visceral). Axillary glands hypertrophied. Brachio-scapular gland enlarged and the seat of recent tuberculous degeneration; shoulder joint healthy; tuberculous synovitis of the left elbow.—(*Annales de Bruxelles.*)

BIBLIOGRAPHY.

TEXT BOOK OF VETERINARY MEDICINE. By James Law, F. R. C. V. S., Director of the New York State Veterinary College, Ithaca, N. Y. In four volumes. Ithaca: Published by the Author.

While awaiting the compounding of a rather tedious formula in a large prescription pharmacy recently, we violated the proprieties to the extent of running through a laige number of original prescriptions which were pasted in a book kept for the purpose, and which is usually preserved indefinitely as a matter of reference and record. We were much edified by the variety of combinations of drugs employed by the numerous well-known physicians represented, and the different forms of therapy employed in the ordinary diseases met with in general practice. But we were chiefly interested in observing the unanimity with which the medical profession have adopted the modern preparations of medicines, and as the particular pharmacy was an old-established one, we induced the clerk to produce the prescription records of the year 1885 for the purpose

of comparison. So different were the large majority of the preparations called for that a physician of that period would have known but little of the substances used to-day. These modern drugs have been brought into general use to meet the requirements of the advances in etiology and pathology, and it is fair to assume that they are a great improvement over the older and cruder preparations.

So it is with our literature. While many of our text-books and works of reference were true exponents of medical science at the time of their publication, such development has taken place, particularly in veterinary science, that the treatises of twenty years ago are not safe guides for students of to-day. English veterinary literature has had many fragmentary additions since the late Principal Williams gave to the world his two volumes upon medicine and surgery, but nothing in the nature of a complete system of medicine has been attempted. It remained for Prof. Williams' old classmate, Prof. James Law, director of the New York State Veterinary College, at Ithaca, N. Y., to undertake this gigantic work, and we are pleased to announce that his task is nearly completed.

Volume I made its appearance as far back as 1896, and was reviewed at the time in these pages. We recapitulate enough here to show the scope of that section, which treated of general pathology, including diseases of the respiratory and circulatory organs, of the blood-vessels and lymphatic system, which was embraced in 410 pages.

Volume II was published during the summer of 1900, and in some 570 pages treated of the diseases of the digestive organs, liver, pancreas, and spleen in all domestic animals.

Volume III has but recently left the printers' hands, and is the largest yet issued, having 600 pages. It discusses the diseases of the urinary and generative organs, skin, eye, and nervous system, together with constitutional diseases.

Volume IV, which completes the system, is in course of preparation, with the prospect of early issuance. It will deal with parasites and parasitism, with infectious diseases, sanitary science and police.

Prof. Law is a plain, forcible writer, is a close observer, has had wonderful experience as a teacher and investigator, and is eminently qualified to perform such an important undertaking, and the English-speaking veterinarians should feel grateful that he has been willing to devote so much labor and time in the preparation of this exhaustive treatise. It has been his

endeavor to place veterinary medicine upon a modern basis, in embracing the latest advances in bacteriology, pathology, and therapeutics, and in recognizing the commanding importance of micro-organisms, not only in contagious diseases, but also in such non-infectious disorders as germs enter into as secondary yet important factors.

With nothing systematically occupying the field since the admirable works of Williams, save translations from the German, we feel that Prof. Law's "Veterinary Medicine" is destined to become a standard authority in English literature.

The different volumes are symmetrical in all respects, save in number of pages, and it goes without saying that every veterinarian's library should be supplied with them. They will be forwarded on receipt of price by the author-publisher.

JESSE BEERY'S PRACTICAL SYSTEM OF COLT TRAINING AND HORSE BREAKING. Illustrated.

This little work, written and published by the above-named gentleman (whose name also appears in the advertising department of this paper in connection with a "Submissive Pulley Bridle"), contains much valuable information and righteous teaching to men in all walks of life, but of especial value to men brought in daily contact with horses, as it reminds us that there is something due these faithful dumb creatures from us, and not all due us from them. It teaches us that we should consider their feelings, study their temperaments, etc., and teaches how to do this. Chapter I begins by saying, "Fear is the principal motive that causes the colt to resist training." It goes on to show that to kick at unknown objects thrown against its heels is but a natural movement in self-defense, etc. A horse being a dumb brute, whose reasoning powers are limited to his past experiences, we must reason with him by acts alone. Hence the importance of beginning every step with the colt right. For by our acts he learns. In order to demonstrate these teachings to a colt, we must first gain his confidence, and we must demonstrate even that to him, as he does not understand words. All this is told us by Mr. Beery, in his own clear, concise way, as we pass from chapter to chapter. He uses the unique argument that not only does it add to a horse's intrinsic value to be properly educated, but that it is due him, that he may have the greatest amount of pleasure out of his life (the greater part of which is spent in harness) that it is possible for him to have and serve man. In another passage he presents a rather original idea, in speaking of "breaking" both sides of

a horse, or all parts or regions of a horse. Illustrating it in the process he terms "poling," which consists of presenting a small pole to a colt for his inspection, and after he has "nosed" it well, and satisfied himself that it is harmless, he passes it successively over all the regions of the body, letting him become familiar with its presence at these various points. Also in his chapter on "kicking," he refers to "breaking both sides of the horse," where he explains how to make the horse cease to kick at us when we enter the stall; he follows with, "In order to break both sides of the horse," and proceeds to explain how to repeat it on the other side. And so all through this little work we find evidences of a close study of "character" in the horse by the author, and a repudiation of anything brutal and unmanly in their handling. He would remind us of how small it is to lose our temper with an animal because it does not do exactly what we tell it, while the poor brute is puzzling its brain to know what we mean, just as we would if given a command in a foreign tongue. He concludes his chapter on "balking" by stating that the control of our own temper is the first essential, and says: "You will feel a glow of satisfaction when you have thus obtained a double victory and not lowered yourself below the dumb beast, but have gained the mastery in a self-respecting way." Each one of the chapters in this book, following "Colt Training," which are "Subjection," "Kicking," "Balking," "Shying," "Running Away," "Bad to Shoe" and "Halter Pulling," first gives the causes of the vice in question, then the means of overcoming it. And the "causes" teach many good prophylactic points to those of us who will never apply the curative methods. After a chapter on "Testimony," which follows these foregoing chapters, comes a "Description of Appliances" (all of which are illustrated), "Promiscuous Vices," "The Over-Check" and "Curb Bit." In this last chapter he turns to our profession for support of his views, and says, "Over five hundred veterinary surgeons have signed a paper condemning tight check-reins as painful to horses and productive of disease, causing distortion of the windpipe to such a degree as to impede respiration. They mention paralysis of the muscles of the face, megrims, apoplexy, coma and inflammation as some of the results of its use." The remaining chapters are devoted to "Teaching Tricks," "Additional Appliances," "Personal Experiences," "Timely Facts and Maxims," and, finally, an appendix devoted to dogs, their sagacity, training, etc. The whole book being a gem of practical

instruction, and neatly bound in cloth in green and gold, with a horse on bended knee before his friend and master upon the cover, it is ornamental in appearance, and, with nearly three hundred pages of reading matter and illustrations, causes one to wonder how it can be furnished for the nominal sum of one dollar, postpaid. R. W. E.

THE NATURE, CAUSE AND ECONOMIC IMPORTANCE OF OVINE CASEOUS LYMPH-ADENITIS. By Victor A. Nörgaard, V. S. (Copenhagen), Chief of Pathological Division, B. A. I., and John R. Mohler, V. M. D., Acting Assistant Chief Pathological Division, B. A. I.

The authors have forwarded us a copy of this paper, reprinted from the sixteenth annual report of the B. A. I., and it gives a very full account of their investigations into this little understood malady of sheep. The colored plates of microscopical fields, as well as those of gross pathological anatomy, are excellent specimens of the lithographic art, and the bibliographical table places the reader in possession of all that can be found upon the subject in every tongue. The experimental work performed by the authors has been quite extensive, and their conclusions are clearly stated. The disease treated of is infectious, caused by the bacillus of Priesz, which is pathogenic to mice, guinea-pigs, rabbits and sheep, and non-pathogenic to chickens and pigeons. It is questionable to the minds of the investigators as to whether it affects horses and cattle, but a typical case has occurred in an Angora goat since their report was rendered. It prevails in certain districts of the western part of the United States, but owing to its benign nature and very chronic course its presence is seldom noticed except upon post-mortem. Fatal cases are practically unknown, and the loss resulting from condemnation of carcasses with extensive lesions is insignificant.

COLLEGE COMMENCEMENTS.

M'KILLIP VETERINARY COLLEGE.

The fifth annual commencement of McKillip Veterinary College was held in the college auditorium, 1639 Wabash Avenue, Chicago, Ill., at 2 P. M., March 29th. The exercises were opened with prayer by Rev. Johnson Meyers, which was followed by an address to the graduating class by Prof. E. Merillat. The class programme consisted in a salutatory address by Dr. H. B. Treman, class prophecy by Dr. B. O. Minge, class history by Dr. H. F. Emich, and valedictory by Dr. R. D.

Scurfield. The Secretary, Dr. L. A. Merillat, announced the standing of members of the senior class, which was as follows: Twenty-one members were entitled to graduation; R. D. Scurfield was awarded the Lovejoy prize for having the best grade for three years' work; Wm. Schumacher, second; H. H. Cohenour, third; T. P. Brankin, honors. C. D. McGilvray received the first prize for best senior grade; J. F. Olweiler, second; R. D. Scurfield, third, and honors to Wm. Schumacher, N. Clark, H. B. Treman, H. H. Cohenour. President M. H. McKillip conferred the degree of M. D. V. upon the following members of the senior class: R. D. Scurfield, Manitou, Manitoba; H. F. Emich, Lima Grove, Ind.; F. W. Buecher, Chicago, Ill.; H. H. Cohenour, Pana, Ill.; W. H. Perrigo, Danville, Ill.; W. I. Gass, Sheboygan, Wis.; J. Gallagher, Chicago, Ill.; T. P. Brankin, Joliet, Ill.; H. B. Treman, Storm Lake, Ia.; B. O. Minge, Faunsdale, Ala.; R. L. Kann, Mechanicsburg, Penn.; Oscar Hartnagle, Victoria, B. C.; C. D. McGilvray, Binscarth, Man.; T. A. Kragness, San Francisco, Cal.; N. Clark, Valparaiso, Ind.; F. C. Willitt, Morristown, N. J.; J. M. Simpson, Mombaccus, N. Y.; J. R. Batch, Chicago, Ill.; J. F. Olweiler, Elizabethtown, Pa.; Wm. Schumacher, Lagrange, Ill.; T. Lambreichts, Montevideo, Minn.

This closes one of the most prosperous and successful terms in the history of McKillip Veterinary College; the number of students in attendance during the present school year was seventy-seven.

CHICAGO VETERINARY COLLEGE.

On March 5th the annual banquet of the faculty and students of the Chicago Veterinary College was given by the trustees at the Sherman House. Ninety-five students and the faculty of twelve partook of the good things set before them. Dr. A. H. Baker acted as toastmaster, and speeches were made by Dr. E. M. Bronson, representing the senior class, Mr. L. S. Robertson of the junior class, and Mr. E. L. Lewis of the freshmen. Dr. A. S. Alexander spoke for the faculty. Several speeches were made by other members of the faculty and students, interspersed with vocal and instrumental selections by members of the class; and a whistling solo, with piano accompaniment, was given by Prof. G. M. Cushing. Being a family affair, undue restraint was noticeably absent, and each one enjoyed himself heartily.

The commencement exercises of the eighteenth session was

held in the college auditorium on Wednesday, March 27th. The following gentlemen received their diplomas and the degree of Doctor of Comparative Medicine: E. M. Bronson, Indianapolis, Ind.; O. A. Kyle, Colfax, Ill.; C. G. Jennings, Marseilles, Ill.; W. R. Michael, St. Jacob, Ill.; Jas. C. Myers, Chicago, Ill.; W. R. Pick, Lodi, Wis.; I. D. Reynierson, Jamestown, Ind.; J. O. Simcoke, Stewart, Ia.; E. B. Ward, Perry, Mo. Dr. Michael distinguished himself by winning the gold medal for the highest general average, also the prizes in theory and practice and anatomy. Prof. A. H. Baker delivered the doctorate address, referring to the present bright prospects of the veterinary profession evinced by the extraordinarily large demands for veterinary surgeons all over the country and large attendance of students, also giving the graduating class some valuable advice, and wishing them godspeed in their future career.

ONTARIO VETERINARY COLLEGE.

The closing exercises of the session of 1900–1901 were held in the college building, Toronto, Canada, March 28. The Principal, Prof. A. Smith, F. R. C. V. S., took the chair, and with him on the platform were: Mr. A. Pattullo, M. P. P.; Prof. Baker, Toronto University; Prof. Mavor, Toronto University; Mr. Hill, Industrial Exhibition, Toronto; Mr. H. S. Wende, V. S., President Ontario Veterinary Association, and Dr. Duncan, M. D. Prof. A. Smith opened the meeting by a short address, and called on Dr. Duncan to read the graduating and honor lists, also the list of prize-winners.

The following is the list of graduates and prize-winners:

Hal. L. Bellinger, Hickory Corners, Mich.; G. Elmer Bitgood, Voluntown, Conn.; William A. Boucher, Minneapolis, Minn.; Francis W. Buckle, Guelph; Hiram Burlingham, Wellington; Thos. Bryant, Wayland, Mass.; William A. Connoly, Fullerton, Cal.; George T. Crowley, New Britain, Conn.; Albert B. Culley, Avon, N. Y.; Frederick A. Davis, Dunstable, Mass.; C. E. Dickerman, Montpelier, Vt.; Geo. B. Duncan, Beloit, Kansas; O. H. Eliason, Scandinavia, Wis.; Chas. H. Epps, Richmond, Va.; Claude C. Evely, St. Thomas, Ont.; R. Frank Erwin, Pickney, Mich.; Fred D. Fordham, Watkins, N. Y.; William D. Forsythe, Southbridge, Mass.; Thomas Fraser, Richmond, Va.; George L. Frese, Elmore, Ohio; Robert G. George, Piqua, Ohio; Walter C. Giller, Rood House, Ill.; Nathaniel S. Glass, Chesley; Charles E. Howard, Leonardsville,

N. Y.; Percy S. Isaacson, Hardingham, Norfolk, England; Matthew S. Kennedy, Carman, Man.; William J. Kirk, Sharon, Pa.; William M. Lowery, Cliton; John P. McCoy, Minden City, Mich.; William McDonald, Florence; George A. McLevey, Florence; C. Arthur Mack, Carberry, Man.; Samuel M. Mizer, Wilmot, Ohio; James J. Murison, Cannington Manor, Assa.; Thomas H. Monahan, Providence, R. I.; William J. Pedden, Parkhill, Ont.; John Perschbacher, Grand Rapids, Mich.; T. Milton Pine, Allisonville, Ont.; L. J. Price, Liberty Centre, Ohio; P. J. Purcell, Bradford, Pa.; J. C. Rasmussen, Tampico, Ill.; Clarence Ransford Richards, Victoria, B. C.; T. Herbert Richards, Beaumaris, Ont.; A. L. Ramage, Calgary, N. W. T.; Zen. W. Seibert, Mansfield, Ohio; John Thomas Sharpe, Carman, Man.; Robert James Shine, Brussels, Ont.; Summer S. Smiley, Carman, Man.; William F. Smiley, Carman, Man.; B. E. Springer, Akron, Ohio; John F. Sylvester, Carman, Man.; F. F. Sheets, Van Wert, Ohio; R. Claude Titus, Hillier, Ont.; F. H. Tucker, Lincoln, Neb.; Carr R. Webber, Rochester, N. Y.; Leslie Willoughby, Elmwood, Ont.; George Wooldridge, Lowell, Ind.

The following gentlemen were awarded prizes for the best examination in the various branches: Diseases and treatment, C. R. Richards; materia medica, Leslie Willoughby; chemistry, Thos. H. Monahan; pathology, Leslie Willoughby; physiology, C. R. Richards; anatomy, C. R. Richards; entozoa, P. S. Isaacson and C. R. Richards; dissected specimens, Leslie Willoughby; best general examination, C. R. Richards. Many other prizes and honors were awarded to both seniors and juniors.

GRAND RAPIDS VETERINARY COLLEGE.

The annual commencement exercises of this school were held in the college auditorium, March 30. Those who received diplomas were Frank Baldwin, George M. O. Olds, Charles E. Hessie, Henry Hayne, Elijah E. Paterson, Eugene F. Brown, Simon A. Welch, E. R. Parker, F. Warner, A. G. Nichols and Charles H. Olds.

The valedictory was given by Henry Haynes, diplomas were presented by Dr. J. B. Griswold, and Dr. L. L. Conkey delivered the closing address.

During the past year the school has had an attendance of 33, and during its existence 71 have matriculated. At the close of the exercises a banquet was given in honor of the class

at Chapin's. Col. M. A. Aldrich acted as toastmaster. Steps were taken after the barquet toward the organization of a State veterinary association.

CORRESPONDENCE.

THE ROBERTSON-SWAIN CONTROVERSY—DR. SWAIN'S REJOINDER.

DECATUR, ILL., April 4, 1901.

Editors American Veterinary Review:

DEAR SIRS:—On the 949th page of your March issue, Dr. James Robertson of, and for, the State Board of Veterinary Medicinal and Surgical Examiners, attempts a defense of himself and the Board against a series of wholesale charges, specifications and positive proof which I preferred against them in the February number of your journal. And, now, while I feel like apologizing to the profession, one and all, for asking them to suffer the infliction of carefully reading that sickly and silly deliverance from the Doctor in your March issue, I do so only because it is supposed to be the best defense that can come from that more or less respected, august, and erudite body; but why they presume to put forth even this bastard and brainless defense is a mystery to me. The Board admits it has never denied a certificate to any applicant, however undeserving and degraded, if only he had the fee. It admits having licensed an invalid from the insane asylum; it pleads guilty to having passed an applicant whom our committee found unable to answer a single primary question; of which fact I refer to the Illinois Veterinary Medical and Surgical Association in proof. The Board admits telling these applicants, against whom plentiful and persistent protests were made, that they need not feel uneasy about losing the $20 fee, in case they failed to pass, because the Board would pass them; and the Board always thus exchanged the license for the fee. I say *the Board admits the truth of all these allegations because they are not denied.* The Board does not pretend to deny nor palliate this infamous practice, *because it can't.* From all over the State would concentrate clouds of witnesses to confound them. They must take their medicine. When conscience and common honesty compelled our committee to condemn this Board and its infamous actions, they answer back that we are "*non-graduates;*" and, when we adduce evidence that many of the world's most eminent men belong to our contemptible

class, they call us "egotists," seeking the association of these giants of earth who walk the mountain ranges of the world. When we prove they have licensed men that are demented they say that "*dementia is much in evidence*," whatever that silly phrase may mean, and insinuate a suspicion of our sanity. When we affirm the fact that we and others protested the unfitness to practice of these applicants, the Board did not deny that fact, but sought to deceive the profession by publishing, as a letter of protest, what was, in reality, an expression of my utter disgust with the Board for its *cringing*, *cowardly*, and *contemptible* conduct, in dereliction of its plain and positive duty. Dr. Robertson knew, when he published that letter as a letter of protest from me, that he was *deliberately trying* to *deceive the profession at my expense.* This act of shameless duplicity, while not open, perhaps, to the charge of *downright lying*, is such a cunning, *careless*, *contemptible*, *twisting* and *torturing* of the *truth*, that, in *courtesy to him*, I will call his conduct *cowardly* prevarication.

He has there on file two thoroughbred letters of vigorous protest from me, dated July 28th and Dec. 16th, 1899, which the Board will never publish. I think I have answered Dr. Robertson's deliverances fully and fairly. He says he "shot, at random at our committee and hit the king bee of the hornets' nest and hurt him badly." In behalf of our committee I may say his assault was like bombarding a stone-wall with mush poultices. If our committee report was false it was calumny, and should have called out their cannon. But when we smote them on one side they turned the other, and when we apply the lash they offer no resistance, but simply lie down and seek to be funny. His defense of our arraignment, either as a literary or logical fulmination, is a complete, flat, and foolish failure. He purposely perverts certain parts and passages of my article, seeking in the absence of originality to steal his neighbor's thunder in search of lightning. Doctor, when in battle never go over to the enemy to borrow ammunition.

But, to be candid, I must confess the Doctor's article, however soft and senseless, is vastly better than I expected, for you know "*ex nihilo nihil fit*"—"out of nothing, nothing can come." The Doctor once expressed a haughty, imperious and blood-curdling contempt for the whole kit and clan of us poor plebeian non-graduates, but he says *now* he has the profoundest respect for most of them—*except me. He pities me* for allowing the lurid scintillations of my cerebrum to shatter the vase

and letting the overflowing fountain of my "undoubted talent run wild." Now, isn't it true that a recent rasping the Doctor received from us had some potency in pumping into him some of this "profound respect" for my recently despised but now profoundly respected compeers? I have stated in this article that this State Examining Board admits having licensed men to practice who are absolutely unqualified. With their *qualifications* this Board claims to have *nothing to do.* In the name of outraged decency and honor, and in behalf of the profession at large, I say: *Shame on such official infamy.* Mr. Editor, I will prove every allegation I have uttered; and truthfully paint this incompetent Board so black that the aroused profession must remove them.

In answer to my letter of December 16, 1899, in which I severely criticised the Board for its shameful conduct, I have the Secretary's answer defending the Board's action. He does not deny granting licenses to every applicant, but says the law (prior to January 1st, 1900) *compels* them so to do, provided the applicant proves that he has practised three years or has a diploma. Thus armed, and, barring only by immoral character, this guileless goodly Board says it is compelled to grant licenses to every applicant or be subjected to mandamus process, compelling it to violate the trust imposed in it. Such is the Secretary's interpretation of the law, by which he justifies the Board's guilt prior to 1900. "But," says he, "after the time limit (January 1, 1900) of this law, then rest assured that not only non-graduates but *all holders of diplomas from two-year colleges will be compelled to come before the Board and pass the examination* as required by the law." Holy Moses! I said, here is a virtuous deliverance that could only come from an immaculate conception. Prior to January 1, 1900, the Board claimed that the law bound them to license every applicant, and they did so, freely—for the fee; but, the law explicitly states that an examination before this Board of examiners touching the applicant's qualifications to practice veterinary medicine and surgery in the State of Illinois "*shall be discretionary with the Board.*" This the Secretary of the Board denies; hence their wholesale licensing and cowardly cringing before every illiterate tramp that came before them holding up the fee.

We respectfully submit that the law not only *permitted* but *made it the imperative duty of this Board to examine these men under the law prior to the time limit when they had a suspicion of the applicant's utter incompetency, and especially when such sus-*

picion was reduced to a certainty by protests being filed against them by many of the best members of the profession in the State. Such was the Board's status under the old law or prior to January 1, 1900. Now, what would any competent and conscientious Examining Board do in the presence of these applicants, these facts, and these protests? What would I do? I would say: "Gentlemen, I am here to safeguard the highest interests of the veterinary medical and surgical profession in the State of Illinois. Prior to January 1, 1900, the law leaves it optional with the Board whether it shall license you after three years' practice without an examination, but, against each of you, gentlemen, there are lodged and on file here some very *emphatic protests from the profession* against your being licensed, and thus, the Board by this act of the profession, must exercise its discretion and subject each of you to an examination."

But the Board, after January 1, 1900, as we have noted, promised in effect: "Never to be caught in another scheme or scrape and to never let another guilty man escape." The Bible declares: "He that knoweth his duty and doeth it not shall be beaten with many stripes." But they grew gradually and greatly worse, fell from grace, lost their religion, and became so ungodly that they actually sold licenses to practice veterinary medicine and surgery to every trifling devil that applied and paid the fee. This latter was "the alpha and omeg a," the beginning and the end, the first and the last and the "*sine qua non*," that is, without which there is nothing. Judas Iscariot sold the Saviour for 30 pieces of silver, but this Board sold out the veterinary profession in the State of Illinois *for 20 pieces.* Judas had the decency to go out and hang himself, but this Board hesitates even after our committee has made its duty plain. When the devil took the Saviour up on the mountain and offered him all the kingdoms and glory of the world if he would set aside principle and fall down and worship him, what do you think, under the circumstances, would have been the status of this Board? Why, each mother's son would have gone down on his knees, for the first time in his life, with hands up, offering to sell his soul to the devil for half the sum. My reason for expressing this belief is because I know they have sold themselves to a bigger fool than the devil for a devilish sight smaller sum.

Notwithstanding all this, there is something about this Board we must admire; under the terrible rain of shot and shell our committee was forced to focus upon them they only

squirmed and grinned, and when we uncovered and began to dissect them, they good-naturedly made fun of their own funeral. Against this Board, personally, I cannot feel the slightest prejudice nor displeasure. I doubt not they are the mildest mannered men that ever "scuttled ship or cut a throat," and, as husbands, fathers and friends, they may be faithful, they may be even elegant, ideal, and an ornament to any social circle, but while all this may be true, the same could be said of King Charles the First, and yet the good people of England were *reluctantly compelled to depose him from office and cut off his head because his official conduct was a curse to the state.* We recommend this Board to the clemency of the outraged profession of the State.

Respectfully, S. H. SWAIN, V. S.

NEBRASKA'S NEW VETERINARY LAW.

LINCOLN, NEB. April 24, 1901.

Editors of American Veterinary Review:

DEAR SIRS:—It affords me great pleasure to notify you that after a struggle of ten years the Nebraska Veterinary Association has finally succeeded in passing a law creating the office of State Veterinarian. This credit, however, is largely due to the Legislative Committee of that association, of which our esteemed Dr. Ramacciotti was chairman, and to his untiring efforts we are indebted for the success attained in having this bill become a law. The entire veterinary fraternity of the State rejoices over the good fortune of having at last succeeded; and although the bill does not provide for as much as we should like we have great hopes in the future of bringing it to as good a law as any in the United States.

Very truly yours,

A. T. PETERS.

SOCIETY MEETINGS.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

The regular quarterly meeting of the California State Veterinary Medical Association was held at the Maison Faure, Sacramento, Cal., March 18, and was called to order at 8 P. M. by President Sullivan.

Upon roll-call the following members responded: Dr. H. A. Spencer, San José; Dr. G. F. Faulkner, Salinas; Dr. A. S. Williams, Marysville; Dr. Jas. Sullivan, Suisun; and Doctors D. F.

Fox, A. M. McCollum, C. L. Megowan, and C. H. Blemer, Sacramento. Visitors: Dr. J. Otis Jacobs, Bureau of Animal Industry, Reno, Nevada; Prof. F. E. Twining, veterinary bacteriologist, Fresno, Cal., and Hon. Elwood Bruner, Sacramento, Cal.

The minutes of the previous session were read and approved.

There being no unfinished business, or reports of Secretary or Treasurer, the regular order of business was passed to reports of committees.

The Committee on Resolutions appointed to draught and present resolutions to His Excellency, Governor Henry T. Gage, protesting against the action of one of the directors of the State Agricultural Society in appointing a non-graduate and non-licentiate to the position of "track veterinarian" at the California State Fair, asked for an extension of time. Dr. McCollum stated that this matter had been put off from time to time and that he protested against any further delay. Dr. Blemer remarked that while he was very anxious to see this matter given prompt attention he did not think the efforts were directed in the proper channel; he thought that the matter should go to the Directors of the State Agricultural Society and not to the Governor, and further requested that his name be dropped from said committee, and suggested that the name of the President be substituted therefor. Dr. Spencer moved that Dr. Blemer be dropped from the Committee on Resolutions and Dr. Sullivan be substituted in place thereof. Carried.

Dr. Spencer moved that the original motion under consideration be amended by striking out the words "resolutions to the Governor," and inserting in lieu thereof "resolutions to the directors of the State Agricultural Society," and that said resolutions be drawn and presented immediately, and that press copies be made of same. Carried.

Dr. Spencer stated that as a member of the committee for the advancement of this association, he not only desired to see new members enrolled but was equally anxious to have old members, who had dropped out for various reasons, come back into the association, and thought that every possible endeavor should be made to accomplish this. He spoke to some length relative to brother veterinarians of Southern California, and paid them many high compliments, not alone as veterinarians, but as scholars and gentlemen, and moved, "that the Secretary be instructed to correspond with the veterinarians of Southern California and ask each of them individually to resolve himself into

a committee of one to ascertain from each other if it is not possible to revive interest in State Veterinary Medical Association matters, and, furthermore, that the place for the next quarterly meeting of this association be held open until answers were received from Southern California and in the event of said answers being favorable that the next quarterly meeting be held in the city of Los Angeles." Carried.

Dr. Spencer further requested the members present to pledge themselves, in the event of favorable replies from Southern California, to attend the Los Angeles meeting, which was done by all present.

Under "Reading of Papers, etc., and Discussion," the regular order was suspended to allow the etc., to precede the reading of papers. The etc. consisted of a complete dinner for each member and guest present. Dinner from cocktail to nuts and coffee, with frequent administrations of wines of various colors and brew. The guest of honor and toastmaster, Hon. Elwood Bruner, ex-member of the Legislature, in his very able manner reviewed the early history of this association and told of how proud he was to have been the champion of the veterinarians in the Legislature of 1891, and the pleasure it would give him to champion their cause at any and all times. The possibilities presented to the veterinarians of to-day in guarding the health of the people of the commonwealth, was ever expanding and that the people were rapidly learning to look to the veterinarian for protection.

Doctors Spencer and Blemer replied to Mr. Bruner, thanking him warmly for his past and present interest in the association and the veterinary profession. Dr. McCollum, in speaking of the veterinarian as a sanitarian recalled many cases in which the veterinarian had been of inestimable service to the health of the people, and reviewed the work inaugurated and carried out under the direction of veterinarians, that of the testing and destruction of tuberculous cattle. A most interesting discussion was the result of the Doctor's talk, especially the proper statutory laws under which this disease (tuberculosis) could be properly controlled, and the destruction of tubercular germs in beef.

Dr. James Sullivan was to have presented a paper on "Prophylaxis," but stated that owing to pressure of business he was unable to prepare the same.

Dr. F. E. Twining, veterinary bacteriologist of Fresno, Cal., spoke on several subjects, particularly regarding the use of hog-cholera serum as prepared by himself, and the good results ob-

tained; also on the fever-producing principle of tuberculin. He gave the methods of obtaining this substance, and stated that in his opinion it would be the diagnostic agent of the future for tuberculosis, producing as it does, succeeding reactions within a few days apart. Two rare and interesting diseases were spoken of—one among colts resulting in the death of 50 per cent. of the animals affected. Post-mortem examination developed the fact that large numbers of the *Schlerostoma Equinum* or "Armed Schlerostome," were present in the viscera, having passed through the walls of the intestines and invaded almost every organ of the body Another case was that of a disease among Angora goats which had in about twelve months killed 1300 of a drove of 1500. The animals became extremely emaciated and apparently starved to death, although conditions of feed and climate were changed from time to time. On post-mortem a condition of extreme anæmia and emaciation were found, although all organs appeared normal. Microscopic examination of the blood revealed the presence of a micro-organism within the red blood corpuscles. Replying to questions from Dr. Blemer, Dr. Twining stated that the micro-organism was a protozoa resembling very much that of malaria in the human and Texas fever in the bovine, and that careful examination did not reveal any external parasites on the goats, such as ticks, etc. He stated that investigations and experimental work are now under way and hoped to be able to tell more of the disease later on.

Dr. D. F. Fox, of Sacramento, read a most interesting paper on "Epizootic Pleuro-Hepatitis," and his experience with the same, a disease now prevailing among the horses of this county. The discussion which followed was taken part in by all present.

The Secretary read a paper on "Verminous Bronchitis of Calves," * a most fatal and infectious disease prevailing in parts of California.

The meeting then adjourned to meet at the call of the President in June, 1901.

CHARLES H. BLEMER, D.V.S., *Secretary.*

IOWA AND NEBRASKA VETERINARY MEDICAL ASSOCIATION.

The second annual meeting took place at Omaha in one of the parlors of the Merchants' Hotel at 2.30 P. M. on November 20, 1900, and was called to order and presided over by President Dr. J. E. Brown, of Oskaloosa, Iowa.

* Will appear in an early number of the REVIEW.

The Secretary and Treasurer, Dr. J, S. Anderson, of Seward, Nebraska, being absent, Dr. J. J. Drasky, of Crete, Nebraska, was duly elected Secretary and Treasurer *pro tem.*

The minutes of the previous meeting were read and after some corrections were approved. It was moved, seconded and carried that the minutes should read that the committee on organization recommend that the temporary organization be made permanent, and that the members of the Iowa and the Nebraska associations in good standing were eligible to membership in this organization on paying a membership fee of fifty cents.

The President appointed the following Committee on Resolutions: Dr. A. T. Peters, of Lincoln, Nebraska; Dr. H. E. Talbot, of Des Moines, Iowa, and Dr. M. V. Beyers, of Osceola, Nebraska.

Under the head of new business Dr. Peters made a most able speech in regard to the elevation of the army veterinarian. This question was discussed by other members present and it was the opinion of them all that the association should use its influence, and that the individuals should use their influence upon our congressmen and senators in behalf of the army veterinarian. It was moved, seconded and carried that the Committee on Resolutions be instructed to draw up a set of resolutions to be be sent to the representatives in congress asking them to use their votes and influence for the elevation of the army veterinarian.

Dr. Ramacciotti, of Omaha, Nebraska, president of the clinics, announced that the subjects would be ready on the afternoon of the following day and that the clinics would take place in his infirmary.

It was moved, seconded and carried that Dr. Ramacciotti be empowered to choose any of the members of the association to assist him in the clinics. He chose Dr. Talbot, Dr. Brown, Dr. Drasky, Dr. Peters and Dr. Gibson to operate on such subjects as he might assign to them.

The annual address was delivered by President Dr. Brown * in an able and pleasing manner and was commented upon by Dr. Talbot, Dr. Miller, Dr. White, Dr. Parstow, Dr. Drasky, Dr. Leslie, Dr. Vincent and Dr. Everat.

Dr. J. G. Parstow, of Shenandoah, Iowa, read two papers, one on "Hypo-Sulph. Soda Poisoning," * which elicited from quite a number of the doctors present a lively discussion, and the other one, entitled "Cæsarean Section in a Cow."

* Will be published in an early number of the REVIEW.

A paper was read by Dr. J. H. Gain, of Seward, Nebraska, in which the doctor discussed an operation in the treatment of impervious [?] urachus.* While this is a new departure in the treatment of this trouble, it seems that the doctor has certainly found a radical cure, which promises to do credit not only to its author, but to the entire profession as well. Many of the doctors present took part in the discussion of this interesting paper.

On motion, the chair appointed Dr. Parstow, Dr. Gain and Dr. Leslie an auditing committee, which was requested to report at once. The committee reported that the Secretary and Treasurer's books were in harmony with his report, and recommended the same for acceptance, which was at once voted upon and carried.

On motion, the meeting adjourned to meet at seven o'clock P. M. of the same day.

At 7.45 P. M. the association was called to order by the President, and the following gentlemen were found present: Doctors J. E. Brown, J. J. Drasky, J. G. Parstow, H. E. Talbot, D. H. Miller, S. T. Miller, W. H. Austin, V. Shafer, M. V. Byers, W. A. Hammond, James Vincent, Fred Evans, J. H. Gain, T. White, Bostrom, Gibson, Young, McKim, Crosford, Everat, H. Dell and W. Thomas; Messrs. Duff, of Chicago; McIntosh, of the *Nebraska Farmer;* Janak, editor of *Hospadr;* Adams, John M. Pattar, J. W. Haxby and S. L. Kostoryz, editor of *Osveta.*

Dr. Peters spoke on the subject of immunization of hogs against hog cholera. This speech was discussed by Doctors Vincent, Gibson, Young, Drasky, Brown, Thomas, Miller and Evans.

It was moved, seconded and carried that the chair appoint a committee of six, with Dr. Brown as the chairman, to investigate and report on the subject of hog vaccination.

Dr. Ramacciotti reported that the last year's clinics had been a complete success, which was pleasing to the operators.

A somewhat heated discussion arose among the doctors on the subject, "What I Saw in Omaha." While this discussion took on an unpleasant aspect at times, yet it closed leaving the parties concerned on general good terms, and Dr. Drasky's action was approved by all the doctors present. It was hoped that no unpleasant nor unfriendly relations existed after the discussion.

The report of cases was taken up by Dr. Thomas. In his report on parturient apoplexy the doctor confirmed his opinion

* Will be published in an early number of the REVIEW.

expressed in a paper on the same subject read before the Nebraska Veterinary Medical Association some time ago, wherein he was of the opinion that we will find brain lesions on post-mortem examinations of subjects dying of this disease. The doctor showed a brain with a large blood clot in the medulla oblongata. He urged that practitioners make post-mortem examinations of all subjects dying of this malady and keep a record of the same.

On motion, the meeting adjourned to give room to the Nebraska Veterinary Medical Association, to meet again at 9.30 A. M. of the following day.

At 9.30 A. M. the President called the association to order.

Dr. Drasky reported on a case of "Sorghum Poisoning, or What?" This case was discussed by Drs. Parstow, Miller, Peters, Miller, Leslie, Vincent, Austin, Evans and Brown.

Dr. Gibson reported on "Hybrid Pumpkin Poisoning." Discussion by Drs. Leslie, Brown, Drasky and Bostrum.

Dr. Gain reported on a case of "Ridgling," in which the gland was found attached to the spleen.

Dr. Gain reported a case of "Malanosis."

Mr. Adams was introduced to the association by Dr. Ramacciotti. Mr. Adams is an old-time friend of the profession, and is the father of one of the veterinary bills which was passed in this State some years ago. He made an extensive and able address to the association, in which he urged that the doctors continue in their struggle to secure legislation to the effect that the veterinary surgeon be recognized and protected by law. He very kindly offered his aid and assistance to the association and to the profession in their efforts along this line.

Upon motion, Mr. Adams was made an honorary member of the association by a unanimous vote, and a vote of thanks was also given him for his kindly offer of assistance to the association.

The election of officers resulted as follows :

President—Dr. Ramacciotti, of Omaha, Nebraska.

Vice-President—Dr. Austin, of Newton, Iowa.

Secretary and Treasurer—Dr. J. J. Drasky, of Crete, Nebraska.

The following Board of Censors was appointed by the Chair :—Doctors Byers, Evans, Talbot, Miller.

It was moved, seconded and carried that the Secretary and Treasurer be instructed to pay Dr. Anderson $1.05 due him.

It was moved, seconded and carried that Dr. Ramacciotti be reimbursed for his expense of the clinics.

Dr. Parstow was appointed a committee of one to wait upon Dr. Ramacciotti and conduct him to his chair, where he was presented with the gavel by the retiring President. The new President delivered a short speech of acceptance.

Dr. Brown, the retiring President, delivered a very enthusiastic speech, which was greatly enjoyed by the association.

A bill of $ was allowed in favor of Dr. Brown, and the same was paid.

The Secretary was instructed to draw a set of resolutions thanking the Merchants' Hotel for the accommodations extended to the association during their meeting, which was at once done.

The association adjourned, on motion, to meet at two o'clock P. M. of the same day, at the office of Dr. Ramacciotti.

At two o'clock P. M. the association met in the office of Dr. Ramacciotti, where the clinics took place.

Dr. Ramacciotti was appointed to act as president of the clinics for the coming year, and he promised to have a great variety of subjects and everything in readiness so as to warrant the greatest thing in the shape of clinics yet undertaken in Omaha.

The association adjourned on motion to meet next year at the call of the President and Secretary.

J. J. DRASKY, *Secretary.*

NEWS AND ITEMS.

DR. TOTTEN, of Indianapolis, has been transferred to the quarantine service with headquarters in Kansas City.

DR. MCCALL, of Spencer, Iowa, and Dr. Robt. Jay, of Davenport, have recently been appointed inspectors in the Bureau of Animal Industry, and stationed at Kansas City.

DR. R. FRED EAGLE, of Kansas City, Kans., and Dr. C. W. Barnhart, of Udal, Kansas, are veterinarians in charge of consignments of horses and mules in transit from New Orleans to Capetown.

WHEN the prices brought by the thoroughbreds consigned by the estate of Marcus Daly to sale in New York were footed up it was found that the aggregate was $404,550. Less than 150 head were included in the offering.

DR. B. F. KAUPP, of Kansas City, is taking a well earned vacation, and is sojourning in Galveston, Texas. While away he will look after some investments in the new exciting oil fields of Beaumont, Texas, and where he is hoping to develop a gusher.

DR. A. T. PETERS, of the University of Nebraska, Lincoln, spent the major portion of April nursing a fractured fibula, sustained while in the discharge of duty at the Experiment Station farm. Last reports credited him with such rapid convalescence as to give promise of complete restoration in a few weeks.

DRS. L. A. AND E. MERILLAT, of Chicago, have disassociated themselves from the large practice of Dr. M. H. McKillip, and have begun business upon their own account in the Windy City. Correspondence having reference to the "Department of Surgery" in this journal should be addressed to them at Indiana Avenue, Chicago, Ill.

WHAT is thought to be the largest goat ranch in the world is located near Lamy, N. M. It covers 28,000 acres of land and harbors 17,000 head of Angora goats more or less well graded up. It has a warehouse and factory in Philadelphia where the product of the ranch in skins and mohair is worked up into the shape in which it commands the highest price in the metropolitan market.

MORE AUTOS GIVE UP.—The New England Automobile Co. has gone the way trodden by the Illinois Electric Vehicle Co. a few weeks ago. In the report furnished relative to outgo and intake this New England company stated that its income had been something like $93,000 in a stated period, while its expenses for all accounts had been upwards of $211,000, leaving a deficit so large that it was not deemed wise to go ahead with the venture.

HIGH PRICES FOR HORSES.—As an evidence of the vitality of the horse market at present the average price realized at the great New York sales of trotters and pacers is interesting. One firm in the Eastern metropolis has sold since Nov. 1, 1900, around 1500 horses, old and young, good, bad and indifferent, ranging from The Abbot, 2:03¾ (which sold for $26,500), the champion trotter of the world, down to a yearling colt that will never do much for his owner. The average price realized for this great number of horses is right at $450, a figure that was hardly hoped for again in the dark days of 1894, 1895 and 1896.—(*Breeder's Gazette.*)

THE UNITED STATES DEPARTMENT OF AGRICULTURE maintains more than fifty agricultural experiment stations in the various States of the Union. Bulletin 93 of the Agricultural Department consists in a report of the work and expenditures of these stations for the year ending June 30, 1900, and is very instructive. The Government appropriation for their mainte-

nance is $719,999.07, which with the sums received from the various State governments, fees, farm products and miscellaneous items, make a grand total of $1,170,857.78. There are employed by the various stations 29 veterinarians. There should be one at each station.

GOOD EXAMPLE BY MANITOBA.—Dr. F. Torrance, Registrar of the Veterinary Association of Manitoba—also a Vice-President of the American Veterinary Medical Association—publishes as an advertisement in *The Farmers' Advocate*, of Manitoba, a list of the members of the association, and says: "Under the authority of Secs. 18, 19, 20, 22, and 26 of the Veterinary Association Act, 1890 (53 Vic., Chap. 60), the following persons only are entitled to practice as veterinary surgeons in the Province of Manitoba, or to collect fees for the service rendered as such." * * * "The practice of the veterinary profession in Manitoba by any other person is in direct contravention of the statute, and renders him liable for prosecution."

SECRETARY STEWART, of the A. V. M. A., under recent date, advises us that volunteering essayists for the Atlantic City meeting are very tardy in notifying him of their intention to present papers, and consequently it prevents any announcement being made of the prospective programme. He has made special invitation to the new members and those who have never hitherto contributed to this part of the convention, reserving the "war horses" for emergencies; but he is beginning to fear that the new field will not respond in sufficient numbers. A member should certainly feel it a great privilege to be able to present an original thesis before the National Association, and we trust that by the time another issue of the REVIEW is ready for its readers we will be able to announce that the programme is full to overflowing.

R. T. HARRISON, a dog breeder and fancier, of New York City, sued the Adams Express Company for the value of a Japanese spaniel dog, which he shipped to the Danbury (Conn.) dog show in 1899, and which died shortly after its arrival. His arrangement with the company was that the dog should be shipped on a certain train which Harrison took passage on, so that he could care for it *en route;* but they delivered it upon an earlier train; it arrived at its destination, with no one to receive it, and was returned to New York, where a telegram ordered it to be sent back to Danbury. Thus the little fellow, with three or four others, was kept many hours without nourishment, and

it was alleged at the trial that in consequence it died. A verdict for $240 was rendered, which was appealed by the company, and the higher court has just reaffirmed the first finding.

DR. WM. HERBERT LOWE, so well known to veterinarians throughout the country, has been seriously ill at his home in Paterson, N. J., since April 3, from an exaggerated and extremely painful attack of inflammatory rheumatism, being confined to his bed and in charge of a trained nurse. Our last advices are that he is somewhat improved, though it is thought that considerable time will be required for complete convalescence. His last act was to attend the meeting of the New York County Veterinary Medical Association on the night of April 3 to arouse interest in the coming meeting of the A. V. M. A. at Atlantic City, his attack overtaking him on his trip homeward. He was so earnest and enthusiastic in his efforts to make the coming convention the greatest ever held that we fear he overtaxed his system, robust as it has always been. We offer our sincere sympathy, and trust that he may soon be restored to health and be able to see the fruition of his ardent hopes.

PRECAUTIONS AGAINST FOOT-AND-MOUTH DISEASE.—A Washington telegram, dated April 2, has the following: "The cattle on the continent of Europe are so diseased that this Government will not permit the admission of any animals from there. The officials of the Agricultural Department are watching closely all reports from abroad regarding the extent of the foot-and-mouth disease, a fatal malady that is raging among the live stock in almost every country throughout Europe. For the last three years the outbreak has been general on the European continent, and the recent reports from various foreign ports do not indicate any diminution in its extent. This Government, as it has done since the epidemic reached such alarming dimensions, is refusing to admit any cattle, sheep or swine, except from the British Isles. This is done not only to protect the live stock interests of this country, but also to protect our $30,000,000 or $40,000,000 annual export trade in cattle."

INTERNATIONAL TRADE IN CATTLE—AGREEMENT WITH CANADA.—The memorandum of agreement made in connection with the testing of cattle for tuberculosis between the Canadian Minister of Agriculture and Dr. McEachran, Chief Inspector, representing the Canadian Department, and Secretary Wilson and Dr. Salmon, of the United States Department of Agriculture, is as follows: "1. The certificates issued by inspectors, specially selected and duly appointed as officials of the govern-

ment of Canada, will be accepted for breeding cattle and dairy cows over six months old, at United States ports. 2. The certificates of Canadian veterinaries of cattle tested by them in Great Britain, accepted at Canadian quarantines, when indorsed by the chief inspector of veterinary superintendents of the quarantine, will be accepted at United States ports of entry. The following are the veterinaries of the Dominion Department of Agriculture to apply the tuberculin test to cattle exported to the United States: W. H. Pethick, Central Bedeque, Prince Edward Island; W. M. Jakeman, V.S., Halifax, N. S.; J. H. Frink, V.S., St. John, N. B.; J. A. Couture, V.S., Quebec; A. E. Moore, C. H. Higgins and V. T. Daubigny, veterinarians, of Montreal, Quebec; George W. Higginson, V.S., Rockland, Ont.; William Stubbs, V.S., Toronto; Charles Little, V.S., Winnipeg; J. C. Stargreave, V.S., Medicine Hat, N. W. T.; J. B. Hart, V. S., British Columbia."

THE LAW AGAINST EXPOSING GLANDERS.—We have received several letters from veterinarians, mostly from the Borough of Manhattan, New York City, inquiring as to the law under which a Brooklyn veterinarian was fined $250 for having caused to be led through the streets a horse suffering from glanders and farcy. In answer to our various correspondents we append a copy of Section 658 of the Penal Code, which is as follows: "*Sec. 658. Selling or offering to sell, or exposing diseased animal.*—A person who wilfully sells or offers to sell, uses, exposes, or causes or permits to be sold, offered for sale, used or exposed, any horse or other animal having the disease known as glanders, or farcy, or other contagious or infectious disease dangerous to the life or health of human beings, or animals, or which is diseased past recovery, or who refuses upon demand to deprive of life an animal affected with any such disease, is guilty of a misdemeanor." Numerous prosecutions have been obtained under this law for leading glandered horses through the streets, omitting to have horses killed after knowledge of their condition, refusing on demand to have a glandered horse shot, etc. Selling a glandered horse has been punished by a fine of $300, $250, etc. A man permitting his horse to drink from a public trough, he knowing the animal to be diseased, has been held to be liable to an owner of a horse contracting the disease from that source. In the case of a man named Garson, who sold a glandered horse in New York, as far back as 1877, the offender received a sentence of six months' imprisonment in the penitentiary.

WHAT REVIEW SUBSCRIBERS SAY.

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"I ALWAYS want the REVIEW."—*Dr. Burnham, V. S., Bedford, Ind.*

"I SHOULD certainly not know what to do without my REVIEW."—*John B. Hopper, D. V. S., Ridgewood, N. J.*

"I WISH the REVIEW a successful year, as it richly deserves it."—*L. G. Moore, V. S., Trenton, N. Y.*

"I READ THE REVIEW thoroughly, and find lots of useful information. I met with splendid success following Prof. W. L. Williams' treatment, in February REVIEW, for mammitis."—*T. D. Geoffroy, Salix, Iowa.*

"IT GIVES ME PLEASURE to say that the information gained through the columns of the REVIEW during the past year is to me, and should be to every veterinarian, well worth ten times the price of a year's subscription."—*Charles H. Blemer, D.V.S., Sacramento, Cal.*

"I FEEL JUSTLY REPAID for my investment for the REVIEW during the past year. No one practicing veterinary medicine can afford to be without it, and more especially the young practitioner. I, for one, find many valuable hints, which I endeavor to apply in my practice. I shall endeavor to contribute any cases of interest which may come under my observation."—*C. H. Jewell, D. V. M., Dunkirk, N. Y.*

AMERICAN VETERINARY REVIEW.

JUNE, 1901.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

FRANCE FIFTEEN YEARS BEHIND AMERICA.—It is somewhat strange how, among the best meaning ones, injustice is often done to others. Of course, sometimes it is done so thoughtlessly and the object is so good that it is not worth while calling attention to the error committed and try to correct it. The question of priority is among the numerous cases of errors thus committed. After all what does priority amount to? Yet there seems to exist conditions and cases where protest is justifiable, especially when the error is publicly sanctioned by high scientific authority. For instance, at a late meeting of the Société Centrale de Medécine Veterinaire, where unfortunately I was not present, and therefore could not protest at the time, Mr. Cagny called the attention of those present to a *new* (?) mode of treatment of lameness by the subcutaneous injections of spirits of turpentine, claiming that by their use he had been fortunate enough to relieve shoulder lameness of various natures, navicular disease, and sprains of tendons. Without entering into the consideration of the serious symptoms, sometimes alarming, that occur quite frequently, and with which most veterinarians are familiar, it may be said that there is much doubt as to whether the injections were the cause of the recovery or if it was the long rest which they impose, and which for many was more than sufficient to bring on a cure. To American veterinarians this form of therapy is not new, and the records that have been published in our journals tell that

the results have been far from resembling those of Mr. Cagny. But what was the crowning of the discussion was the remarks that Prof. Almy introduced on the use he had made LATELY of injections of cocaine upon the course of nerves of lame legs, for lameness below the fetlock, by injecting at that point, thus differentiating it from lameness of the shoulder; or by injections upon the median or the cubital, or the sciatic or the anterior tibial for lameness between the fetlock and the point of injection, etc.

All this is very well, but why ignore the fact that this means of diagnosis has been used for years by others? In the United States cocaine has been thus employed for fifteen or more years, far previous to the time when the attention of French veterinarians was called to it, by an article published in 1897, a publication which it was said was the first to mention the great services cocaine could render in those cases. It is singular that our colleagues of the Société, who are all well read, should have ignored that as long ago as 1886 the REVIEW had recorded the experiments made by Dr. Torrance and the results he had obtained.

America ahead of France in veterinary surgery! That is too good not to be recorded.

* * *

A HOME FOR HOMELESS ANIMALS. — There exist in all large civilized cities of the world places where lost animals of all kinds and of all natures are brought and kept for a short time, waiting for an owner or a claimant of any kind to come and take them, and if the saving owner does not make his appearance within a short time, two or three days, the said animal is disposed of—sold or killed. Those places, pounds, as they are called, vary in size and importance, according to the administration which has charge of them; some are quite well kept, others are far from it, and the boarders which occupy the stalls or kennels receive care which may be good or bad—more of the latter than of the former, it is claimed by lovers and charitable friends of quadrupeds and of pet animals.

Of course, it can be scarcely expected that the occupants will receive the attention, the food and the pettings that they would have from their owners, if they had such. And, again, it is rumored that in some of those pounds the processes resorted to in freeing the boarders of the sufferings of this wicked world are far from being humane, death being more or less accompanied with unnecessary pains, which sometimes have to be repeated before the result is obtained.

Paris has a pound, of course. But the French *fourrière* enjoys a terrible reputation for carelessness, want of attention, and rough treatment of her inmates.

America has also pounds, whether better or not, I do not know; but in the eyes of many Americans who are living in Paris, as well as other benevolent French people, a home for lost dogs is much needed and must be erected and kept.

A subscription has been organized, and funds are pouring in from all directions. The *New York Herald's* French edition, has headed the list with $200, and every day it is increased by donations of all kinds. A poodle, "Dick," sends $100; a fox-terrier, "Dick Freeborn," sends $10; "A Pomeranian," "Chiffon," "Bob," and many others send $5, $2—and to this date nearly $1200 have been collected.

If it continues, as there is every prospect it will, it will not be long before the new home for dogs will be one of the curiosities to visit in the great city, just as is already the cemetery, which exists in the old island des Ravageurs near Asnières, where tombs are neatly arranged and kept, some with monuments on the graves, which in time to come may make the place a rival of the Père Lachaise or Montmartre.

* * *

THE CONGRESS OF TUBERCULOSIS will be held this year in London, from July 22 to 26. The King of England has accepted the Presidency, and will inaugurate the congress in the great room of Queen's Hall.

The Vice-Presidents, 48 in number, are taken from among the medical, political and nobility of Great Britain.

The Congress will be divided into four sections: (1) National and municipal section; (2) section of medicine, including climatology and sanatorium; (3) that of pathology, including bacteriology; (4) veterinary section. There will be besides an exhibition of public medicine (pathology and bacteriology) and of hygiene, annexed to the congress.

The regulations of the Congress will be as follows:

(1) There will be honorary delegates and ordinary members. The honorary, named by governments or foreign universities, or by the executive committee, will pay no subscriptions.

(2) Delegates of the English government or colonies, or of English or foreign institutions, and the ordinary members, English or foreigners, shall, to receive their cards of membership, pay to the General Secretary of the Congress, 20 Hanover Square, W., London, one pound sterling.

(3) The members will be allowed to attend all the meetings and will receive one copy of the transactions and of all the publications of the Congress.

The cards, giving admission to the private reunions, receptions and excursions, shall be given by rank of inscription; however, if there are too many they will be given by drawing.

(4) The official languages shall be English, French and German.

(5) (6) and (7) relate to the respective work of each section, publication of reports, papers, etc.

The meetings will take place between 9.30 A. M. and 1.30 P. M.

As far as we know now, veterinary medicine of the United States will be represented by Dr. Wray, as delegate of the Bureau of Animal Industry, and Prof. A. Liautard, delegate of the American Veterinary Medical Association.

* * *

To conclude this already long chronicle, and to answer the demands that I have received from the United States, I give here the address of Prof. Lignière. Communications can be addressed to him: Laboratoire des Hacendados, Sante Fé, 4299, Buenos Ayres, Republique Argentine.

At the time the requests of my friends in America, who asked me to see him on some subjects had reached me, the Professor had already started on a new mission for the study of diseases of cattle, and it is only lately that I have been able to find his correct address. A. L.

AS TO THE A. V. M. A.

While we rejoice that general practice is so flourishing all over the country, we trust that veterinarians will not be so engrossed by its exactions as to fail to appreciate the importance of the approaching meeting of the A. V. M. A., and the necessity for early notification of its Secretary as to the titles of papers which they propose to present. Sanitary veterinarians, especially those connected with agricultural and other colleges, have usually the requisite opportunity to engage in such work after the closing of the session, and they will undoubtedly be prepared to enrich the programme with their valuable contributions; but it has long ago been conceded that practical papers must not be omitted if we are to keep up interest and attendance and do the greatest good to the greatest number.

THE SURGICAL CLINICS AT THE A. V. M. A.

A very earnest effort is being put forth to make the surgical clinics at the Atlantic City meeting of the American Veterinary Medical Association the best yet held in this country. Chairman of Arrangements Lowe, at the time of his unfortunate illness, was exerting his energy in stirring up the great veterinary centres to a realization of the opportunity afforded at these clinics to make the meeting of powerful practical interest to practitioners, and he was meeting with much success. The very night he was seized with inflammatory rheumatism he attended the meeting of the New York County Association, and made an earnest address upon the subject. It was not without effect, for a resolution followed directing the President to appoint a committee to assist the Committee of Arrangements in securing operators, the motion including the stipulation that only those

who positively agree to be present and carry out their part of the programme shall be accepted. Accordingly a committee consisting of Drs. Bell (chairman), R. W. Ellis and H. D. Hanson were appointed, and they are now engaged in furthering the objects of the resolution. It is hoped that surgeons who volunteer will select procedures which are commonly undertaken, illustrating the safest and simplest methods of performing them, and also that they will notify the chairman at once, that a place on the programme and suitable material can be secured.

THE NEW YORK STATE VETERINARY MEDICAL SOCIETY set a pace last year that awakened an interest in it from one end of the commonwealth to the other. All who attended were shaking hands and congratulating each other that they were present, and declaring that it was a phenomenal success, and that they would not miss another for any ordinary consideration. They departed for their homes with a righteous determination of working to increase its membership and its usefulness. Holding its meeting this year in the same place, with a committee of arrangements composed of nearly the same men, with last year's experience as a guide, it is fair to assume that the meeting of 1901 will justify the prediction that we are to have a glorious reunion in September, full of intellectual life and activity, with practical work in the clinics which shall make every one better for the time and money spent in journeying to Ithaca. While every indication points to the fulfillment of this view of the event, we must not be over-sanguine, but each member should feel that to attain the ideal results here outlined *he* must do *his* part. The Secretary should receive early notification of *your* contribution to the programme.

WE have in hand a valuable article from the pen of Dr. Charles F. Dawson, of Baltimore, Md., upon the "Dissemination of Infectious Diseases by Insects," which will be printed in the July REVIEW.

THE interesting experiences of Dr. Hal C. Simpson, in veterinary charge of a British transport for South Africa, are given elsewhere. This will be followed by an account of his journey to the Philippines.

ORIGINAL ARTICLES.

OXYGEN AS A THERAPEUTIC AGENT.

BY DR. J. CAMPBELL, CHICAGO, ILL.

Read before the Chicago Veterinary Society, December, 1900.

(*Concluded from page 99.*)

If the solution of continuity produced either by a direct injury or from thrombosis, causing the death of the part cut off from the blood supply; if it become infected by any of the many varieties of vegetable parasites, the process of destruction will be quite rapid; but, supposing it does not become infected and yet passes over month to month and year after year and still does not heal, what rational conclusion can we arrive at? First, we know full well that almost any wound inflicted on a healthy subject, whether man or beast, under favorable surroundings, if kept clean, will readily heal by first intention, without any other assistance. I have frequently heard the statement made that an old sore of this kind was the result of blood disease and therefore must be treated constitutionally. As a rule the constitutional treatment has about the same result as the local. In coming to this conclusion the doctors were correct in part, but in part only. While it is true that the trouble is located in the blood, yet the rule is that it is not a general condition of the blood, but a local one (and amenable to local treatment) and due entirely to a deficiency of oxygen to the particular part where the ulcer or sore is located.

While it may not be an easy matter to explain to the satisfaction of all why there should have been a deficient supply of oxygen to the part in the beginning to cause this condition, yet it is easily understood why there is a deficient supply after the

ulcer or sore has become established. It has been very thoroughly demonstrated that by regular and uniform pressure all the blood can be forced out of a limb so that a perfectly bloodless operation can be made; on the same principle, the indurated mass surrounding the ulcer or sore exerts a uniform pressure on the circulation and impedes or retards it. We believe all surgeons will admit this statement to be a fact. Suppose, therefore, for the sake of argument, that this impediment to the circulation amounts to 20 per cent., what is the result at the ulcer?

The 4–5 of the normal supply circulating through the indurated mass is required to give up as much oxygen to the tissue for its support as would be required from a full supply; again, the amount of carbon dioxide taken up by the reduced circulation is the same as would be given up to a full circulation; hence, when the blood reaches the ulcer, the proportions of oxygen to carbon dioxide are very materially changed; instead of being one to four—the normal amount found in venous blood—we have a proportion of one to five or more. If one to four be about the limit at which tissue can be repaired, it then becomes very evident why a condition of that kind will not heal, and our course of treatment in order to be successful is also very plain.

If such a condition is brought about and maintained from a lack of oxygen circulating in that particular part, and if a certain per cent. of oxygen in the blood is absolutely necessary to the work of reparation, then it becomes evident that the only rational course we can intelligently pursue is to supply the want. The above proposition has been clearly and conclusively proven during the past 80 years, when Drs. Hill, Thornton, and Cavallo made their experiments on oxygen as a therapeutic agent, beside very many others of repute since that time; but as all of those men were obliged to use it in the form of a gas, we understand why it did not come into general use. For many years the attention of many of the brightest minds the world has produced has been directed to the question of obtaining

oxygen in such a form that it could be utilized and made available and practical, both to the practitioner and surgeon, in the treatment of those diseases and conditions to which it is applicable.

While oxygen exists in nature in unlimited quantities and combines with almost everything in varying proportions, yet there does not exist in nature a single compound of oxygen where it can be utilized to advantage in the treatment of disease. For instance, in pure water we have over 90% pure oxygen, yet its combination with hydrogen is such, that the oxygen is not and cannot be made available in practice. So, also, with all the others; from some we can obtain oxygen, but while we get the oxygen we also get other agents that we do not want. To get a compound from which oxygen could be obtained comparatively cheap where the supply would be automatic, regular and uniform, without the interference of any element that would be in any way detrimental, has been the object of my study for a number of years. In preparing a compound of this kind there are several points to be considered: first, we must have a chemical compound; second, that compound must be stable under all ordinary conditions except one; third, it must be so compounded that the affinity of venous blood for oxygen will break up the compound; fourth, the compound must be so regulated, that pure arterial blood will have but little if any effect in breaking it up; fifth, that it is only when the compound is broken up that the oxygen will be evolved and chlorine liberated; sixth, the combination is made and must be made in such a way that the evolved gases, oxygen and chlorine, can only act in their nascent state; seventh, the combination is made in such a way, that as soon as the venous blood has received its normal supply of oxygen, its affinity for oxygen is lessened to a point where it will no longer extract oxygen from the compound. This being true it can be readily understood how and why an application can be made to an ulcer that will remain effective for three or four days. To this preparation I have given the name "Oxychlorine"; oxygen being the prin-

cipal agent and chlorine the secondary, these two gases being the only active agents in the compound.

One pound of oxychlorine is equivalent to about 48 gallons of pure oxygen. In an indolent ulcer such as I have described, you can readily understand why there is a deficiency in the supply of oxygen at the ulcer; this deficiency can be closely approximated by noting the extent of the indurated mass surrounding the ulcer, and the consistency of the induration. If the induration be firm and resisting, the result will be that the circulation will be largely impeded, or, in other words, the circulation will be impeded in direct ratio to the density of the indurated mass. Again, remember that the indurated tissue requires just so much oxygen for its sustenance and support as it would require under normal conditions; also that the amount of carbon dioxide given up to the blood will be the same as the amount given up to a full circulation. Now, for the sake of argument, suppose that we assume that the indurated mass surrounding the ulcer is sufficiently dense to retard the circulation, say 20%; that would leave 80% of the normal supply to do all the work that is required from a full supply; again, supposing the indurated mass was equal in weight to one pound of the economy; this one pound of tissue is only receiving a 4-5 supply of blood, yet it is required to give up as much oxygen from the blood to the tissues as would be called for from a full supply, and also the amount of carbon dioxide taken up by the reduced supply will be equivalent to what would be taken up by the normal circulation; this being true, you can readily see why the blood when it arrives at the ulcer only contains about one-half of its normal supply of oxygen, thus largely increasing the proportion of carbon dioxide to oxygen in the blood.

The proportion of 1 to 4 has been fixed by nature as the limit, or about the limit, at which the reparative process can take place; and it is also an established law of nature that oxygen is absolutely necessary to the work of assimilation, and is the only agent that can bring about and consummate the reparative process; believing this, our course of treatment becomes

plain—we must in some way and by some means supply the deficiency in oxygen to the affected part. To an ulcer such as I have described, the deficiency would amount to 1-2 gallon of oxygen in 24 hours. To obtain that amount would require 1-6 of an ounce of oxychlorine, costing by the pound 2 6-10 of a cent for one day's medication. To make this treatment by oxygen effective, the supply must be uniform, regular and continuous. As the blood to the part is ever arriving, ever departing, in an uninterrupted, continuous flow, so the supply of oxygen to be effective must be ever present and ready to meet the demand. Here is a most important feature about oxychlorine: no matter how much you apply, the blood will only utilize so much; the balance will remain unchanged.

While we have devoted considerable time to the treatment of the indolent variety of wounds and ulcers, yet it must not be supposed even for a moment that this is the only class of cases where oxychlorine is to be used. Going on the principle that an ounce of prevention is worth more than a pound of cure, we fully believe that the great field for oxychlorine is in the prophylactic treatment of wounds. All wounds are liable to become infected, and I should think especially so in horses, on account of their surroundings. Now, if any infected wound be opened up, so that you can readily get at the infected part, then, as a rule, one good application of oxychlorine will be sufficient to destroy all the infection, and it will do that without injuring a single living, healthy cell; now, if oxychlorine will destroy infection when fully established, it must follow as a natural consequence that it will prevent infection. Take any fresh wound on man or beast, wash it thoroughly with a solution of oxychlorine—about six per cent.; then apply oxychlorine in powder, put on a bandage to keep the powder in place and that will be all the treatment that will be required. One thing I wish to call your attention to especially; that is, oxychlorine to be effective, where it is used alone, must be applied to a surface where the skin is broken; there must be a solution of continuity to enable it to act. On large wounds, where a few

stitches are necessary to close the wound, I would first wash out the wound as before stated with a solution of oxychlorine, then over the line of stitches apply the oxychlorine in powder. Do this, and you can rest satisfied that you will have union by first intention.

So far we have dealt only with oxygen, except to state that oxychlorine consists of a combination of the two most powerful gases known to scientific medicine. Heretofore the word chlorine has always been associated in the minds of medical men with cautery or poison. There are few, if any, who realize the fact that chlorine gas can be brought in contact with a wound and not cauterize. The teaching in all schools so far as we know has been that chlorine gas brought in contact with a solution of continuity, will decompose the molecule of water and form hydrochloric acid, setting oxygen free; the result will be a cautery. This we believe is what has been and still is taught. Now, while that is true so far as chemistry is usually taught, yet it is not true when used in oxychlorine, for the very simple reason that hydrochloric acid cannot be formed in the presence of an excess of nascent oxygen; the result is, that you have all the good effect that can be obtained from those two powerful gases acting together in their nascent state.

There are other conditions often met with where oxychlorine by itself is not applicable; for these conditions we put up another preparation, called "Oxychlorine Plastic Dressing." It is composed of oxychlorine, C. P. glycerine and dehydrated silicate of alumina and magnesia, all of which are hygroscopic. The oxychlorine is dissolved in glycerine; the glycerine being a hydro-carbon is absorbed by the tissues and takes the oxychlorine with it, and thus by osmosis it reaches the circulation. When this dressing is placed over an inflamed and swollen part, the process of osmosis and exosmosis is at once set up; the glycerine with the oxychlorine is absorbed by the osmosis and the fluid exudate is removed by exosmosis; in this way the swelling is rapidly removed, especially in acute cases.

In cases of long standing the swelling is removed and the

vessels restored to their normal condition much quicker and better than by any other known dressing.

By the use of oxychlorine plastic dressing you obtain a double action, which cannot be obtained by any other known dressing. As can be readily understood, the oxychlorine in solution in glycerine is readily absorbed by the tissues; and when absorbed, the oxygen from the oxychlorine is taken up by the blood in the capillary circulation; this oxygen taken into the circulation at the inflamed part adds new life and vigor to the blood cells, and very materially aids and assists nature in removing the fluid exudate in her own way. In addition to this you also remove the fluid exudate by the process of exosmosis through the skin. Of all other plastic dressings manufactured and sold on the market (no matter by what name they are called) for inflammation, they have but one action, namely—the removal of the fluid exudate by exosmosis; that is the artificial way of removing the exudate and getting rid of the swelling; the natural way is by absorption; this is the way the God of Nature intended that the fluid exudates should be removed—and the good physician is the one who recognizes the fact that it is his duty to aid and assist nature as nearly as he can. While it is true that you assist nature in her work of reparation by removing the fluid exudated by exosmosis, yet it is equally true that you assist her more and better by aiding her to remove it in her own way. This becomes very apparent in the treatment of an old case of sub-acute or chronic inflammation. Again, oxychlorine plastic dressing is superior to all other forms of dressings, from the fact that it can be placed over any form of wound, sore or ulcer, without any fear that the wound will become infected. In fact, it carries sufficient oxychlorine to render it a perfect prophylactic against any form of infection.

VETERINARY PRACTICE has been exceedingly good this spring. Buyers of horses have been forced to pay such long prices that they very generally seek expert opinions upon the question of soundness.

A PRACTICAL TALK TO PRACTICAL MEN.

By J. E. Brown, V. S., Oscaloosa, Iowa.

A Presidential Address delivered at the Omaha meeting of the Iowa and Nebraska Veterinary Medical Association, Nov. 20, 1900.

Only a little over a year ago quite a number of Iowa and Nebraska veterinarians gathered here in this city to bear witness to and rejoice in the birth of a new Veterinary Medical Society.

This new comer into the veterinary fraternity of the West was the outcome of a particular intimacy, friendship, and finally a union, in the interests of the veterinarians of these two States.

Springing from such a parentage we were naturally filled with enthusiasm and joyous anticipations concerning the future growth and development of the offspring; to-day we reassemble to do her honor by the celebration of her first anniversary, and to plan for her farther maturity and future usefulness.

I am sorry that I am unable at the present time to refer to the object now claiming our attention by title, but unfortunately she has not yet been christened; the recommendation of a suitable name or title being one of the duties of our committee on organization, not yet reported.

There is apparently no limit to the growth and influence possible to this organization, nor to its value as a professional and social educator to the members of the western veterinary profession.

Here in the very centre of the Great West, the greatest agricultural and stock-raising country that God ever permitted the sun to shine upon, is certainly destined to become the garden spot of the world for veterinary surgeons.

Such a country will not only demand but will command the very best—the most learned and thoroughly competent and fully equipped in every sense—veterinarians that the profession affords.

The present representatives of the veterinary profession in the West are almost universally an energetic, hard working lot

of fellows, sufficiently ambitious to maintain their places in the front ranks and to avail themselves of all the benefits obtainable through the various avenues leading to knowledge.

It would be impossible for us to conceive of a more fertile source of practical knowledge than that which comes to us through a meeting of real, earnest, thoughtful, intelligent workers in veterinary science.

Their considerations and discussions on the various subjects which come before them, the clinical demonstrations and the individual intermingling one with another, are indeed ideal methods for practical education.

(Apparently some of our brethren in the rural districts have not yet learned this, but it is true all the same.)

Then recognizing veterinary associations through their meetings as being the greatest propagators of real practical veterinary knowledge, we can only predict a wonderful growth for the one we are to-day to dedicate.

Our present organization is only a little nucleus, around which will gather the wisdom and strength of the Western veterinary profession.

Its influence shall manifest itself, and it shall be recognized throughout the length and breadth of the land on all great questions pertaining to veterinary and sanitary science.

While Iowa has not had nearly as many graduated veterinarians as many of the States farther East, her State veterinary association has for many years enjoyed the reputation of being one of the best, both in points of attendance and in the character of its meetings.

Nebraska, with a far less number of veterinarians yet than Iowa, can safely claim, I believe, that a larger percentage of her veterinarians are members and supporters of her State veterinary association than any other State in the Union. It will now be seen that the veterinarians of these two States have assumed the responsibility of the support of three veterinary associations, and this in addition to the aid they may and will give to the American Association.

Did I hear a voice dare to raise the question, Will they support them?

Not much. Everybody knows too well the sort of stuff that these fellows are made of.

They are not perfect. No, not that; but they do belong to that class that "never say die" when engaged in a good work.

We have our imperfections just like the balance of weak, struggling humanity. We have our short-comings, which I believe, if we were duly reminded of from time to time, would work a wonderful improvement in our general condition.

We do not see our own imperfections as others see them.

Might I be pardoned, then, if I should call attention to some of them as they have appeared to me?

One thing is the neglect of certain duties which we owe to the associations of which we are members.

For many years, as many of you know, it has been my privilege to serve my own State's association as Secretary, and I speak with that knowledge that comes by the line of experience.

As the time for our meetings would approach it would become necessary to go among our members and solicit papers, reports of cases, etc.

The excuses that have been offered in reply were simply astonishing.

It was not that the members lacked interest exactly; they were interested in the success of the meetings and so expressed themselves, but the illustration I wish to make is this: that the veterinarians, like the representatives of every other line of business here in the West, are so imbued with the spirit of hustle, that it is only by an extreme effort that they can content themselves to quietly sit down and give their time and attention to such matters.

Now, gentlemen, let us not neglect such duties.

Let each member bear in mind that he is jointly responsible for the success of the meetings.

As we work along, from time to time new ideas and new

methods come to us, which when put into execution prove to be valuable aids in our work.

Let me impress upon your minds the importance of making special notes of all such things, for the express purpose of bringing them before just such meetings as this.

Give the profession the benefit of your findings.

Simple as some of these things may seem to you, too simple you may think to occupy the time of the meeting with, yet just remember that if the thought was new and good to you, it will be new and good to some one else.

I sometimes think that in these meetings an effort is made to be what some might term scientific that many of the more practical and therefore helpful things are entirely overlooked.

Do not be afraid to write papers or make up reports of certain interesting cases; either are always acceptable.

Do not always wait to be asked to do these things.

You can hardly imagine what a relief it is to have these come as volunteers.

There are many more questions pertaining to association rights and privileges and duties that might advantageously be discussed, but I have in mind another subject which I consider of still greater importance to the future prosperity of the profession; so, after having started your minds along that channel of thought, it will be left for further consideration to your own good judgment.

Too well do we all know how in the past every honest and conscientious effort that the veterinarians have made toward progression (I mean of a public nature) has been antagonized by that same old spirit born of prejudice toward veterinarians that has been so thoroughly grounded into the hearts of the people by that uneducated, unintelligent and usually morally degraded class of men who have been known in the years gone by as "horse doctors."

It has been found no easy task to overcome those prejudices, nor to educate the public mind to distinguish the difference between the two classes.

It was the lack of differentiation by the public that has been our constant chagrin and that has figured so conspicuously in the defeat of so many of the very laudable measures attempted by us, which we well knew would mean a betterment in many of the conditions wherein the public would share the greatest benefits.

It was the lack of respect, confidence and influence in the profession by the public that has stood between us and our accomplishment of the greatest public good. We become impatient and fret because we cannot eradicate these prejudices from the public mind more rapidly and command a greater influence, and I wonder if we ever stop to consider that one of the principal reasons why we cannot is the ever presence of "the wolf in disguise."

They pose as qualified veterinarians and boast of diplomas as good as anybody's. We find them lounging about the streets, livery barns and race tracks, and they manifest about the same degree of self-respect as do the men they find in such places and with whom they associate.

Gentlemen, do you realize that the one thing, greater than all others, that stands to-day between us and that respect and influence which we would that we might command, is that which savors of so much quackery and lack of *self*-respect—the careless habits and the unclean daily deportment to which so many veterinarians are slaves, yet so unfitted and unbecoming to professional men?

Can we not, then, arouse within the hearts and minds of all our brethren a more determined effort toward the manifestation of the dignity that naturally should come with education, and that always commands respect from *all* classes.

I am not advocating absoluteness in this respect excepting as it may apply to the character and integrity, for there need never be any blight attached to that, for no one knows better than the speaker how difficult it is at *all* times and how impossible it is *sometimes* for a busy practitioner to maintain a presentable appearance; but in the interests of the profession I

do earnestly plead for the observance of neatness and cleanliness in so far as it can be made compatible with our work.

I am fully aware that of necessity with the dirty work we have to do our clothing cannot long be kept spotless; that is not expected; but there is no excuse for our habitually going about the streets, about our business, or appearing in public places in a careless, dirty garb and general slovenly make-up that we sometimes see.

A respectable hat, a smoothly shaven face, a well-kept beard, a clean collar and tie, the actual mud and loose dirt brushed from the outer clothing, and a touch of polish on the shoes, are features of every-day dress that go a long way toward giving one a respectable, gentlemanly appearance, and certainly none of these things are beyond the attainment of any practicing veterinarian.

It is true that very many of the people with whom we have to associate in business are not inspiring to us in this respect. We all know who they are. Many of them have come into the world blighted by birth; they have had no education, mentally or morally, that tended to inspire, hence no ambitions, and therefore with these there should be no comparison.

I have not a word to utter against the honest laborers in the very lowest vocations of life, but certainly all veterinarians should aspire to rise above the styles, the habits, and the associations of the street loungers, the common hostlers or the race horse swipes.

Yes, we must hold the confidence and respect even of these, else in our work sometimes it would be in a measure handicapped; but, gain and maintain that confidence and respect, not by constant companionship, which only breeds familiarity, but by kind words when thrown in contact, an ever gentlemanly conduct, and always strict attention to our own business.

It is one of the powers and privileges vested purely within our own selves, that each may so deport himself that credit and dishonor will reflect not only upon himself but also upon the profession which he represents, and, likewise, if he so deport

himself as to reflect discredit and dishonor upon himself, the same will reflect discredit and dishonor upon the profession in the eyes of the people.

Little do we realize, sometimes, the extent to which our moral and intellectual worth are estimated by those who see us simply upon the evidence of our appearance and our general conduct.

Recapitulating these, if I am correct in the matter, the essential attributes to, and on which the public will build confidence in our profession, are, first, a proper education; then self-respect, genteel habits and deportment and an honest endeavor on the part of each one of its representatives.

To obtain this, of course, no general law can be proclaimed, but let each one of us adopt a moral standard, such as we conscientiously feel it should be, live up to and beyond it, and the examples we set will gradually but naturally be patterned after by those whom we have not yet been able to induce to come in and share in the good things of our meetings.

VERMINOUS BRONCHITIS.

By Charles H. Blemer, D. V. S., Sacramento, Cal.*

Read before California State Veterinary Medical Association, March 18, 1901.

In November, 1899, I investigated an outbreak of alleged contagious pleuro-pneumonia in Kings County, California, and upon thorough examination found the disease to be due to the *Strongylus Micrurus*, a nematoid or hair-like worm which inhabits the bronchi and their ramifications.

In my opinion this disease has existed in this State for many years, but the cause has been overlooked and the trouble pronounced some other disease—but is now known to exist in Los Angeles, Kings and Humboldt Counties.

Of the eight species of strongyli which inhabit the air passages of domestic animals, that producing the disease in the above mentioned outbreak was recognized as the *Strongylus Micrurus*, a hair-like worm, from one-half to three inches in

length, the female being longer than the male. It is generally believed that the female deposits the embryos directly into the bronchi of the host, but that the same do not develop there, but must necessarily be expelled from the animal to pass the first stages of their existence. They live in water for months, and it is claimed that the embryo under certain conditions, will, after having been dried a year or more, revive when placed in water.

There are many unsatisfactory theories advanced as to how the worm enters the host. The most probable one being that said embryos enter the body with water or along with damp grasses.

The attention is first directed to the disease by a slight cough, which gradually becomes stronger and husky, ending in paroxysms and suffocation. The worms and embryos are expelled from the mouth or nasal cavities along with mucus by severe coughing. When the progress of the disease is slower the symptoms are milder, but owing to disordered nutrition, loss of appetite, etc., the animal rapidly emaciates.

Inhalations, combined with tonics, are apparently of the most benefit in the treatment of this disease. Intertracheal injections of either chloroform, turpentine and carbolic acid, or oil of amber, appear to be of benefit, but are unsatisfactory on account of swellings and abscesses when the fluids get into the tissues.

The best results were obtained from a mixture of chloroform and oil of turpentine or amber, equal parts, also a little formaldehyde. One or two teaspoonfuls of this mixture was poured into the nostrils and allowed to vaporize.

Any bitter stimulating tonic, arousing digestive function, may be given.

Owing to the unsatisfactory results to be obtained from any treatment it is of obvious importance to prevent the spread of the disease as much as possible. Ignorance as to the life history of the parasite renders any prophylactic measure rather uncertain, recognizing, however, the utility of drying and

draining damp pastures, and the destruction of animals dying from this malady.

I have to thank Dr. F. E. Twining, Veterinary Bacteriologist, of Fresno, Cal., for valuable assistanee in the Kings County outbreak.

ALKALOMETRY IN VETERINARY PRACTICE.

By Robert W. Ellis, D.V.S., New York City.

While the alkaloids, or active principles of drugs, have been used in veterinary practice for a considerable time, to a limited extent, hypodermically, as in the administration of morphine, atropine, physostigmine, pilocarpine, gelsemine and a few others for special conditions, "alkalometry" in the accepted sense of the term, which is the administering per orem of the measured or weighed alkaloids of drugs in granule form, as adopted by many thousands of physicians throughout our land, is decidedly a new departure in veterinary medicine; and one we believe destined to increase in its popularity and become a permanent feature, more especially in that branch of veterinary medicine known as "canine practice," in which, with us, it has long since been regarded as indispensible. Alkalometry possesses many features which commend it to us. Its certainty of strength, being the very salt or vital part of the drug, divested of all its crude properties, insures a certainty of action, so gratifying to practitioners. The fact that it is known what each granule contains by weight, makes the arranging of a dose possible without the necessity of scale or measure, hence their convenience and accuracy at any time or place. And the fact that the alkaloids are prepared in granule form, also makes their administration to the canine patient easy, by placing them well back on the base of the tongue, the dog swallowing them without realizing that he has been given a dose of medicine. This has the double advantage of causing the patient to get his proper dose (instead of losing a portion of it when given in liquid form), and of not exciting him, which in some cases

retards recovery, in others even making it impossible. To cite an instance where they are a decided advantage (and this occurs every day), we are called to see a dog, perhaps in a lady's boudoir, where she has him upon her lap, or some fine article of furniture, and we decide from his condition that it will be advantageous to begin his treatment with a cathartic. Now, under the old system, we would prescribe, perhaps, castor oil and syrup of buckthorn, or something equally bulky and nasty, and on calling the next day we naturally want to know if the medicine has "acted," and we are informed that he has not had it, that he positively refused to take it, and almost threw himself into a fit resisting it, and so they ceased to try to force him further. Consequently, our first step in the treatment is balked, and we may expect the same difficulty right on through it. On the other hand, if you practice "alkalometry" in that situation, you would remove from your pocket your nice complete "pocket-case," and administer to his dogship sitting right on his mistress' lap, or the dainty piece of furniture, as the case may be, with no fear of soiling anything about you, two, three, or four grains of aloin, and one or two grains of calomel, in keeping with the size of the dog. The dog scarcely realizes that he has taken anything; but when you call next morning, he *has* realized it, and so have those caring for him, and the answer to your inquiry invariably is, "I should think so, Doctor." That may seem a small dose of aloin, and I confess that I used to fail to get results from a much larger quantity, as I used to give it in capsule, but the granules made by the Abbott Alkaloidal Co., which I use, have given me the aforesaid results. And so right along the line you may look for accuracy and activity of result in these alkaloids in granule form, administered per orem.

To mention a few of the indications for the employment of certain alkaloidal preparations in my experience, I might point, first, to one that finds a very useful place with me as a "tonic." The iron arsenate in granules of 1–67 of a grain. Of these I give two to four at a dose at three to six-hour intervals. In paraly-

sis, so common in dogs of plethoric dispositions, strychnine arsenate, in 1–134 of a grain, finds a most useful place; given in from one to two granules at a dose, from a half hour to two-hour intervals, according as the exigencies of the case may require. Podophyllin, 1–12 grain, three to six a day, as a laxative to dogs with a tendency to constipation. Lithium salicylate, 1–6 grain granules, six to twelve a day, in scanty high colored urine, has proved highly beneficial with me. Camphor monobromated, 1–6 grain, two to three granules at a dose every three hours, makes a good adjunct to other treatment in pneumonia in dogs; my other treatment being one to two grain dose of quinine at three-hour intervals, and if the dog refuses to eat, "Malted Milk," administered with a spoon, and raw eggs given in the same manner.

To get back to the subject, after quinine sulph., we will speak of quinine arsenate, in general debility, given alone or in conjunction with iron arsenate, is a splendid rebuilder. It is put up in the Abbott list in 1–67 grain granules. Arsenious acid, in the same size granules, is convenient for administering wherever this drug is indicated. Salol in 1–6 grain granules proves very efficient in acute rheumatism, cutting it short in a few hours if persisted with. Caffeine in 1–67 and glonoin in 1–250 grain granules, are two very potent and important active principles to combat a collapse following a long sickness or from shock. Anti-epilepsy (timmerin), which consists of atropine sulphate, 1–600 of a grain, and glonoin 1-500 of a grain, in one granule, proves very efficient in my hands in the treatment of epileptic fits in dogs, causing a dilation of the capillaries and relief of brain symptoms, and general relaxation of muscular tension, very promptly. Calcium sulphide in 1–12 grain tablets is one of the best in the list, having such a wide range of usefulness. It is useful in skin diseases by its property of causing the cessation of suppurating processes, hence its application in mange, eczema, pustular dermatitis, etc., and from its newly discovered property as an anaphrodisiac, is usefully administered in young, growing house-dogs, at that annoying age when

every object with which they come in contact arouses their sexual propensities. I have demonstrated its efficacy in these cases to my entire satisfaction. Zinc sulphocarbolate in 1–6 grain granules in cases of distemper with intestinal complications, fœtid diarrhœa, etc., is very efficacious. In addition to those mentioned as having special and general application in practice, my "case" also contains calomel in ½ gr. tablets, bismuth subnitrate, 1–6 gr. granules; tannic acid, 1–6 gr. granules; codeine sulphate, 1–67 gr. granules; acetanilid comp., in tablets (acetanilid, 1 2–5 grs., caffeine, 1–5 gr., and bicarb. sod., 2–5 gr.); acid carbolic, 1–12 gr. tablets; benzoic acid, 1–67 gr. granules; morphine sulph. 1–12 gr. granules, and cerium oxalate, 1–6 gr. granules. Besides the contents of the "pocket case," I maintain what I term my "standing army," not very large, about 30,000 strong, but of picked material in my estimation. A stock of one thousand each of the 24 already enumerated, and in addition, a thousand each of the following, constitute this army: Atropine sulph., 1–500 gr.; aconitine amorphous, 1–134 gr.; ergotin, 1–6 gr. granules, and anemonin, 1–134 gr. granules; "triple arsenate," which is a compound of strych. arsenate, 1–134 gr., quinine arsenate 1–67 gr., and iron arsenate 1–67 gr., a very reliable reconstructive tonic. "Triple arsenates with nuclean," in tablet, being the same as the preceding, with the addition of two drops of nuclean solution to each tablet. This combination is not only a reconstructive tonic in a general way, but has a special application where the sexual organs are involved. It is a reliable aphrodisiac. With this stock of alkaloids at our command, office practice becomes a pleasure, as we feel that we are equipped to cope with any condition that is likely to present itself to us. Drug preparation has advanced by steps, from the use of the dried plant from which decoctions were made, or the green plant bruised to a pulp, to the tinctures, fluid extracts, and finally to resins and alkaloids, and having always been partial to concentrated preparations, having for many years used the fluid extracts undiluted upon the tongue, in preference to more dilute and bulky

preparations, in general practice and hypodermically, as many of the alkaloids as was practicable, I took very kindly to the alkaloidal preparations so conveniently prepared for internal administration, introduced to the veterinary profession a year ago by the Abbott Alkaloidal Co., of Chicago, through the media of this journal, and rejoice at the realization that we are able to procure the active principles of the drugs we desire to employ separated from the grosser materials, accurately weighed and put up in convenient form for administering internally, with no greater exertion necessary upon *our* part than paying for them. This is a condition of affairs we feel that merits a vote of thanks from the veterinary profession to the makers of these alkaloids, and to the thousands of their supporters in the medical profession that have made it possible, through *their* support, for these people to place them at *our* doors, and congratulations to the veterinary profession that they have been so placed within the reach of all. At some future time I shall report some experiences with the alkaloids in equine patients similarly administered.

THE PRESENCE OF PHOSPHATES IN THE URINE OF THE HORSE.

By Pierre A. Fish, D. Sc., D. V. M., N. Y. State Veterinary College, Ithaca, N. Y.

Read at the meeting of the N. Y. State Veterinary Medical Society, Ithaca, N. Y. Sept. 13, 1900.

The presence of phosphates in herbiverous urine has been a mooted question until a comparatively recent period. Even at the present time there are some who deny such existence. Phosphates are abundant in the urine of omnivora and carnivora, but present only to a slight extent in that of herbivora. The first and most natural explanation for this state of affairs would seemingly point to the difference in the diet of these three great groups of animals.

That this is not entirely the true explanation is readily un-

derstood when the food supply itself is examined; for the plants upon which the herbivora exist are relatively rich in phosphates, and we must explain their slight appearance in the urine from some other standpoint. In order to get at the subject in a comprehensive manner, the relationship of the phosphates to the food supply should be noticed.

The Relation of Phosphates to Plants.—Biologically plants are classed with living beings; they possess vital properties; they possess anabolic and katabolic functions; they assimilate and disassimilate; their tissues are built up and the waste material is removed, fundamentally, in a way quite comparable to that in higher forms; they have the power of elaborating the inorganic material derived from the soil and building it up into new organic or protoplasmic combinations.

The phosphates with which the plants are directly concerned are four in number, namely: the phosphate of potassium, the phosphate of lime, the phosphate of magnesia, and the phosphate of iron.

The earth is especially rich in the phosphates of iron and alumina; phosphates of lime and magnesia are found in quite variable quantity and sometimes in extremely slight amounts; the phosphate of potassium is not normally present, and the slight quantity found in some analyses is derived from the organic débris undergoing decomposition in the soil. The phosphate of alumina, quite generally abundant, does not seem to be made use of as such by the plants. In order to be utilized it must apparently undergo decomposition in the soil, ad then resulting phosphoric acid forms new compounds, such as the phosphates of potassium, lime, and magnesia.

The phosphate of potassium, although scarce in the soil, exists in considerable amount in the seeds of the plants. It is readily soluble in water.

The phosphates of lime and magnesia are insoluble in water alone; but they are easily dissolved in water containing carbonic acid, and the moisture of the soil is generally favorable for this purpose. The phosphates of potassium, lime and magnesia,

because of their solubility, are, therefore, most easily absorbed by the plants.

The phosphate of iron is insoluble in water, or in water containing carbonic acid, and becomes soluble only under certain complex conditions, so that its use by the plants is comparatively limited.

Distribution of Phosphates in Animal Tissues.—In the tissues of living beings five forms of phosphates are encountered, namely: the phosphates of potassium, soda, lime, magnesia and iron.

These phosphates are unequally distributed in each kind of tissue, but some particular one of them may predominate in a certain organ, or a particular organic system. Thus, the phosphate of potassium predominates in the nervous system; the phosphate of sodium predominates in the blood plasma; the phosphate of iron in the red corpuscles; the phosphate of magnesia in the muscular tissues, and the phosphate of lime in the bones.

The soluble alkaline phosphates are more especially present in organic liquids or tissues of soft consistence. The phosphate of soda in the plasma (liquid), the phosphate of potassium in the nervous system (soft consistence).

The insoluble earthy phosphates are more especially reserved for the solid tissues. The phosphate of magnesia associated with the phosphate of soda and phosphate of lime predominates in the muscles (semi-solid), the phosphate of lime is in excess in the bones (solid).

Elimination.—The phosphates, thus generally distributed through the great tissue systems of the animal body, are influenced by all metabolic processes, and, like other compounds, are being torn down and built up as the result of physiological activity. Pathological conditions, affecting any of these systems, by interfering with the anabolic or katabolic functions, influence, one way or the other, the elimination of the products of metabolism.

The two principal channels for the elimination of the phos-

phates are through the kidneys in the urine and through the intestines in the fæces. In the omnivora and carnivora the principal channel is through the kidneys; in the herbivora the principal channel is through the intestines. It is believed that in the latter the phosphoric acid taken in with the food combines to a large extent with bases which have become separated by the action of the digestive juices upon the food, and a large portion of the phosphates thus formed passes out with the fæces.

The amount of phosphates eliminated is affected by purely physiological processes, and also by pathological conditions.

Physiologically, a diet rich in phosphates, such as a large feed of oats, bran or oilcake, increases the amount of phosphates in the urine; exercise or vigorous muscular work, or anything which promotes metabolism increases the amount of phosphates eliminated.

Pathologically, any disease affecting any of the tissue systems in which phosphates are present, will affect the amount of phosphates excreted. Among such diseases may be mentioned rheumatism, diseases of the nervous system, rickets, osteomalacia, osteoporosis, spavin, ringbone, splint and navicular disease, in all of which the amount is increased; on the other hand, the phosphates are decreased in renal diseases and tuberculosis.

The examination for urinary phosphates is, therefore, of much clinical importance for purposes of diagnosis and prognosis. The great number of bone diseases to which the horse is subject, renders it very desirable that one should be able to follow the course of the disease and outline the treatment according to the information obtained from the analysis of the urine with reference to the phosphates.

Information may thus be derived as to whether a spavin, ringbone, or splint is in its active stage, shown by an increased amount of phosphates in the urine, or if the period of active change has passed over and the phosphates no longer appear in undue amount, although the exostosis remains. In this way one

can determine whether or not the disorder is active or quiescent; one may also more easily determine the seat of lameness according to such examination, whether due to spavin, etc., or to hip or to shoulder lameness, as the case may be, and arrange the treatment accordingly. In cases of fractures an enormous amount of phosphates are thrown out into the urine. The progress of knitting together and healing of the parts may readily be followed by noting the gradually diminishing amount of phosphates in the urine.

For purposes of diagnosis or prognosis a quantitative determination of the phosphates is essential. This formerly was beyond the reach of the ordinary practitioner, because the skill, training, experience, time and the complicated methods were not available, but with the introduction of the centrifuge, an apparatus comparatively inexpensive, such quantitative determinations can be made in from three to ten minutes by any one who can prepare the proper chemical reagents and mix them in the proper proportions in the tubes.

The urinary phosphates are divided into two general groups: the earthy and alakaline.

The earthy consists of the phosphates of calcium (abundant) and magnesia (scanty). They are insoluble in an alkaline medium, but to a certain extent are held in solution in the urine by the presence of free CO_2.

The alkaline consist of the phosphates of sodium and potassium and are very soluble. They never form ordinary urinary deposits. They are more abundont than the earthy.

The urine of the horse is always more or less turbid and this is due for the most part to the deposition of certain of the salts before the urine has been passed from the bladder. These salts consist mainly of the carbonates, but also, to a smaller extent, of the earthy phosphates.

A frequent source of error in testing for phosphates in the urine of the horse is in not allowing time enough for the precipitate to settle. On account of the density and viscidity of the urine the precipitate does not always form nor settle readily

and frequently an hour or more should be allowed after the reagents are mixed with the urine in order to insure a total precipitation. This is true particularly of the magnesian test.

The metabolic processes concerned with the phosphates are not altogether dissimilar to the action upon the nitrogenous constituent of the proteid food stuffs, and in some ways there is an apparent correlation.

Summary.—Phosphates in the soil that are of direct use in the metabolism of plants are: the phosphates of potassium, lime, magnesia and iron. When the plants are eaten as food and after being subjected to the action of the digestive juices, their phosphates are decomposed and the resulting phosphoric acid forms new combinations and these are distributed to the various tissue systems.

In the animal tissues, the phosphate of potassium is found especially in the nervous system; the phosphate of sodium especially in the blood plasma; the phosphate of iron in the red blood corpuscles; the phosphate of magnesia in the muscles, and the phosphate of lime in the bones.

As a result of the metabolism in the tissues, physiologically or pathologically, a certain amount of phosphates are eliminated; in the omnivora and carnivora chiefly in the urine; in the herbivora slightly in the urine and more largely in the fæces.

A knowledge of the normal amount of phosphates present in the urine or a departure from this standard, either in excess or deficiency, is of considerable importance clinically in the diagnosis and prognosis of numerous diseases.

CYSTOTOMY (LITHOTOMY).

By Veterinary Surgeon A. Chinniah, Colombo, Ceylon.

History.—A black Waler gelding pony, about 14.2 high, eight years old, the property of W. W. Kenny, Esq., of Colombo, was brought to my surgery with the history that the animal passes highly blood-colored urine. It was treated by me for

some time with palliative drugs as in cases of ordinary hæmaturia; but when the case assumed an obstinate nature, I suspected that there must be some mechanical agent, such as a calculus, doing the mischief as the symptoms suggested. The animal was examined per rectum and the presence of the calculus was diagnosed with certainty.

Symptoms.—There was painful straining during micturation, but at times the urine passed was of normal color and consistency. After brisk exercise the urine passed contained blood corpuscles and pigments in abundance, and the expression of the patient during the passing of urine indicated great pain. The appetite was all throughout good and there was no noticeable rise of temperature. As soon as the proper diagnosis was arrived at I informed the owner that the animal must stand an operation which, if it succeeded, was the only means of saving the animal.

Modus Operandi.—The instruments taken for the operation were scalpels, sharp-pointed bistoury, Symes' artery forceps, bull-dog forceps, stone forceps, Gullion's lithotritor, male catheter and the female washing catheter.

The animal was thrown on the near side and a general anæsthetic (chloroform) was administered. The penis was pulled out, washed and lubricated, and the catheter was passed and the penis retained all throughout in this position by an assistant told off for the work. The off hind leg was drawn a bit in front. I took my position just near the croup. The tail was washed antiseptically and given in charge of another assistant to be kept in the desired position. An incision was made two inches below the rectum along the middle line of the perineum downwards. When the urethra was reached, the sharp point of the bistoury was introduced into the tube (urethra), which was eventually slit open to admit the passage of the forceps. When the forceps were in the bladder the stone was grasped, with the assistance of my left arm, in the rectum. Several attempts were now made to remove the stone without performing cystotomy or lithotrity; but they proved futile.

Though the lithotritor was at hand ready for use I preferred to perform cystotomy. The bistoury was passed along the urethra into the mouth of the bladder, and guided by my left hand per rectum to prevent a rectal fistula, an incision was made dividing the mouth of the bladder, prostate glands and (unavoidably) the pudic artery. The latter was promptly caught and ligatured. This made the operation simple, and with the help of the hand, per rectum, the removal of the calculus was easy enough.

The calculus weighs 3⅜ ounces and its circumference 7¼ inches. It is not spherical, but convex on both surfaces, and the margin unbroken and round. The outer layer is apparently composed of phosphate of lime and the inner of oxalate of lime.

After Treatment.—The bladder was washed with a tepid solution of boracic acid. The wound was antiseptically treated and painted with iodoform and eucalyptus oil and left open. The animal micturated soon after the operation, and passed urine both through the wound and along the natural passage. The passage through the wound ceased after the first day of the operation—January 27, 1901. The wound is being daily dressed antiseptically with what I call an antiseptic emulsion composed of boracic acid, carbolic acid, iodoform, eucalyptus oil and glycerine, and satisfactory progress continues to be made. The wound is 2 inches in length and a quarter inch deep now.

OPERATION FOR IMPERVIOUS URACHUS.

By Dr. J. H. Gain, Seward, Nebraska.

Read before the Iowa and Nebraska Veterinary Medical Association at Omaha, Nov. 20, 1900.

Until the later treatment for parturient apoplexy the country practitioner usually had a chill when the symptoms of this trouble were described along with a request for help, and somewhat the same feeling comes over him when a stock owner comes in and says that his young colt is unable to stand, passes urine

in considerable quantities through the navel,hocks badly swollen, saying the old mare stepped on them.

During the past spring and summer we had a great number. A few that had only a slight discharge from the navel, with no other symptoms, recovered both with and without treatment.

In the more severe cases, having tried various injections, together with tying off the urachus and losing all of them, the following operation was suggested and performed by Dr. Anderson :

The patient having been kept from dam for six hours was laid down and tied so as to leave the abdomen freely exposed. An anæsthetic was then administered, the abdomen thoroughly washed with soap and water, and the hair shaved from a space four inches long by eight wide, with the navel as the centre. An elliptical-shaped incision five inches long and just wide enough to take in the navel was then made through the skin, underlying tissues and peritoneum. The umbilical vein was traced ahead until found to be healthy, ligated with silk worm gut and severed. The urachus was then followed up to bladder and two strands of the silk worm gut passed between the branches and each ligated separately, a strand being then passed around and over both ligatures. The urachus was then severed about a half inch below the ligature, the peritoneum was closed with an uninterrupted suture, the ends being left long enough to hang outside. The skin was closed by an ordinary interrupted suture, directions being given to pull out the inner suture the third day.

THE DEPARTMENT OF AGRICULTURE has decided to bear the entire expense of testing cattle with tuberculin in Great Britain which are to be sent to the United States for breeding purposes. Importers are directed to communicate with Dr. T. A. Geddes, care U. S. Consul, London, who represents the government in this matter.

IN the University of Nebraska appropriation bill Gov. Dietrich has vetoed items appropriating $90,500 for the improvement of the property and equipment of the University and the Experiment Station.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

POST-MORTEM EXAMINATION OF A CRYPTORCHID BULLOCK—CONGENITAL MALFORMATIONS AND PATHOLOGICAL CONDITIONS.

By C. H. SWEETAPPLE, V. S., Professor of Cattle Pathology and Obstetrics, Ontario Veterinary College, Toronto, Canada.

"In life that vegetates, and life that moves, o'er all, disease her beauty withering wand waves high," and it cannot be doubted that in all "life that moves" congenital malformations may also exist as well as pathological changes.

The following case from notes of a post-mortem examination made for the Health Department of the city of Toronto, a few weeks ago, will I trust prove of interest.

A white steer, about three years old, had a masculine (staggish) appearance about the head, was in good condition and apparent good health. In consequence of having a tumor in the soft tissues in the region of the throat, the animal was held under the authority of the City Health Department, to be butchered under veterinary inspection.

The bullock was killed and the viscera removed by the butcher in the ordinary way. And on opening up the animal, it proved to be a cryptorchid, a small imperfectly developed testicle being found in the postero-inferior part of the abdominal cavity, attached to the spermatic cord. This, of course, accounted for the staggish appearance of the animal.

The liver was normal in size and form, but had two gall bladders closely united together. The butcher told me that he had occasionally noticed similar malformations in slaughtered animals.

On removing the stomach an abscess was found adjacent to the reticulum. It contained a quantity of pus, and a piece of steel wire, apparently about two inches of a knitting needle.

The tumor in the throat was about the size of a large orange. It consisted of dense fibrous tissue, in the centre of which was a cavity, containing a pus-like fluid; this cavity had several chambers communicating with each other. It was evidently tubercular.

On the serous coat of the rumen there were a number of

small tubercles, in the grey or early stage of development, also some in a similar stage on the parietal peritoneum.

In the greater part of the whole of the tissue of the lungs, were numerous tubercular nodules, varying in size from that of a marble to a walnut. These were in the caseous stage. There were no adhesions or tubercular nodules on either the visceral or parietal pleura.

And there was a tumor about as large as a duck's egg near the distal end of the fleshy portion of the gastrocnemii muscles —situated in the areolar tissue between the muscles—the muscular tissue itself was not involved. This was evidently tubercular—a greatly enlarged lymphatic gland.

Finding all these different conditions in one animal was certainly unusual and worth recording.

TORSION OF THE UTERUS.

By W. L. West, V. S., Belfast, Me.

April 10th, while attending the quarterly meeting of the Maine Veterinary Medical Association, I was called home by telephone to see a parturition case.

Found a three-year-old cow which had been in labor eight hours, without making any progress. Upon making an examination found the uterus twisted to the right, with the os dilated enough so that by following the direction of the curves the hand could be introduced into the uterus and the fœtus examined, which was found to be in the vertebro-sacral position and correct anterior presentation. Gave the owner a very guarded prognosis and had about decided to perform a laparotomy and proceed as Dr. McCrank did, when it occurred to me that, while in college one of our professors told us that if the arm could be introduced into the uterus and the fœtus grasped firmly, by having the cow rolled the opposite way the torsion might be relapsed or entirely reduced.

I must confess that this seemed to me at the time like a fairy tale, but as in any event it could do no harm and might be productive of some good, resolved to give it a trial. I put side lines on the cow and crossed the ropes over the back and drew the feet up snug to the abdomen and secured them there. Introduced the hand into the uterus and secured a good hold of the fœtus by getting the forefinger and thumb into the eyes and other finger in the mouth ; had attendants roll the cow to the left, and was agreeably surprised and disappointed to find the torsion completely reduced when the cow had been completely turned.

Removed the calf now without difficulty, irrigated uterus with creolin solution, removed remains of the placenta, gave the cow two ounces of whiskey, had her covered with a blanket and had the satisfaction of seeing her eating hay in less than thirty minutes. She made an uneventful recovery.

THE MOST BRUTAL WAY TO DOCK A HORSE.

By T. S. CHILDS, V. S., Saratoga Springs, N. Y.

I had a hurried call by a millionaire's coachman at 3 A. M., April 6th, to go and see three valuable horses that had been docked just one week before by a man who claimed to be a world-beater, as a docker, spayer, and castrator. It was in Ballston Spa, seven miles from Saratoga. On my way the coachman gave me this history: Last Friday, the boss had this man come to the stable to dock three horses; the *modus operandi* was as follows: First, he got several men from the boss's mill, and roped, cast and bound the animals one at a time, and had a good strong man take hold of the tail and pull it backwards as hard as possible, while he (the operater) took a common hand saw and sawed the tail off; let the horse up, and repeated the operation on the other two. The coachman remonstrated against the method, but this wise man of surgical science gave him to understand that he knew his business and that that was the latest up-to-date method. The coachman says the place was like a slaughter house that day, and the next day this wise man made his appearance, and as the blood showed evidences of not subsiding, he placed a cord on the tails, back about four inches from the end. It was put on so tight and left on so long that sloughing took place. After the animals had suffered in this way for four or five days they called the local veterinarian in, and, after he treated them three or four days, with no improvement, I was called. I gave them to understand that under the circumstances I should charge $25 for my visit and advice, which was agreeable to them. On my arrival I think I can say without any hesitation that I saw three of the worst looking, rotten tails I ever saw. They were terribly swollen and the ends were as large as a man's double fist, suppurating and fœtid. The temperatures were more than 105° F. in each case, animals distressed and off their feed. I prescribed and left the cases, with the understanding that the attending veterinarian would let me know how they came out, which he has not done up to this writing.

Well, some men are rogues and get praised for it, and some

try to be honest and are turned down at every corner. It is a question of luck, I guess; but none of us are always right. I think if a graduated veterinary surgeon was guilty of such a cruel and brutal piece of surgery he would be haled before the courts of justice forthwith. We as veterinarians are looking for protective laws. I say, enforce the laws we have, and from a humanitarian standpoint, stop such brutality in our State. The owner of the above-mentioned animals is one of the wealthiest and most influential men in Saratoga County.

THE SCHMIDT TREATMENT FOR MILK FEVER.

By Wm. Petrie, V. S., Wheeling, W. Va.

At my first opportunity to try it, I was without an instrument to administer the solution. The case was a very bad one and there was no hope by any other method; so, not wishing to let it pass, I took a common milk tube and placed it in a new "Omega" syringe, disinfected the instrument and a quart bottle with boiling water, then placed a glass funnel in the neck of the bottle and plugged the neck of the funnel with a pledget of absorbent cotton. I then put one dram of carbolic acid and two drams of iodide of potash in the funnel and poured in boiling water until the bottle was full. After cleansing the udder well and cooling the solution to about blood heat, I injected the solution into the udder directly from the bottle, about a fourth into each quarter. Three injections six hours apart brought relief, and complete recovery soon followed.

A LITTLE EXPERIENCE WITH TANNOPINE.

By Wm. Petrie, V. S., Wheeling, W. Va.

At the present time, when so many new medicines are being placed on the market, it is impossible to give each a trial. But when one does find something that is exceptionally good, it is only fair to say so, that others may profit by the experience. About a year ago the Fabenfabriken of Elberfeld Co. sent me a sample of tannopine and asked me to try it in diseases of animals, saying that it was recommended for diarrhœa. I tried it in horses, cattle and dogs, with most satisfactory results. In catarrhal diarrhœa it seems to be a specific. Two cases in horses, four in cattle and two in dogs, that were treated over six months ago, were perfectly cured, and others of more recent date seem to be all right. The only cases where tannopine failed to produce the desired results were found to be of a tuber-

cular nature; these, of course, we know will yield only temporarily to any form of treatment.

DEPARTMENT OF SURGERY.

By L. A. and E. Merillat,
2127 Indiana Avenue, Chicago, Ill.

KERATOCENTESIS (*Concluded*).

Staphyloma is a name given to any bulging cornea or sclera of the eye, or the formation of tumors involving them; the most common forms are:

1. Anterior (*keratoglobus*).
2. Posterior, a bulging of the sclera posteriorly.
3. Annular, which surrounds the ball either equatorially or partially.
4. Intercalated, found between the sclera and the iris.

Of these only one will be considered as an indication for paracentesis; the other forms are generally due to neoformations, or other pathological lesions which are not treated in this manner. The first, the keratoglobus or anterior staphyloma (Fig. 47), when caused by intraocular pressure or dropsy of the anterior chamber, is often benefited by removing the pressure.

Staphylomata of the cornea may appear in various forms; it may be *partial* or *complete*, racemose, conical or globose. They

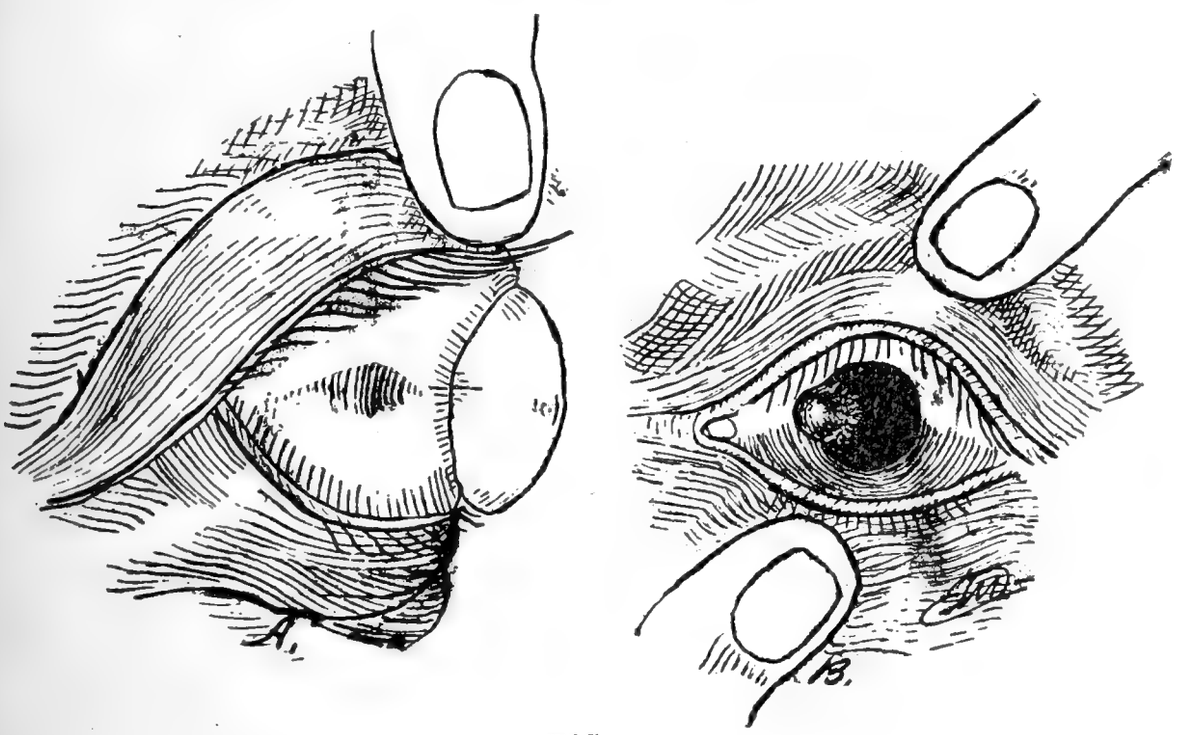


FIG. 47.
STAPHYLOMATA.
A, lateral view; B, anterior view.

are *partial* when they involve only part of the cornea (Fig. 47–B); *complete*, when the entire cornea is bulged out anteriorly (Fig. 47–A); and racemose, when the cornea presents a number of protrusions that are sometimes linked together. Most all staphylomata are caused by increased intraocular pressure; and this pressure produces some pathological lesion in the structures of the cornea which allows it to become distended.

In a vertical section of the cornea five well developed layers are recognized, which we will name from without in:

1. Anterior epithelial layer.
2. Anterior limiting membrane.
3. Substantia propria (*proper substance*).
4. Posterior limiting membrane (*Descemet's*).
5. Endothelial layer.

1. The *anterior epithelial layer* is a continuation of the ectodermic portion of the conjunctiva, and consists of from six to eight layers of squamous cells; the deep layer of cell, however, may be considered low columnar, and rest upon the anterior limiting membrane which is the matrix of the epithelial layer (*basement membrane*). The epithelium is thickest near the periphery and thinnest at the centre.

2. The anterior limiting membrane, or Bowman's membrane, belongs neither to the elastic nor white fibrous connective tissue. It is well supplied with nerve fibres which enter the epithelium, which covers it; it is a highly developed basement membrane, which is thickest at the centre of the cornea, and is frequently invaded by superficial ulcers of the cornea.

3. The *substantia propria*, or *proper substance*, constitutes the bulk of the cornea and is composed of bundles of connective tissue fibrils held together by interfibrillar cement, and arranged into lamellæ. The connective tissue cells are located between the lamellæ in the corneal spaces. These corneal spaces are larger than the connective cells which affords a passage for the nutrient juices that supply the non-vascular cornea with nutrition. Between these spaces are communications (*canaliculi*), and between the fibrillæ, in the interfibrillar cement, is the location of the lymph spaces. When normal this layer is always transparent and any cloudiness or haziness of the cornea is generally due to some pathological lesion of this substance.

4. The *posterior limiting membrane*, or *membrane of Descemet*, is a well defined membrane, thickest at the periphery, and composed of very elastic tissue. It can be separated from the

proper substance, and is the membrane that protrudes when the superficial layers are lacerated or cut, either by traumatic injuries or accidental surgical wounds. The protrusion of this membrane through a superficial opening forms a hernia (*keratocele, sometimes called Descemet's hernia*). This membrane may be considered the basement membrane of the serous coat of the anterior chamber of the eye; it is continuous with the basement membrane of the serous coat that lines the anterior part of the iris.

5. *Posterior endothelial layer* consists of a single layer of endothelial cells, differing from those of other serous membranes in the absence of stomata, which makes it impossible for the aqueous humor to enter the lymph radicles of the cornea.

This part of the serous membrane of the anterior and posterior chambers, contributes its mite toward producing the

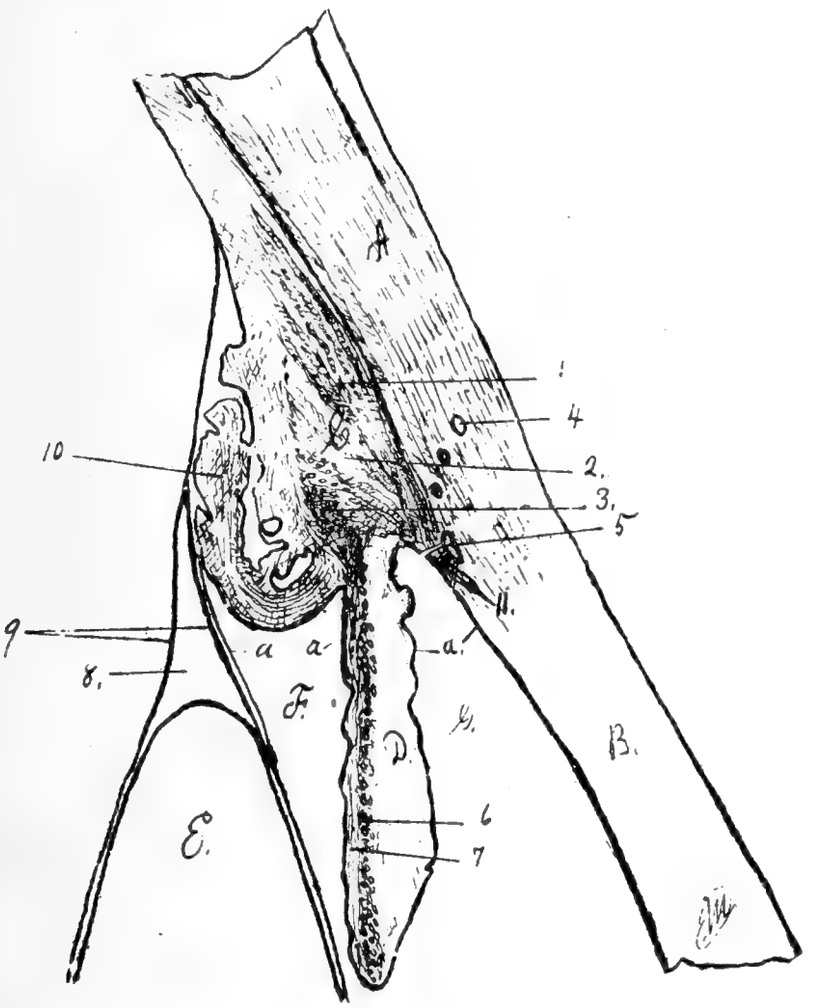


FIG. 48.

CILIARY REGION OF THE EYE.

A, sclera; B, cornea; C, ciliary muscle; D, iris; E, lens; F, posterior chamber; G, posterior chamber.

1, meridinal fibres; 2. radiating fibres; 3, circular fibres; 4, anterior ciliary artery; 5, canal of Schlemm; 6, circular fibres of iris; 7, meridinal fibres of iris; 8, canal of Petit; 9, suspensory ligaments of lens; 10, ciliary process; 11, spaces of Fontana.

aqueous humor, but this activity (secreting) of the membrane is more marked near the vascular periphery of both chambers; the part lining the ciliary processes produces the greatest quantity. The lymph vessels, which normally carry off the aqueous humor, are located in the spaces of Fontana, which communicate with the canal of Schlemm. (Fig. 48–5.)

The transparency of the cornea is maintained by the normal apposition of these layers, and a perfect physiological function of vessels carrying nutrition to it, and its absorbing system. Either of these conditions depend to a certain extent upon intraocular pressure; the position or relation of these structures can be changed by an abnormal pressure, and increased pressure may prevent the access of nutrient juices into the cornea, or interfere with the absorbing system (*lymphatics*); while a diminution of pressure may increase the amount of juices and allow the accumulation of lymph through a lack of tonicity, in lymph vessels, any deviation may cause disease of the cornea, impair the functional activity, its circulatory apparatus, or cause it to lose its transparency; besides these conditions resulting from interocular, the bulging of the cornea is the one to which paracentesis is most applicable, because the other conditions often are difficult to attribute to the real exciting cause, and it is not advisable to experiment much with the organ of vision of valuable animals.

Operation.—The operation is not a difficult one, but one that must be performed aseptically. The anterior chamber can be punctured with a probe, hollow needle, or small trocar. To empty the anterior chamber a probe is sufficient, although some oculists recommend the trocar for the removal of pus (*hypopyon*) from the chamber; it is also recommended for tapping posterior chamber.

Before operating the patient must be properly secured; with some patients a local anæsthetic will answer, but if it cannot be properly controlled, a general anæsthetic must be substituted. The eyelids can be separated with the fingers, but if the posterior chamber is to be tapped, they can be separated with an eye speculum. (Fig. 50–A). The eyeball is fixed with the thumb and forefinger of the left hand; the instrument (Fig 50–B. C.) is entered at the corneo-scleral margin, at right angle with the surface (Fig. 49–a) and as the instrument is inserted the direction is changed so that the iris and lens is not injured; the instrument is removed gradually, allowing the aqueous humor to escape slowly. If the contents of the chamber is

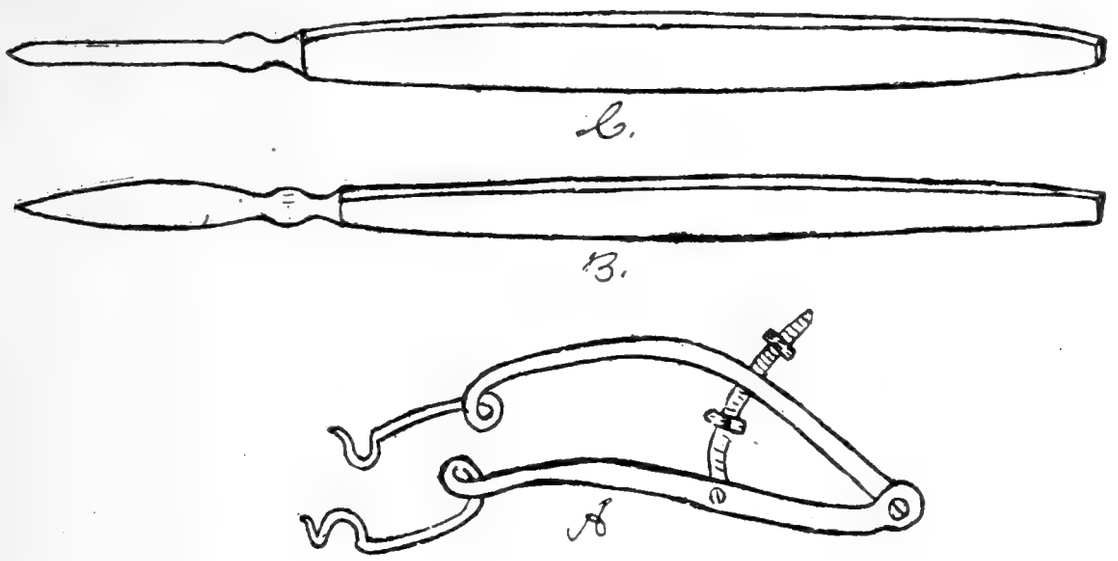


FIG. 50.

a, Eye speculum. *b and c*, Lance-knives.

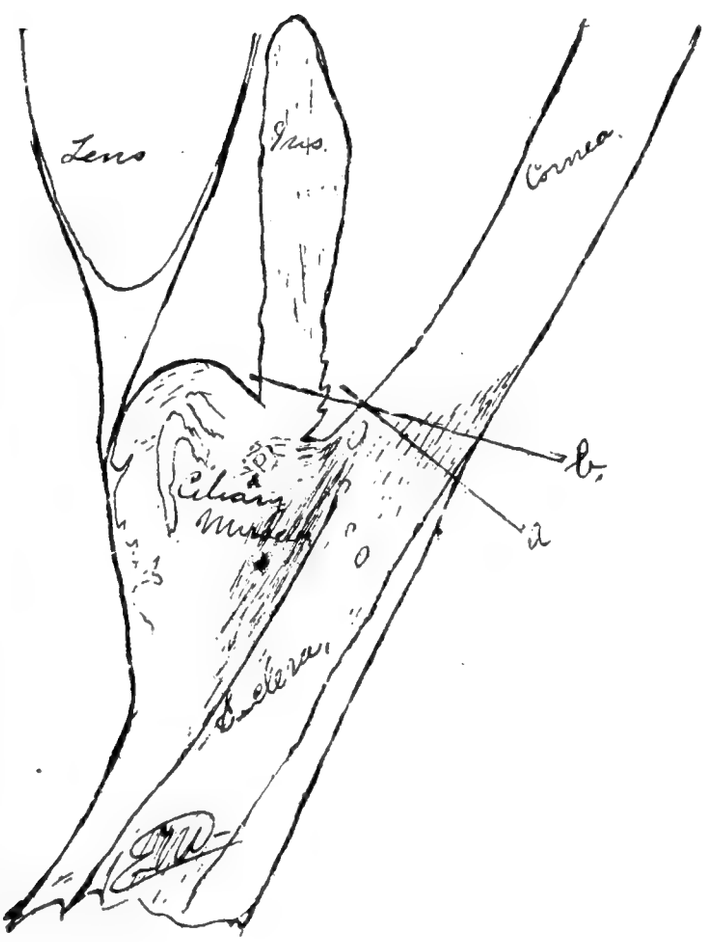


FIG. 49.

a, direction of trocar for puncturing anterior chamber. *b*, direction of trocar for posterior chamber.

forced out too rapidly the iris is frequently driven against the opening by the current, which sometimes makes it very difficult to remove all or the required amount of fluid. The eye should be carefully bandaged to exclude all light, without applying pressure upon the eyeball. The bandage should be allowed to remain on for three or four days. When necessary the operation can be repeated.

2. *Descemetitis* is an inflammation of the posterior part of the cornea. Such inflammation, however, seldom occurs without involving the entire serous membrane lining the anterior and posterior chambers. It usually begins with an acute inflammation, which eventually becomes chronic with a serous exudate (*dropsy*). The accumulation of fluid in the chambers may cause the cornea to bulge out by the increased pressure from within; or, some other complication resulting from intraocular pressure. Such cases are often benefited by paracentesis, repeated as often as necessary.

3. *Diseases of the Iris.*—The diseases of the iris that may be classed with the group that can be benefited by punctures, are all those not associated with plastic inflammation, such as:

1. Aplastic iritis.
2. Serous iritis.
3. Suppurative iritis.

1 and 2. Aplastic and serous iritis are almost identical; by some authorities there is only a little difference in the effusion, but the treatment is the same in all cases. The result of these diseases is the same as in chronic descemetitis.

3. *Suppurative Iritis.*—This is not a very common condition, but cases have been reported in which the exudate assumed a suppurative character from the beginning, which eventually is followed by the accumulation of pus (*hypopyon*) in the anterior chamber of the eye.

Treatment.—In all of these diseases no remedies are effectual as long as the intraocular pressure is not relieved or pus removed from the anterior and posterior chambers of the eye. The treatment which has given the best results is repeated paracentesis of the chambers, with such therapeutic agents indicated (*mydriatics* or *myotics*, *mild antiseptics*, *cooling lotions*, *etc.*). The general condition of the animal must be improved. Some of the cases will improve as soon as the pressure is removed, while others assume a chronic form and require months before the normal condition is restored. In all cases the eye must be kept at rest; the pupil dilated, but may occasionally

be contracted by myotics ; the eye must be protected from light by bandages or hood (Fig. 51) ; and if it becomes necessary to

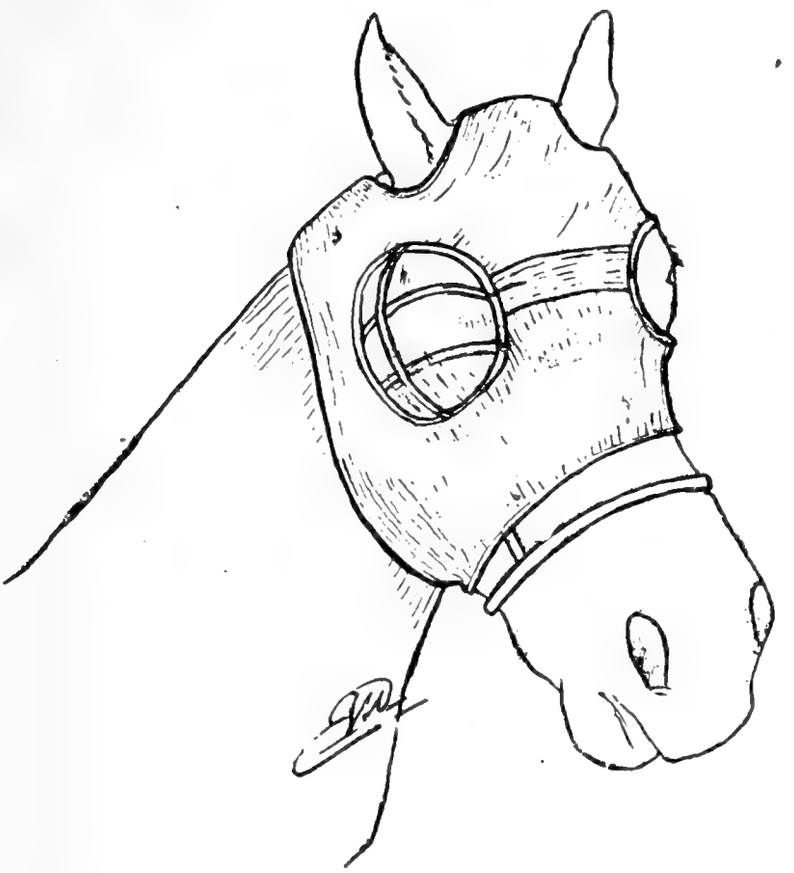


FIG. 51.
HOOD TO PROTECT THE EYE AND EXCLUDE THE LIGHT.

establish drainage this may be accomplished by sclerotomy.

4. *Parasites in the Anterior of the Eye.*—It is unnecessary to trace the life history of these parasites ; it suffices to know that they are worms and the larvæ of a parasite that gains entrance into the anterior chamber of the eye and floats in the aqueous humor. Its length varies from 1 to 5 cm. Its color is white in the early period of its existence, but changes in the course of time, with the nature of inflammation produced by its presence in the humor. These worms may exist in the anterior chamber for considerable time before causing any disturbance, but eventually they will produce an inflammation and the exudate will accumulate in the chamber and changes the consistency of the aqueous humor.

Treatment.—Paracentesis is the proper course to adopt in such instances. The cornea must be punctured and the worm forced out through the opening. The point selected for the puncture should be at the outer and upper sclero-corneal margin (Fig. 49–a). When the worm is removed, the eye is dressed carefully, and dressings allowed to remain in position for at least two or three days. The patient should be allowed to remain

in a dark stall until the anterior and posterior chambers are refilled. If bandages cannot be adjusted so as to obviate pressure upon the eye, a hood (Fig. 50) should be used instead.

6. *Diseases of the Cornea.*—The structure of the cornea has already been mentioned, and also the diseases which may be benefited by paracentesis. Anatomically, the cornea may be considered a continuation of the conjunctiva, sclera and uveal tract. The conjunctiva is continued as the epithelial layer and anterior limiting membrane; the sclera, as the substantia propria; and, from the uveal tract, the posterior limiting membrane and the endothelium (*Descemet's membrane*). The pathological importance of this is apparent when we consider the part involved in each individual form of keratitis and non-inflammatory diseases of the cornea.

Diseases of the cornea can be studied chemically, either from their etiology or by tracing the anatomical divisions of the part affected. To properly treat disease of this kind both methods must be carefully considered, and more especially when they can be treated surgically; to puncture the cornea in all the diseases of cornea mentioned as indications, at all times, and under all conditions, would not be good treatment; in all these cases the operator must exercise good judgment and should never resort to such surgical interference simply because some one has treated a similar case in this manner, but should do so with an object in view.

(*a*) *Pannus* is a non-inflammatory vascular opacity of the cornea. It is sometimes confined to the superficial layers of the cornea (*pannus tenuis*), (which is a continuation of the conjunctiva and is often accompanied by trachoma, entropion or trichiasis, and usually results in a thickening of epithelial layer, and in most instances involves but a portion of the cornea, usually the upper; but when the substantia propria is involved (*pannus crassus*) the entire surface of the cornea may be thickened and dense. Either of these forms of *pannus* seldom run a course without ulceration or formation of new blood vessels by hypernutrition, which is usually caused by the inactivity of the absorbing system.

In the treatment of this condition, which is usually secondary, the first object in view is to remove the cause, and, next, to increase absorption. Some veterinarians have successfully treated these cases by evacuating the anterior chamber, while others have received but little benefit from the procedure. We therefore would advise the surgeon to be somewhat reluctant in re-

sorting to paracentesis for the treatment of pannus, and only adopt it when it is actually necessary to remove intraocular pressure.

(*b*) *Ulceration of cornea* is generally a sequel of suppurative keratitis. The varieties of corneal ulceration depend upon its association with other pathological lesions ; its cause, course and location. The immediate cause of these ulcers is usually infected wounds, whether accidental or surgical. Anything that will destroy the epithelium, opens up an avenue for infection which may occur at the time of the injury or later. The suppuration may yield to treatment early, or may continue for weeks without showing any tendency to heal. In old animals or patients that are out of condition, these ulcers are more serious than in young or healthy ones ; in all cases the course and termination depends upon the ability of the tissues to resist the encroachment of septic organisms.

Treatment.—In all cases careful attention must be paid to the general condition of the patient ; and, as it is generally an infectious disease, the treatment must be preventive and curative. All accidental wounds of the cornea must be treated as infected wounds. The seat of the injury or ulcer should be touched up with a strong solution of formalin (1:50), tincture of iodine, or nitrate of silver ; some veterinarians recommend actual cautery. When the ulcers involve much of the surface of the cornea, the intraocular pressure sometimes causes a protrusion of the underlying structures (*staphyloma* or *keratocele*), and in such cases paracentesis is indicated. By relieving the pressure from within the danger of the cornea becoming ruptured is lessened. The method of puncturing the anterior chamber is the same as already described in the treatment of other diseases of the eye. Strict adherence to aseptic measures in every step is the most important feature of the operation. The puncture in these cases should be made at the superior sclero-corneal margin and within safe distance from the ulcers.

(*d*) *Superficial Keratitis.*—This disease is more common in young animals than in old ones. It may affect one or both eyes, may yield promptly to treatment, but reoccur from time to time and terminate in some more serious complication.

The disease is generally accompanied by pain and photophobia, which makes the patient close the eye tightly (*blepharospasm*) ; this may last for weeks, which often makes it almost impossible to examine the eye without forcibly separating the lids. The prognosis depends upon the severity of the

disease. It is essentially a recurrent disease, and repeated attacks usually terminate in corneal alterations.

(*e*) *Vesicular keratitis* is a disease that is not very common in lower animals. The vesicles contain a clear fluid which accumulates and ruptures, leaving superficial ulcers, and should receive the same attention as superficial keratitis or ulceration of the cornea. There is no doubt that the disease is due to a dyscrasia of some kind, and that the affection is mycotic.

(*f*) *Parenchymatous keratitis* is not so common in domestic animals as some of the other forms of corneal inflammations or diseases. The disease usually begins with a grayish opacity in the substance of the cornea, and gradually extends until it involves the entire corneal surface. The course of the disease is very slow and may extend to both eyes. It may run for months and eventually clear up, while some cases will terminate in ulceration or hypopyon. The disease itself is not an indication for paracentesis, but some of its sequelæ are ulceration of cornea and hypopyon may be benefited by such surgical interference.

Keratocele and *periodical ophthalmia* have been successfully treated by paracentesis. Hernia of cornea, if relieved of the pressure from within, will heal very readily. Periodic ophthalmia (or *recurrent ophthalmia*) is a condition that is successfully treated by relieving the intraocular tension by paracentesis, with the administration of therapeutic agents indicted to improve the condition of the patient.

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

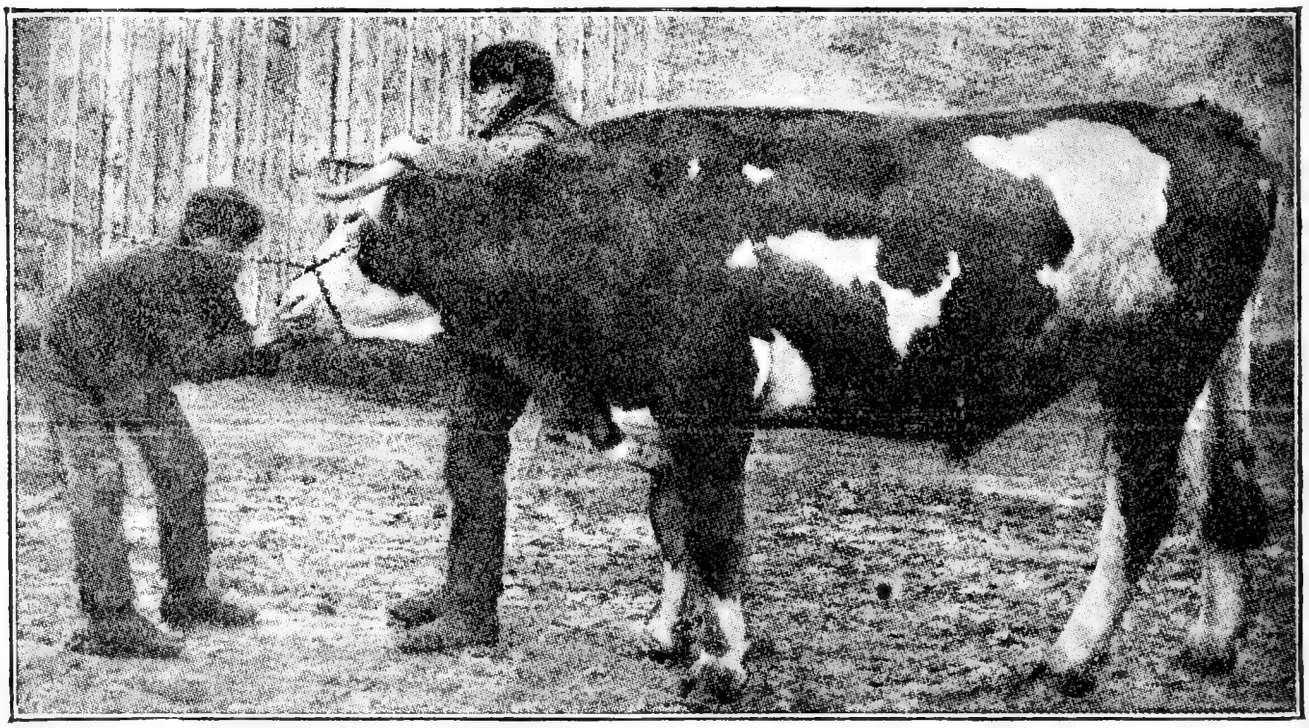
By ADOLPH EICHHORN, D.V.S., Bureau of Animal Industry, Milwaukee, Wis.

THE RESISTING POWER OF THE VIRUS OF RABIES AGAINST DECOMPOSITION [*Prof. S. von Ratz, Budapest*].—Hartwig observed that inoculations with the saliva of rabid dogs, after a lapse of 24 hours, became non-effective, and that the virus of rabies, in decomposition, loses virulency very soon, while Pasteur proved that in advanced decomposition the virus retains virulence for four to five days. Mergel, on the other hand, inoculated the decomposed brain of fourteen days standing, of a wolf, with success, and similar were the results of Galtice. Russo-Travali and Brancolcone also studied and observed carefully this question, and found that in decomposing cadavers

buried for thirty-eight days, the virulency of the contagion of rabies was preserved, while in cadavers in the open air, this could only be proved for twenty-one days. Ratz employed for examination the brains of two dogs, which were buried for twelve and three weeks, respectively. From the completely decomposed brain of the emulsion, some was injected subdurally, and some intramuscularly ; both inoculations were without any effect. Ratz then directed his experiments in the way in which he infected the test animals with the street virus, and after their death from marked rabies, they were buried. In different intervals, subdural and intramuscular injections were made into rabbits. This experiment led to the following results: Inoculations with brain which was buried from fourteen to twenty-four days, produced by either subdural or intramuscular inoculations, characteristic rabies on the test animals ; most certainly this virus was weakened. While using the fresh brain, the animals developed the symptoms of rabies after fifteen to sixteen days, and died two to four days after ; so by employing the decomposed brain, the time of incubation was lengthened, fluctuating from eighteen to twenty-nine days, and death only occurred after twenty to thirty-one days from the time of injection.—(*Veterinarius.*)

To the Auscultation of the Lungs in Cattle [*Dr. Ellinger*].—It is recognized as a fact, that the strength and rapidity of respiration has a great influence on the intensity of the normal and pathological respiratory sounds. The human practitioners, therefore, when auscultating the lungs, order the patient to take deep inspirations, but there is no advantage in allowing an exertable and rapid respiration. But often one hears best by a slightly deepened respiration. In our domesticated animals, we have but slight power to change their respiration. The veterinary practitioner having this in view, is advised to have the animal exercised before examination. As a result of the quick or slow movement, not only an increase in the number of respirations is obtained, but frequently coughing will result with expectoration. So Röder succeeded in obtaining expectoration, in which he proved the presence of the tubercle bacilli from a cow, by trotting her several times up and down the yard. But, besides, by this method, the respiratory sounds are more intense and easier to hear. Röder advises as a practical method the following procedure : After observing the animal in the stable, it is exercised and brought back. During the auscultation of the lungs, the nostrils are covered

with a linen cloth, in order to compel the animal to perform forcible inspirations and expirations. "By this method, we not only hear more pronounced the abnormal respiratory sounds, if they are present, but also areas of consolidation in the lungs are easier detected by percussion." The author also confirms this statement. Röder prefers to make the examinations in the open air, rather than in the stable. Ellinger claims that his experience has taught him a more practical way in this procedure. And as nothing is mentioned about it in the text-books of clinical examining methods, as it is also unknown to most young practitioners, the author describes his procedure in the following



way, accompanied by an illustration: For examinations by this method, two assistants are required. One of them takes the place to the right side of the animal, which is tied, and takes hold of the two horns. The other assistant takes hold of the lower jaw, with both hands, in such a way that all the fingers of both hands, with the exception of the thumb, are arranged so that they span the lower jaw, while the thumb of each hand is placed on the nostrils, which are then closed and opened, according to the desire of the examiner. By this method the examination can be extended as long as necessary, and the respiration can be interrupted for longer or shorter periods. Examination, therefore, can be made very accurate. This procedure is particularly suitable for testing caverns, tumors, consolidation of tissue in the lungs, adhesions of the pulmonary pleura with the costal pleura, which very frequently exist in

tuberculosis. In examining the lungs by this method at the height of inspiration, the abnormal lung sounds become distinctly audible. And, further, by this method, in abnormal conditions, cough is most likely produced; therefore, by applying it, with a careful examination, a positive decision can be made.—(*Berliner Thierarzt. Wochensch.*)

ADENO-CARCINOMA IN THE COLON OF A HORSE [*Ehlers*].—The horse frequently suffered from attacks of colic, and besides when free from pain was not as spirited as before. A disturbance in the action of the heart was also noticeable, by a wheezing sound, which was heard instead of the first sound of the heart. The horse was sold to the butcher. On autopsy a tumor the size of a head was detected in the colon, about ten inches from the cæcal opening. At the location of the tumor the colon was firmly grown to the cæcum. The lumen of the colon 15 cm. long was so much constricted that only two fingers could be introduced. On opening the colon abscesses from the size of a hazelnut to an apple were protruding, the surface of which was of a dirty grayish appearance, with a strong decomposing odor. The consistence of these abscesses varied from soft to the hardness of bone, so that when passing the hand over them, it gave a similar sensation to pumice. The weight of the new formation, together with the intestinal wall belonging to it, was 2600 gm. The microscopic examination proved a cylindrical epithelial carcinoma. In the heart a rough appearance of the mitralis valve was noticeable, the free border of which contained many hard nodules, from the size of one to two pinheads.—(*Zeitschr. f. Vet.*)

PENETRATING ABDOMINAL WOUNDS, WITH PROLAPSUS OF PART OF THE INTESTINES [*Tennert and Weinhold*].—Both authors report a case, each of a successful recovery, from an abdominal wound with prolapsus of part of the intestines. Tennert saw a ten-year-old gelding with a wound to the right of the linea alba and about a hand from the cartilaginous prolongation of the sternum, from which part of the intestines protruded to the size of a fist. The prolapsed portion was very much distended, so that puncturation was resorted to, but without any success. The horse was then cast, by which the intestines were covered with dirt. After a careful cleansing with lysol water, and enlarging the wound, the prolapsed portion was replaced, and the abdominal wound closed with catgut sutures in such a way that the edges did not come close together, but leaving a split half a cm. wide. The internal suture was then covered with

a layer of sublimate cotton, and the skin sutured with disinfected silk. After treatment consisted in frequent washing with a lysol solution. On the sixth day the stitches of the skin and the tampon were removed, and the wound healed smoothly without discharging. Weinhold found in a 17-year-old horse, on the left side, between the coxo-femoral and femoro-tibial articulation a soft swelling the size of a head, having on its summit a wound 1½ cm. long. The exploring finger proved the presence of intestines, which prolapsed through a 15-17 cm. long rupture of the intestinal wall. The animal was placed on his back; in the direction of the rupture a 20 cm. long incision was made, the intestines replaced and the ruptured wound closed with silk, and powdered with tannoform. The skin after the insertion of a drain tube was also sutured and powdered with tannoform. The horse received 1.0 gm. morphine hydrochl. subcutaneously. After treatment consisted in washing with lysol water. Drain-tube and sutures were removed after four days. The wound left a 10 cm. long narrow fistula, which discharged; the horse was cast, the fistula opened, and a slough the size of a dollar was removed. Following this the wound healed very nicely.—(*Zeitschr. f. Vet.*)

A New Colored Production of the So-called Capsules of the Anthrax Bacilli [*Wolf Raebiger*].—In his procedure of producing the so-called capsules of anthrax bacilli, Raebiger avoids the fixation of the cover glass preparate by heat, and attains the same by treating it with formalin (40 per cent. watery solution of formaldehyde). With this at the same time he connects the staining by dissolving anilin dye in formalin. To prepare the dye, formalin is poured, for instance, on gentian violet powder (15 gm. dye to 100 parts formalin), stirred, and left standing for several hours. The dye is good when all the powder is dissolved. This is then filtrated and preserved in a pipette bottle. The finely spread and thoroughly air-dried cover-glass preparate is then dotted with the formalin stain, which after 20 seconds, is rinsed off with water. In the examination, all the corpuscular bodies of the preparate will appear fuller and stronger, as a shrinking does not take place and the anthrax bacilli will show the true capsules. The latter are pale, and are contoured sharply on their periphery by a thick blue line, while the single right angular bacterial cells are separated by pale separating walls. The resulting pictures resemble those of the Johne's procedure. However, the single bacilli appear stronger, and each will show with a certainty the

capsule, contrary to the cadaver bacilli. The capsules are very wide, and the shrinking is so small that when moving the micrometer screw frequently the cylindrical form of Gallerst capsule can be observed. The white dots in the bacterial cells, observed by Klett and Olt, R. could see in 50 to 70 per cent. of the bacilli examined. The disinfection of the preparate with the formalin method, as proved by R., is a complete one.—(*Ztschr. f. Fleisch. u. Milchhyg.*)

ITALIAN REVIEW.

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

A Case of Permanent Cramp in the Horse—Bassi's Operation—Recovery [*By Edoardo Gamba*].—Towards the end of January the author was called to examine a horse which had a pseudo-dislocation of the patella of the right leg. There was no history except that he was found in that condition, and that all efforts to move him were every time accompanied by danger of falling. The diagnosis was easily made, and, although the patella could readily be replaced, the difficulty would return immediately—the condition of the internal and median patella ligaments being readily made out. Ordinary modes of treatment were applied without results; irritating frictions had only for effects to cause much irritation. As a last resort it was decided to operate by Prof. Bassi's method, viz.: Section of the internal patellar ligament. The operation was simple. The animal properly secured, the skin shaved and rendered aseptic, a small incision was made through it and a tenotomy knife introduced into the wound, between the skin and the ligament, and this being divided, the wound was dressed with carbolized oil. The animal was allowed to get up and moved away without any trouble. After a few days of rest he was returned to his work. This simple operation of Prof. Bassi has given him several successes, which were also obtained at the hands of Falletti, Varketta, Cadiot, Manquet, and others. Performed also quite frequently in bovines, where the trouble is quite common, it has always been successful.—(*Il Moderno Zooiatio.*)

Hypodermic Injection of Solution of Chloride of Sodium in the Treatment of Rheumatism of the Shoulder in the Horse [*By Dr. Umberto de Mia*].—The author records his experience in four cases of lameness of the shoulder, due to rheumatism. In one case, of more than one year's

standing, he first resorted to injection of bromidate of arecoline and afterwards to the use of atropine and morphine mixed; but, these being followed with no result, he decided to resort to injections of solution of salt at 7% heated to 40° C. Eight injections were made various days apart. From the first injection a marked improvement was noticed, and after the second the animal travelled sound for a short distance. The recovery was completed after a few days. In a second case, the lameness was first treated by frictions of spirits of camphor and then followed by the use of a similar solution of salt. In the beginning the first three injections were without results; the three following gave a marked improvement and four more brought about a complete recovery. In the third case, an injection of atropine and morphine was first resorted to, as there was great pain in the shoulder; when that had subsided salt was injected and its use was followed by complete recovery also. There remained, however, a certain stiffness, which was relieved after five days by atropine and morphine. The fourth case was very similar to the preceding, and was followed by the same results and stiffness; but ultimately recovered entirely.—(*Il Nuovo Ercolani.*)

An Enzoöty of Sand Disease in Buffalo Calves [*By Prof. G. Marcone*].—A breeder who kept his young calves in a pasture near Caperna, through which the Volturno river passes, noticed that many were dying; he had lost 31 out of 85, and thought that perhaps anthrax was the cause of death. One of the sick buffaloes was sent to the clinic of the Veterinary College of Naples, where he exhibited the following symptoms: The animal was eight months old, thin in condition, weak, and moved slowly; temperature 37.8° C.; pulse slow and thready; respiration slow, and accompanied now and then by groans; there was no appetite, no rumination. The conjunctivæ were injected, the nose dry, mouth cold, thick saliva running from it; thoracic organs apparently sound; abdomen somewhat painful, with flabby walls. The hand introduced in the rectum drew dry fæces, gray, heavy and sandy in appearance. The calf died the next day after his admission to the hospital. At the post-mortem all the organs were found healthy, but in each cavity of the stomach, the intestines as far back as the rectum, quite a large quantity of a gray, heavy substance was found, which, gathered together, formed quite a large mass. The mucous membrane of the intestines was cyanotic in its whole extent. The contents of the digestive tract proved to be composed of

sand. The owner then remembered that previous to the appearance of the mortality in his herd, the Volturno had overflowed the field where the animals had been sent to pasture after it had withdrawn, leaving over the grass a certain amount of sand. The buffaloes kept on grazing and ate grass as well as sand, and the result was the enzoöty, due to the presence of this foreign body, and not to anthrax, as it was supposed. The animals were removed from that mortal field and the trouble disappeared.—(*Riforma Veterinaria.*)

ENGLISH REVIEW.

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

Thrombosis of the Iliac and Femoral Arteries—Complications [*By W. Robb, F.R.C.V.S.*].—Although this patient had been able to work for ten hours in good shape, he suddenly exhibited great pain, and after going about half a mile, he fell right on his side. When the author saw him he was lying flat, breathing very quickly and showing no great pain. Forced to stand up, he only did so for a few seconds, and then without warning, threw himself down in the most violent manner. Sedatives and mustard applied to the abdomen made him spring to his feet, but in a few seconds he threw himself down again, without consideration as to whether he would hurt himself or not. Was it enteritis? Was it azoturia? Later on, observing a peculiar condition of the pulse, 20 in a minute, suspicion was aroused as to the true nature of the trouble, and rectal examination made, and, although the animal strained very severely, the condition of the posterior aorta was made out. The beatings there were also 20, but quite exaggerated in type, the vibration of the walls of this blood vessel being so marked that they could only be compared to the effect sometimes produced on water pipes by one turning off the water quickly. The pulse was readily felt on the right side on the iliac, but not on the left. The horse died shortly afterward. The principal lesions were found in the iliac arteries. Right iliac was normal. In the left there was found yellow clots as far down as where it becomes femoral, which in its centre contained a large black clot with a yellow centre. Below it the femoral was found empty. The abdominal organs were more or less congested.—(*Journ. of Comp. Path. and Therap.*)

Repeated Attacks of Colic from Intestinal Calculi

[*By J. McKerlie, M. R. C. V. S.*].—A horse, belonging to a miller, showed colicy symptoms, which were relieved by ordinary treatment. The pains had then lasted some four days, and during that time nothing passed per rectum. At the end of that time the bowels would act, the appetite improve, and everything went on well for a month or two. Then the trouble would return. The pains being at times very violent; at others they only made the horse uneasy. His favorite position, when suffering slightly, was to stand stretched to his utmost, with his chin resting on the wall in front of him, as far back as he could reach. When down he got on his back, and seemed easy in that position. Very often the bowels did not act for a week and often the pulse would run down and be quite imperceptible. At last, he was found one morning dead in his stall. At the post-mortem was found a rupture about two feet long in the large colon. The bowel was very thin. Floating in the cavity there were found two calculi, which had escaped through the rupture. They weighed together about 16 pounds. Lots of smaller ones were also detected, which collectively weighed 10 pounds.—(*Journ. of Comp. Path. and Therap.*)

Recurrent Fibroid Tumors in a Bitch [*By The Doctor Sahib*].—Under this heading the author records the case of a three-year-old bitch, which for some three weeks had become a nuisance in the house owing to constant dripping of urine. When examined, the vagina and inner sides of the labiæ were found affected with a profuse growth of tumor, firm in consistency and somewhat of cauliflower appearance. These were extracted and after local treatment she was discharged cured in fourteen days. Eleven months after the dog was returned to the doctor for a tumor outside the left thigh, subcutaneous, adherent to the structures underneath, and about as big as a small orange. Observed some four months previous, it had gradually increased, and for a week had given rise to evident lameness. The tumor was extracted, as well as some of the surrounding tissues, muscles, blood vessels, etc., and the animal once more recovered. Five months later she died from dystokia. Post-mortem showed no tumors in the region of the wound, no tumor on the thigh.—(*Veterin. Record.*)

Ruptured Bladder in a Pig [*By Wm. Collinson*].—A pig is suspected to have broken its back. A few days previous he had a fit and other pigs in that same stye had been routing it about. When he wants to move he cannot use his hind legs. Put in a stye by himself he seems to mend in condition and eats

well, but he is always sitting as a dog with his hind legs thrown on the left side. The abdomen is much swollen, and when he is asked to move, he trails his hind legs behind. He looks otherwise healthy and bright. By advice of the author he was slaughtered. At the post-mortem the abdomen was found to contain five quarts of clear liquid smelling very strongly of escaped urine. The abdominal organs were healthy. The bladder presented a longitudinal rupture about four inches long. Its walls had their normal thickness; there was no stricture, nor growth in the vulva to cause retention.—(*Veterin. Record.*)

STOMACH STAGGERS WITH "PECULIAR SYMPTOMS" [*By D. C. Pallin*].—A mare which had a few days before suffered with colics was again taken in a much more serious manner. She had eaten all her bedding the night before. When seen, she was standing in a corner of her box, legs straddled, head hanging pendulous, eyelids swollen and congested, a portion of the tongue protruding, copious discharge of frothy saliva, giving her the appearance of a dog with dumb rabies. Body covered with sweat, extremities ice cold, tail held in erect position, marked tympany; temperature 102°, respiration 36, labored and jerky, pulse full (58), intermittent every sixth or seventh beat. There was also great stiffness, inability to move, especially the hind quarters. Rectum somewhat full. Attempts to raise the head seemed to cause great pain, and patient falls on her knees. Prehension and deglutition of food (liquid) was completely lost. What was the trouble? There were more or less marked symptoms of stomach staggers, impaction, internal rupture, tympany, clot causing pressure on nervous centres, tetanus, etc. Backraking and rectal injections were resorted to frequently. A freshly made soft bolus of aloes was administered, not without great difficulty and danger to the life of the author. Two hours later there was some improvement, yet an attempt to give a stimulant towards the evening gave rise to frantic paroxysms. She was left alone. The next morning she showed great improvement, most of the severe symptoms having subsided. At noon she took a little exercise. In the afternoon the physic acted very freely, and five days after the animal was returned to her work. The case was no doubt one of impaction, giving rise to stomach troubles with aggravated symptoms, which happily yielded to simple treatment.—(*Veterin. Record.*)

RUPTURED SPLEEN (*By Harry Lukes, M.R.C.V.S.*).—A 14-year-old gelding, weighing 1400 pounds, and very fat, was noticed slightly off during his morning work. He soon was found lying

down resting on his sternum, eating hay. Urged to get up, he did so, but was immediately attacked with severe asphyxia, fell down, rose again immediately, when he was again taken with asphyxia which, however, passed off quickly. He was pulseless, the beatings of the heart were very faint, the visible mucous membranes extremely pale. Death occurred in 25 minutes. Post-mortem: When the abdomen was opened the blood rushed out. The heart was enlarged, weighing 10½ pounds, with fatty degeneration. The spleen was of enormous size, weighing 9¾ pounds, measuring 31½ inches in length, 15¾ in width and from 2 to 4½ in thickness. It presented a rupture 14 inches long and 3 inches wide. What was the cause of it? —(*Veterin. Record.*)

A VETERINARY JOURNEY TO SOUTH AFRICA.

LIFE ON A BRITISH TRANSPORT—ON THE ROCKS—STAMPEDE OF MULES WITH FEARFUL LOSS.

By HAL C. SIMPSON, D. V.S., Denison, Iowa.

After some preliminary correspondence relative to the trip, received telegram to come at once if I desired to go to South Africa and to report time of arrival. I telegraphed "There 10 A. M., Thursday, May 10." The operator got it 3.10 A. M., so that when I arrived in New Orleans the ship was loaded and they were waiting for me. Reported at ship to Prof. Owen Williams, who was the principal veterinary officer in America. He showed me around the ship, and gave me directions about as follows: Water at 6, then hay; water at 10, then hay; water at 1, then hay; water at 4, then mash; water at 7, then hay.

Give all the water they will drink every time, and each time a fair allowance of hay, except at seven, then all they want. Feed light the first few days. The mash was oats and bran, equal parts, thoroughly wet; every few days some magnesium sulphate in it; occasionally some potassium nitrate was added.

Was told I was to be in complete control of everything. I had 65 men—one muleteer at $40, four foremen at $30, the skinners (so called) getting $15 for the trip. I picked out three men for my assistants, the rest were care-takers. Anything wrong was to be reported to the deck foreman, and he to report to me. I made about four rounds per day to see that everything was all right, besides being always subject to sick call. There was a steady night guard under a foreman, who were supposed to be

on the watch all night. Each deck foreman appointed day guard to stay below all the time.

The steamship *Corinthia* was a regular stock boat and was better fitted up than most boats in the charter of the government. Had 1452 mules on board divided on three decks, with feed in the hold. The mules were loaded about as follows: one row clear around the ship, heads towards centre; then two rows down centre, facing out, an alleyway about four feet wide between. They were in pens of from five to eight in a pen, all tied with ropes, which I was told had been steeped in aloes, to prevent their eating them. To my mind it seemed to stimulate the appetite so much that they ate rope tie-straps, then halters, finally the feed boxes on breast boards, and occasionally one another. The feed boxes were hung on the breast boards. Ventilation was from wind sails made of canvas, which helped some to get air to the lower decks, then the open ports helped a great deal on the middle deck. Wasn't expected to clean out at all; the result if that had been followed would have been scratches and thrush galore.

The first few days out in the Gulf of Mexico, there were a few seasick mules, with about the following symptoms: cold sweats, shivering, extremities chilled, retching, leaning up against the head or breast board until wind was shut off, then some mad struggling, which generally ended in the animal falling and being trampled upon by the others, unless they were speedily removed. Temperatures were rather high, pulse slow and weak, and respiration accelerated. Some were very uneasy; would often take a mouthful of hay, chew it a minute or so, and then stand and hold for some time; others wouldn't eat or drink at all. Some cases lasted for three or four days, others only a few hours. Treatment: always gave them plenty of room to lie down; if very uneasy, gave tinct. opii, later a physic. But as a rule, no treatment was needed. Had a number of cases of strangles; was unable to isolate them, and was told it was best not to, the theory being that the mules were likely to have it, and the sooner the better, in that way avoiding additional expense and having them ready for service when landed.

Everything was in good shape until May 15th, at 8.15 P. M. The night was frightfully dark, and it was raining harder than I had ever seen it rain before. We were steaming about thirteen knots per hour, when all of a sudden there was a very hard shock, followed by two of lesser force. I put on my

mackintosh and went on deck; was unable to see but a few feet. Went to the left, or port, side, and could hear the waves breaking on the rocks. In a short time lights appeared, and in the course of an hour it quit raining and cleared up a little and we were able to make out the shore about 150 feet away. In the meantime I had made several trips around the ship to see the condition of the mules; found all doing well. Increased the night guards, and had all port-holes closed, which made it extremely hot below decks. The engines began pumping the fresh water out of the tanks before 10 P. M., so that by morning nearly all tanks were empty. We left New Orleans with about 2200 tons of fresh water, they counting on a ton of water lasting a mule for a trip of 28 days, or about nine gallons per day. We were giving them all they wanted, five times daily. The second day after the wreck the water allowance was cut down to one gallon twice daily. About this time a few began to show signs of overheating; on the 19th one died; 20th, 3; 21st, 40; and then I lost count, but about 160 the 22d; the 23d, about 160 again, and probably twenty before we finished unloading, the 24th. The temperature averaged 101 for the twenty-four hours for five successive days. The only ventilation was from canvas windsails leading to the holds. The engines were going full speed most of the time, and there was no chance for fresh air to get below to the animals. We were so close to the shore, and the timber ran right down to the sea, and being between two points, we didn't get any breeze at all.

In the meantime there had been about 1600 tons of coal put overboard, and there were two ships trying to pull the steamer off, besides our own propeller going full speed astern. These two ships, one an English cruiser of 7000 horse power, the other a passenger ship of 3000 horse power, pulled the *Corinthia* over on the side somewhat, so that the deck's angle varied from 15 to 30 degrees. The result of this was that the mules on the upper side pushed their breast boards out, and fell in among those on the lower side, and when one would get down it was very hard to move the others so he could be gotten up. A number were trampled to death, a few had legs broken. In unloading, the mules were led up to the open cattle doors and pushed out; it was only a few feet to the water. If natives were there in canoes to lead them ashore, all right, if not, they often swam out to sea and were drowned, or else swam to one or the other of the vessels that were trying to tow us off, and were killed by the blades of the propellers. We were unload-

ing on the right, or starboard side, which was away from the land, so that they couldn't see land until they were out quite a way. A great many of those that swam ashore, unless they went to one special place, a sort of cove, were drowned; the breakers would lift them up and swing around until they were worn out. The shore was sharp rocks worn by the sea, and was about 10 feet high, with only an occasional place where they could get up. Among those that were landed, were some of the worst bruised up mules I ever expect to see; wounds of all sizes, shapes and descriptions; open joints, eyes knocked out, etc.

I probably should have mentioned the medicines on board the *Corinthia*, which were put aboard in England:

120 lbs. of mustard.
4 gals. tr. opii.
120 lbs. of potassium nitrate.
120 " " magnesium sulphate.
60 " " potassium chlorate.
40 gals. oleum lini.
10 " aromatic spts. ammonia.
10 " ammonia aqua.
10 " turpentine.
1 lb. of iodoform.

Some old out-of-date instruments, a few bandages, a pair of scales, and some absorbent cotton.

The mules, after being landed, were taken to Aux Cayes, a city of 8000 or 10,000, where they were let out among the farmers, in bunches of from 10 to 100, the sick and injured all in one place. A great many developed strangles after getting ashore, and a few pneumonia and purpura hæmorrhagica.

We stayed there a month, before loading on the S. S. *Montezuma*. We loaded 588 less than at New Orleans. After thirty-five days of good weather and fine results, we arrived at East London and unloaded. On the *Montezuma* every pen was cleaned out once a week and disinfectants used. Arrived there with a loss of six, two pneumonia, two purpura, one septicæmia, one general debility.

At East London the animals were unloaded into lighters and taken ashore. After getting ashore, were sent immediately to the front.

After I got ashore and reported, I was shown many courtesies by the officers in the army veterinary department. I made a brief stay in East London, and went from there to Capetown by rail.

The railroad accommodations in South Africa are far from good. Stayed in Capetown a few weeks, during which time I met three American veterinarians of my acquaintance.

Left Capetown for New Orleans on S. S. *Montcalm*, arriving at the latter place after a very pleasant trip. Had an opportunity to return to South Africa with another cargo of mules, but decided not to do so on same salary, of $240 for the trip, unless the trip could be made in not to exceed seventy-five days, all time over that to be paid for extra, which arrangement I was unable to make, and returned home.

OBITUARY.

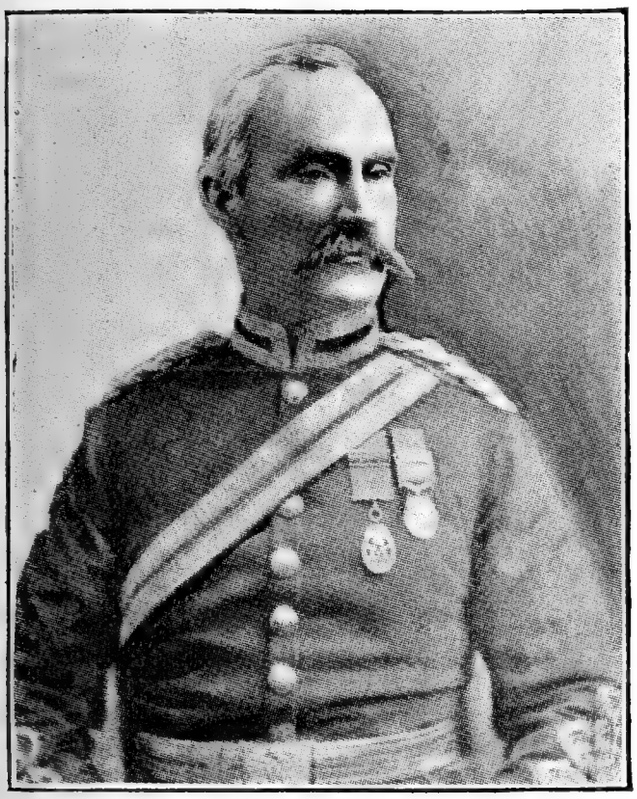
EMILE DECROIX—GEORGE FLEMING.

Veterinary medicine in Europe has had recently to mourn the deaths of two of its members, each of whom had occupied high positions in the armies of their respective countries and leave brilliant records behind them—the former as a humanitarian, the latter as a successful worker in behalf of his profession.

EMILE DECROIX, who passed through the various ranks of veterinary military service, became Principal Veterinarian and was decorated Officer of the Legion of Honor. When he retired from the service he devoted his whole attention to two favorite undertakings—the propagation of hippophagy and his campaign against the use of tobacco. To him is due the introduction of horse meat in France some years ago, and to-day is adopted in every European country, and has wrought so much good among the poor classes. Through his efforts also the creation of the society against the use of tobacco was accomplished, and it is now in a flourishing condition, its work being recognized by many as of the greatest benefit to mankind.

Emile Decroix has been president of several societies, and belongs to many organizations, scientific and benevolent. He was the author of numerous publications, and, although advanced in years, being 80 years old at the time of his death, he attended to the many callings imposed upon him by the great objects of his life. Active and robust to the day before he died so suddenly, his great joy was to attribute his good health to two considerations, which he often mentioned in a joking way—he ate horse flesh and never smoked.

GEORGE FLEMING, C.B., LL. D., F. R.C.V.S., etc., Principal Veterinary Surgeon of the English Army, died at his residence Higher Leigh, North Devon, on Saturday, April 13, 1901. He was born in Glasgow, March 11, 1833, studied veterinary medicine at Edinburgh, and obtained medals for chemistry, materia medica, anatomy, best examination, and gained the Fitzwygram prize for practical knowledge. Entering the army as veterinary surgeon in 1855, he was present at many important engagements, serving in China, Syria, Egypt, etc. He rose through the various positions to that of Principal Veterinary Surgeon, to which he was appointed in 1883, being placed on the retired list on June 28, 1890. He was elected a Fellow of the Royal College of Veterinary Surgeons in 1877, received the LL. D. degree from Glasgow University in 1883, was five times President of the Royal College, and was a member of many other scientific and professional organizations. He contributed very largely to veterinary literature, the chief ones being: "Vivisection: Is it Necessary and Justifiable?" "Horse-shoes and Horse-shoeing," "Animal Plagues," "Rabies and Hydrophobia," translation of Chauveau's work on "The Comparative Anatomy of the Domestic Animals," "A Manual of Veterinary Sanitary Science," "A Text-book of Veterinary Obstetrics," "Influence of Heredity and Contagion in the Propagation of Tuberculosis," "Operative Veterinary Surgery," "Parasites and Parasitical Diseases of the Domestic Animals," etc.



During the 30 years of his active professional life he was associated with the governing body of the profession of England, and it was largely through his efforts that the "Veterinary Surgeons Act of 1881" was enacted, which proved such a blow to empiricism in England. He was an active and an honorary member of many veterinary and scientific bodies in his country and throughout the world, being one of the first honorary members of the U. S. V. M. A. He was a genial, interesting and

amusing friend; was ambitious and proud of his profession, and devoted much of his energy to its elevation. Those who knew him will long remember his personality and his affability, while his scientific work will remain alway. A. L.

CORRESPONDENCE.

AN ENGLISH READER SEEKS INFORMATION.

NEWMARKET, ENGLAND, April 24, 1901.

Editors American Veterinary Review:

DEAR SIRS:—Will some reader kindly send us through the REVIEW drawings and dimensions of the most practical kind of stocks for securing horses during operations? Something of the most up-to-date character. So many of our clients object to casting valuable horses these days and operating tables are somewhat expensive. Also does any one know the composition of Tweed's Liniment and Naviculine? VETERINARIAN.

SOCIETY MEETINGS.

THE OHIO VETERINARY MEDICAL ASSOCIATION convened for its eighteenth annual session at the Ohio State University, Jan. 16, 1901, with President Dr. S. D. Myers in the chair. Session called to order at 2.30 P. M., when Rev. W. O. Thompson, President of the University, was introduced, and delivered to us a cordial and kindly address of welcome, which was briefly responded to by Dr. W. H. Gribble. Roll-call showed the following veterinarians present: S. E. Bretz, Nevada, Ohio; O. V. Brumley, Columbus; J. C. Burneson, Wooster; J. H. Blattenburg, Lima; L. W. Carl, Columbus; T. Bent Cotton, Mt. Vernon; W. E. Clemons, Greenville; P. A. Dillahunt, Springfield; E. W. Emery, Greenfield; W. C. Fair, Cleveland; J. E. Foster, Coshocton; Paul Fischer, Columbus; C. B. Frederick, Columbus; W. H. Gribble, Washington C. H.; R. C. Hill, West Alexandria; T. B. Hillock, Columbus; S. H. Kent, Cadiz; T. E. Jones, Newark; W. A. Labron, Xenia; C. E. Leist, Columbus; R. J. Michener, Lebanon; F. Miller, Fort Recovery; S. D. Myers, Wilmington; M. C. McClain, Jeromesville; E. L. Price, Circleville; Walter Shaw, Dayton; E. H. Shepard, Cleveland; S. S. Snyder, Dalton; G. R. Teeple, Napoleon; D. S. White, Columbus; W. B. Washburn, Tiffin, with the University veterinary students, John E. Bender, C. C. Hencock, G. E. Cook, T. O. Anders, L. H.

Merche, M. B. Lamb, O. C. Pettiford, C. H. Sater, H. N. Brown, C. L. Henderson, H. A. Forrester, Norton Dock, W. E. Severn.

Minutes of last annual session were read and adopted.

Dr. S. D. Myers, President, then delivered a short address as follows:

Gentlemen: To-day and to-morrow we complete the final strokes that forge for our organization the last link of the 19th century, and start the first link in the chain of the 20th century. What it shall be depends upon the individual work of every member of this society.

We trust this meeting will be harmonious and one long to be remembered for the good it shall accomplish in the awakening of an interest in our association; that shall mark the birth of a new era in the history of association work in the Buckeye State.

We are here this afternoon, fresh from our fields of labor, ripe in the experience of the past year, and it will be strange indeed if, after an interchange of these experiences and the discussion of vital subjects affecting us as veterinarians, we do not return to our homes better prepared for the work of the year and better able to cope with the problems that confront us.

The past year in veterinary circles has witnessed many important events, and the present activity in association work in this country has never been excelled.

The recent meeting of the American Veterinary Medical Association at Detroit was one of great good, and one long to be remembered by all of us that had the privilege of attending. Through the efforts of the American Veterinary Medical Association the army veterinarian has advanced to a stronger position than has ever been held before. We believe if the good work is kept up the United States Army will have a veterinary corps that will be a credit to the country.

We, as an association, have cause for congratulation at having the privilege of meeting at the Ohio State University, where a magnificent pathological exhibit can be viewed, also the University Museum of Natural History, the chemical laboratory, and other scientific exhibits, besides we have every facility for carrying out our clinical work.

As a result of numerous investigations our knowledge of certain classes of diseases is gradually becoming more precise and accurate, and the time has arrived when we may look forward to a system of medicine in which by preventive and curative inoculation we shall be able to grapple successfully with some of the deadliest forms of disease with which we have been helplessly and almost hopelessly contending.

Comparative pathology is receiving more attention in our colleges and universities, not only in this country, but in some foreign countries as well. This branch has been sadly neglected, and we are pleased to know that it is slowly but surely coming into prominence. It is a subject that interests the medical world at large.

Sanitation has also made great strides, but barriers are found here hindering progress. It has been found by experience that the people must first be educated to the needs of sanitation before proper laws can be enacted and enforced.

We are sorry to note the stand taken by one of our live-stock journals regarding the so-called "campaign against tuberculosis." The at-

tacks made on veterinarians and sanitary boards have either been made through ignorance, or a desire to become prominent through a series of misrepresentations. We ought now to be pleased that our profession has at last been recognized. So have for its members gentlemen who we believe are capable and fully qualified as meat and milk inspectors. I am sure you will agree with me when I say, we are at last placed in our right position. Stringent meat and milk inspection cannot possibly be carried out by any other than a qualified veterinarian.

And now my fellow practitioners, we trust this meeting shall be a congenial and profitable one, and if you will allow me, let me suggest that after the routine business of the meeting we consider and discuss the papers and communications that may be brought before us. Who is there among us that has not met complicated cases, and does not need the advice of fellow practitioners? These meetings are the very place to give and receive such information.

We do not want to be antagonistic to any work this association may have in hand, but we think for the good of the association, there is one subject we should let rest for the present. We refer to veterinary legislation. The discussion of this subject has taken up a greater part of the time of our meetings for several years, and what is the result? Surely we have gained nothing, but on the contrary we have lost.

What we want to do is to turn our efforts in another direction. We should endeavor to make these meetings so interesting and profitable that no veterinarian in the State can afford to miss them. Then we will be strong enough in numbers to have some influence.

Concluding, we, your officers for the past year, express our warmest appreciation for the help and support that has been accorded us on all sides. It is true some have been a little dilatory in the matter of answering correspondence, which makes the work a little burdensome, but we think it has not been for lack of interest.

You must now choose others from your ranks to bear the responsibilities we have striven to discharge, and when the new officers take the good ship by the helm, we hope that each and every one of you will lend a helping hand toward making this one of the strongest State organizations in the United States.

In conclusion let us ever be mindful of the one great object of such organizations as this, helping one another. There is room for us all, and only the honorable means of fair competition will end well and bring to us all that just reward which comes as the result of honest toil.

Secretary Dr. W. H. Gribble was then asked if he had any report to make, and responded with the following:

Mr. President and Gentlemen: At the last annual session of this association, a resolution was adopted that if the American Veterinary Association met in annual session in Detroit, Mich., that we, as an association, have no semi-annual session; but should, as individuals, all try to meet with the national body. As you all received invitations to a session it is proper that we offer an explanation. As soon as Detroit had been selected by the American Association, we began corresponding with the officers of the Michigan Veterinary Association and received from them an urgent request that we as an association meet in Detroit; and finally it was decided that so it should not seem as if we were forc-

ing ourselves upon the American Association, that we have a joint session of the Veterinary Associations of Michigan, Ontario and Ohio during the time of the meeting of the American. In theory this was very plausible, but practically was found impossible to carry out. The American Association cordially invited us to attend all their sessions, clinics and entertainment as if we were members of that body, and that took all of our time. In clinics Ohio held her own in speed of operating, as Dr. Torrence performed plantar neurectomy on one front limb (both sides) in the remarkable time of one minute and forty seconds, with openings in the skin not exceeding half inch in length; his instruments a knife and wooden meat skewer. While the dexterity and method of the operation was loudly applauded, and secured for the operator much praise, we must confess that his instruments gave rise to much severe criticism.

It may be out of place for us to criticise the methods of the American Association, but it does seem that some better arrangements as to time could be effected; as for instance, clinics called for 8 A. M. would not commence until 11 A. M., a time when papers were being read, so that one to see an operation must miss listening to some valuable essay, or hear the paper and miss the operation. We venture to say that if clinics called for 8 A. M. commenced at that time, irrespective of audience or *principal operator* and then adjourned at its specified time, you could guarantee everything on time the next day; but all in all you who were not present missed a treat, professionally, as well as socially, besides gaining confidence in your ability; for on leaving home with a full knowledge of your professional mistakes, and your seeming lack of skill, you see college professors commit errors in operations that you yourself would not be worse guilty of; you then return home restocked with confidence and consider yourself a full-fledged veterinarian once again.

The social entertainment (thanks to the Michigan Association) was on a scale unexpected and surprising; trolley rides, theatre parties, luncheons, and above all that visit to Parke, Davis & Co.; putting in hours walking through the different departments in the manufacture of their numberless medicinal preparations, including the visit to their biological laboratory (the largest in the world) where scores of horses and cattle, hundreds of guinea-pigs, pigeons and dogs are used in experimentation and manufacture of the various serums and antitoxins, used now in the diagnosis or treatment of such diseases as tetanus, diphtheria, tuberculosis, glanders, black leg, anthrax, Texas cattle fever, etc. At the close of this visit the firm entertained the association at luncheon, and from there, last but not least, we were escorted aboard steamer and given a ride of twenty-five miles up the lake, through the government canal to Star Island, there to sit down to an elaborate fish banquet and flowing oratory, at the close of which the meeting adjourned. A large number of ladies from Ohio were in attendance, who, one and all, were loud in their praises of their entertainment, especially the many kindnesses shown them by the wives and daughters of the veterinarians of Detroit, and I doubt if one of them failed to swear that she would never again, if in her power, fail to attend the annual meetings of the American Veterinary Medical Association.

Gentlemen, we meet to-day to celebrate the eighteenth anniversary

of this association, to again renew acquaintance with one another and participate in the pleasures and privileges which can always be found at the sessions of the Ohio Veterinary Association.

As your Secretary we cannot call your attention to the unprecedented prosperity of the association such as we are told abounds all over the country in other matters. This association was organized July 24, 1883, and was open to membership to graduates and non-graduates alike upon the recommendation of a board of censors; but in 1889 the non-graduates, no matter how practical, had lost all interest in the association (with the exception of Dr. W. G. Jones and J. B. Hillock, this latter now deceased), and allowed their membership to relapse from non-payment of dues. so that during that year (1889) an amendment to the by-laws was adopted, abolishing the board of censors and restricting further new membership to only graduates of legally incorporated veterinary or medical schools or colleges.

Our records show that since organization, to January 1, 1901, there have been 93 admitted to membership, of which only 35 remain in good standing, that is, owing two years or less of dues. Of these 22 are graduates of Ontario Veterinary College, 4 of the American Veterinary College, 4 of the Ohio Veterinary College, 2 of the Ohio State University, Veterinary Department, 1 from Montreal, 1 from Chicago, 1 from New York College and 1 non-graduate.

Of this great loss 7, J. B. Hillock, J. Charlesworth, G. W. Bowler, L. B. Chase, A. J. Smith, J. Yonkerman and J. C. Meyers, Sr., have been removed by death, one was expelled, eight have withdrawn and forty-two were suspended for non-payment of dues.

Of the twenty-five members who organized this association in 1883 eight are still loyal members. Of the thirteen who joined in 1884 only one, Dr. G. W. Butler, remains with us. Of the five who joined in 1885 all have withdrawn, been suspended, or expelled.

The great loss of 42 from non-payment of dues, cannot possibly be caused by our burdensome annual assessment of $1. There must be other and greater reasons, either our association is not organized upon a basis acceptable to the great majority of veterinarians of this State, or else our sessions have not been of sufficient interest as to appeal to members to retain their membership. Neither of these reasons may be at fault, for sometimes we think the veterinarians of Ohio are different from those of other States as regards association, and especially is this true when your Secretary receives letters telling him how the association should be run, what it should do, etc., and invariably the writers are men who have never advanced one cent in the payment of expenses, and yet if the work they suggest was accomplished, they would share as well in the benefits as those who bore all the expense. If our by-laws are not as they should be, it is not a hard matter to correct them, and if our sessions are not interesting then who is to blame but the members. The President and Secretary may request, but they cannot compel, and there is not always the enthusiasm shown that insures success; especially is this so when trying to prepare a programme. There is not a member of this association but who is capable of doing something that will instruct, benefit, or add pleasure to these meetings, and yet fully 50 per cent. of those requested to assist, offer some sort of an excuse. This is not as it should be, for to accomplish all that such an organiza-

tion as this should, requires the individual and united efforts of us all.

There is no doubt but a great good could be accomplished to the profession as well as live-stock owners, by a large harmonious association such as Ohio with its well educated and large number of veterinarians ought to have. We sincerely hope that this session will be a successful one; its meeting place should attract some, the expectancy of clinics attract others, and we have written more letters endeavoring to obtain a good attendance than for any previous session; but more than this, at no time during the ten years we have been your Secretary has the President taken such a deep interest in the success of the meeting as Dr. S. D. Meyers, the present occupant of the chair. In conclusion, we thank you for many kindnesses, but would suggest to some, prompter replies to the Secretary's communications.

Next order of business was the nomination and election of officers, to serve for the coming year.

Dr. Sydney Myers was nominated for President, Dr. J. H. Blattenburg for First Vice President, Dr. W. A. Labron for Second Vice-President, Dr. E. H. Shepard for Third Vice-President, Dr. T. B. Hillock for Treasurer, and Dr. W. H. Gribble for Secretary. There being but one nominee for each respective office, the rules for ballot were suspended and the Secretary instructed to cast the vote of the association, thereupon the President declared each and every nominee duly elected.

A large amount of correspondence was read, none being of a really important nature, though some of it amusing.

Dr. T. Bent Cotton now read a really interesting essay on "Tuberculosis of the Horse," in which he took the ground that a sorrel horse was a diseased one, the color indicating in itself the existence of disease. This paper, as might be expected, aroused a storm of debate; but not being a stenographer we were unable to catch it; only that some denied the existence of tuberculosis at all in the horse, others that it did exist, and others, while they had never definitely diagnosed it in horses, they saw no reason why that animal should not suffer from the disease.

Adjourned until 7.30 P. M.

Evening Session.—Meeting called to order at 8 P. M.

Dr. E. H. Shepard, of Cleveland, gave us an interesting address on "Notes of City Practice," in which he exhibited several fine specimens, one large calculus and one a specimen of two large molar upper teeth and no lower ones.

Report of Committee on Contagious Diseases was read by its chairman, Prof. D. S. White. It was well discussed by almost every member present and accepted.

Report of Committee on Veterinary Progress was verbally given, and on motion accepted.

Dr. R. C. Hill read reports of cases.*

The chair appointed the following committee to audit the books of the Secretary and Treasurer and to report to-morrow morning: Drs. L. W. Carl, P. A. Dillahunt, R. J. Michener.

Dr. G. R. Teeple, of Napoleon, made application for membership, vouched for by Drs. Carl and Blattenburg, and under suspension of the rules was elected to membership.

The remainder of the evening was taken up in discussing the treatment of tetanus, some claiming good results from the carbolic acid treatment, while others found the treatment as severe as the disease, the hypodermic injections of the acid causing immense sloughing of tissue.

Just at this point the meeting adjourned because the electric lights went out (11 P. M.), to meet in the morning at the University Veterinary Hospital and conduct clinics.

January 17.—We convened as per adjournment, and as proof that clinics are successful was the number of members in attendance.

We failed to keep a record of the clinics, but remember "Cunean Tenotomy," by Dr. Hillock; "Spaying Bitch," by Dr. Blattenburg; "Firing for Spavin," by Dr. Frederick; "Intravenous Injection of Hydrate of Chloral to Produce Anæsthesia," by Dr. Brumley; "Peroneophalangeal Tenotomy," and "Median Neurectomy."

After the clinics we again convened. The Auditing Committee rendered the following report: "We, your committee appointed to audit the books of this association, find the accounts all correct, and that there is a balance in the treasury of $279.44. R. J. MICHENER, P. A. DILLAHUNT, *Committee.*"

The chair appointed the following committees:

Veterinary Progress.—Drs. Walter Shaw, E. H. Shepard, O. V. Brumley.

Contagious Diseases.—Drs. D. S. White, S. H. Kent, R. J. Michener.

In reference to meeting place for semi-annual session it was decided to leave the selection to the officers of the association. Prof. White invited the association to meet again at the University at our next annual meeting, and suggested the appointment of a committee on clinics.

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* Will be published in July REVIEW.

A vote of thanks was tendered the officials of the University, especially the veterinarians, for their kindnesses in assisting in making this session a success, after which the association adjourned. WM. H. GRIBBLE, *Secretary.*

ALUMNI ASSOCIATION OF THE NEW YORK-AMERICAN VETERINARY COLLEGE.

A special meeting was held in the lecture room of the college building on Monday, April 1, 1901, at 4 P. M., with Dr. Fink in the chair. In the absence of the Secretary, Dr. F. R. Hanson was appointed Secretary *pro tem.*

The object of the meeting being to admit new members, after the reading of the Constitution and By-laws by the President the following new members were admitted: From the class of 1901—Drs. R. G. Bose, D. J. Johnson, J. L. Sterling, F. H. Werner, I. Wertheimer, F. S. Morris, W. C. Miller and C. J. Jones. From the Alumni Association of the American Veterinary College—Drs. L. H. Howard, H. N. Hall, R. W. Ellis, W. H. Hoskins, H. D. Hanson, F. R. Hanson, W. H. Lowe, J. P. Lowe, E. R. Ogden, T. E. Budd, Wm. Dougherty, W. J. Coates, J. F. Winchester, J. S. Buckley and E. C. Ross, From the Alumni Association of the New York College of Veterinary Surgeons—Drs. H. D. Gill, Amling, Wm. Anderson. C. E. Anderson and Wm. Fleischman.

The Secretary, Dr. Eichhorn, having received a Government position, sent in his resignation, which was accepted, Dr. F. R. Hanson being appointed in his place.

The President, Dr. Fink, appointed the following members to constitute the Board of Censors: Dr. H. D. Hanson (chairman), Drs. Wm. Anderson, R. W. Ellis, W. C. Miller and W. J. Coates. Meeting adjourned. F. R. HANSON, *Secretary.*

ALUMNI ASSOCIATION OF THE AMERICAN VETERINARY COLLEGE.

The regular meeting was held in the lecture room of the New York-American Veterinary College, Monday, April 1, 1901, at 2.30 P. M., with Dr. R. W. Ellis in the chair.

The following members answered roll-call: Drs. R. W. Ellis, H. D. Hanson, W. H. Lowe, J. P. Lowe, J. F. Winchester, L. H. Howard, W. H. Hoskins, E. A. Hogan, H. N. Hall, T. E. Budd, Wm. Dougherty, W. J. Coates, E. R. Ogden and F. R. Hanson.

Minutes of the previous meeting were read and approved.

The Executive Committee reported that arrangements had been made for the dinner at Hotel Marlborough, and that the regular Alumni Prize would be given.

Resolutions upon the deaths of Drs. Chas. Burden and M. O'Connell were read.

The Treasurer's report was read and ordered audited.

Library Committee reported progress.

The following officers were re-elected :

President—Dr. R. W. Ellis.

First Vice-President—Dr. W. H. Lowe.

Second Vice-President—Dr. H. D. Hanson.

Secretary and Treasurer—Dr. F. R. Hanson.

There being no further business, meeting adjourned.

F. R. HANSON, *Secretary.*

AMERICAN VETERINARY MEDICAL ASSOCIATION.

The following have offered to contribute to the programme: Dr. W. C. Fair, Cleveland, O.; Dr. Carl W. Gay, Syracuse, N. Y.; Dr. G. R. White, Nashville, Tenn.; Dr. Wm. McEachran, Windsor, Ont.; Dr. D. P. Yonkerman, Kalamazoo, Mich.; Dr. G. W. Dunphy, Quincy, Mich.; Dr. R. S. Huidekoper, Washington, D. C.; Dr. G. E. Nesom, Clemson College, S. C.; Dr. V. A. Moore, Ithaca, N. Y.; Dr. C. H. Higgins, Montreal, Can.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

Secretary George W. Pope informs us that the next meeting of the above association will be held in Newark on July 11. The exact place of meeting had not yet been decided upon at the time of notification. It is hoped that there will be a large attendance.

NEWS AND ITEMS.

DR. A. W. MILLER, of Herington, Kansas, and Dr. L. A. Shaw, of Louisana, Mo., have recently received appointments as inspectors in the Bureau of Animal Industry.

Dr. X. I. RICHMOND, of Kansas City, journeyed to New Orleans with Dr. H. G. Patterson, to take veterinary charge of a cargo of horses to South Africa.

THE COLORADO STATE BOARD OF AGRICULTURE have established a department of veterinary science, with Dr. George H. Glover, of Denver, at the head of it, at an annual salary of $1500.

DR. EUGENE BIART, of Leavenworth, Kansas, has recently returned from Manila, P. I., where he had gone to serve the government as a veterinarian a year ago. The doctor reports a very pleasant and profitable experience.

DR. WM. HERBERT LOWE, reported as being dangerously ill with inflammatory rheumatism in the May REVIEW, is convalescing nicely, and has already resumed his enthusiastic work in behalf of the Atlantic City meeting of the A. V. M. A.

DR. ELISHU HANSHEW, of Brooklyn, N. Y., who was reported in the April REVIEW as being ill with capillary bronchitis, is, we are pleased to announce, so far recovered as to assume active control of his large practice.

DR. J. J. MILLAR has succeeded Dr. L. A. Merillat as Secretary of the Faculty of McKillip Veterinary College, Chicago. The former has entered into partnership with Prof. McKillip, and he will assume the chair of cattle pathology and obstetrics in addition to his other duties.

DR. H. G. PATTERSON, of St. Joseph, Mo., recently paid his friends in Kansas City and St. Joseph a short visit, returning to New Orleans to begin his fifth voyage to South Africa, May 23. These trips across the water seem to agree with the doctor, as he is adding considerably to his avoirdupois.

BACILLOL, the new germicide advertised elsewhere, is making rapid strides towards universal use among veterinarians. Under tests it has proven more destructive to germ life than any non-poisonous substance known, weak solutions killing them very quickly. Write the Bakterol Company, New Brighton, N. Y., for literature and all particulars.

DRS. L. A. MERILLAT AND J. M. WRIGHT, late of the McKillip practice in Chicago, have formed a partnership under the title of Wright & Merillat, and are engaged in the general practice of veterinary medicine at 2127 Indiana Avenue, Chicago.

DR. W. L. JOHNSON, of Brooklyn, N. Y., who recently made a trip from New Orleans to South Africa, returned in the early part of May, much improved in health, to regain which was his principal object in accepting the charge. He had flattering offers from the British Government to accompany the army to Egypt. He may again take a voyage to the Dark Continent under similar circumstances, as his first was one of much pleasure and profit.

THE NEW YORK LEGISLATURE has fixed the value of each cow condemned by the New York City Sanitary Board at $22.50. At present the municipality owes for seven cows the Board ordered destroyed. Under the law city bonds are to be issued to pay such bills and hence the first bonds put out will aggregate $157.50. Under the law again bids for such bonds must be advertised for and the expense consequent thereon will be about $3000. The rate of interest is three per cent. New York's "cow-bonds" are regarded as financial curiosities.—(*Breeder's Gazette.*)

GLANDERS IN MAN.—In the report of the Massachusetts Cattle Commission (Dr. Austin Peters, chairman), issued January 1, 1901, the deaths of four people from glanders are given in detail, two of which were very sad. A mare died of obscure glanders of the lungs, and about that date the owner and his son became ill with a sickness which at first puzzled the physicians. The veterinarian who had treated the mare had diagnosed the trouble as bronchitis, but not being satisfied with his diagnosis, held a post-mortem and reported to the Commission that he believed the disease was glanders. When the owner and his son were taken ill, he suggested to the physicians in charge that they might have contracted the malady. This was found to be the case, the father dying of glanders two weeks later, the son ten day subsequently.

SYMPATHETIC LACTATION.—While incidents like the following are not uncommon in our annals, it is recorded here as an interesting circumstance, having occurred within the past few weeks in the practice of Dr. Bell, of the REVIEW: A mongrel bitch, three years old, gave birth to a litter of puppies more than a year ago, which were weaned at the usual time. Her mammary glands had thus been inactive for a year, and they were apparently dry. A new born pup was brought in to the house, and was being fed upon artficial food. It was observed that a strong attachment was manifested by the bitch for the new-comer, being jealous of any one who came near it. She permitted and encouraged the puppy to suckle from her dry breasts, and it was noticed that the little fellow's appetite for malted milk began to decrease, until he finally refused it altogether, at the same time gaining in flesh and animation. A closer investigation disclosed the fact that he was obtaining a full supply of good rich milk from his foster mother, which continues to flow in abundant quantity.

BUREAU OF ANIMAL INDUSTRY EXAMINATION.—The U. S.

Civil Service Commission announces that on June 18, 1901, an examination will be held in any city in the United States where postal free delivery has been established, for the position of meat inspector. During the past three years in addition to the regular semi-annual a number of special examinations have been held for this position, but the Commission has failed to secure a sufficient number of eligibles to meet the needs of the service, every person who has passed the examination having been offered an appointment. This examination offers a most excellent opportunity to secure employment in the Government service at a salary of from $1200 to $1400 per annum. The examination which was held on April 23, 1901, did not result in a sufficient number of eligibles to meet the present needs of the service. Applicants must be graduates of veterinary colleges. Those graduating prior to or during 1897 will be accepted if from colleges having a course of not less than two years in veterinary science, while applicants graduating since that time must be from colleges having a course of not less than three years. These facts must be shown in the application. Applications received from persons who are not such graduates will be disapproved. The examination will consist of the subjects mentioned below, which will be weighted as follows: (1) Spelling (second grade), 5; (2) arithmetic (second grade), 5; (3) letter writing (second grade), 5; (4) penmanship, 5; (5) copying from plain copy (second grade), 5; (6) veterinary anatomy and physiology, 10; (7) veterinary pathology, 25; (8) meat inspection, 40; total, 100. Information concerning the scope of the examination may be found in sections 36 and 60 of the Manual of Examinations revised to January 1, 1901. Age limit 20 years or over. From the eligibles resulting from this examination it is expected that certification will at once be made for the purpose of filling a number of existing vacancies in the position of meat inspector in the service of the Bureau of Animal Industry, Department of Agriculture, at different places throughout the United States, and to other similar vacancies as they may occur. This examination is open to all citizens of the United States who comply with the requirements and desire to enter the service. All such persons are invited to apply, and applicants will be examined, graded, and certified with entire impartiality, and wholly without regard to any consideration save their ability as shown by the grade attained in the examination. Preference in certification may be given to eligibles who are legal residents of the place or vicinity where the va-

cancy exists. Persons who desire to compete should at once apply to the U. S. Civil Service Commission, Washington, D. C., for application forms 304 and 375, which should be properly executed and promptly forwarded to the Commission. All persons who have been examined for this position during the past year and failed to pass will be allowed re-examination upon filing a new application. All persons who are unable to file their application prior to the date of the examination will be examined provided their request is received at this office in sufficient time to ship papers to the place of examination selected by them, conditional on the subsequent filing of their application in proper form showing them to be eligible.

WHAT REVIEW SUBSCRIBERS SAY.

I HAVE BEEN TAKING THE REVIEW for the last twelve years and I consider it one of the greatest additions to my library that I could have. I don't see how any veterinarian can get along without it."—*J. S. Culbert, V. S., Portland, Indiana.*

"THE AMERICAN VETERINARY REVIEW is one of my *Vade Mecums* on my desk in my study since 1886. Its arrival is always highly appreciated, and its contents read and carefully noted. My subscription for 15 years was a grand investment, both to my patrons and myself. It had a reciprocal influence, first, being the medium of edification to the diligent practitioner, and, secondly, through his instrumentality, beneficial to the community at large. My good wishes both to the AMERICAN VETERINARY REVIEW and its worthy editors. May success crown your noble work.—*D. F. Bowersox, Aaronsburg, Pa.*

AMERICAN VETERINARY REVIEW.

JULY, 1901.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

"BREAKING-DOWN."—Very few are there of our American colleagues who have not met in their practice those cases which are registered under the name of "break-down," and which occur almost instantaneously, leaving an animal with his fetlock down, almost or even touching the ground, the toe turned upwards, and for which, of course, no treatment is possible. When post-mortems are made the lesions are found in the fibrous apparatus of the lower part of the leg, most commonly on the suspensory ligament, whose bifurcating branches are more or less torn from their sesamoidal insertion; perhaps also the tendons of the flexors of the phalanges are involved, and with those periarticular lesions of almost characteristic nature. In other cases the lesion occurs below the fetlock, at the os pedis, where the plantar aponeurosis is, so to speak, torn from the bone. Not uncommonly structural changes are observed in the bone and evidences of osteoporosis, softening and degeneration, are found to explain the giving way or rather the tearing away which brings on the inability of the fetlock to fulfil its function of support. We remember that some years ago, talking of this form of disease, which we thought was quite more frequent in the United States than in Europe, Prof. Nocard suggested to us the possibility of the tendinous or ligamentous degeneration being due to parasitic affections of those tissues. For some time we had no occasion to observe other cases, but

once in minutely examining the ruptured ends of a suspensory ligament, we thought that we had detected oozing from them and forming in the meshes that surrounded the seat of the lesion little threads which looked to us like worms. We had no opportunity to settle the question in this case, and that we had to deal with cases of parasitism like the form of filariosis due to the presence of *filaria reticulata*, we are not able to say. The careful reading of an excellent article due to the pen of an army veterinarian (M. Prader), which we found in the *Archives de Parasitologie*, has drawn our attention lately to the subject again, and while the subject as treated by M. Prader is not altogether of the same nature as those of our common breaking down, we have thought that some extracts from the *Archives*, with some of the illustrations, might be of great interest to our friend —so much so that we have failed to find anything on this subject in the literature at our disposition. We hope not to be mistaken, and while the subject seems to end only in negative results as far as general therapeuty is concerned, we feel that by presenting it to our readers it will open up for them an opportunity for inquiry and for investigation into the etiology of a disease which is as yet so incomplete.

* * *

TICKS AS INFECTING AGENTS.—The part played by hæmatozoas in the development of diseases among animals is daily made more and more known. To the various *filarioses* which have been known for a long time, have successively been added the diseases due to the *spirochætæ* (spirillosis of geese); to the *trypanosomes* (surra of India), *Nagana* or *disease of the Tsetse* of Austral Africa, and to the *piroplasmas* (bacterian hæmaturia of cattle and *carceag* of sheep, observed by Starcovies and Babés in Roumania; *Texas fever*, so thoroughly studied by Smith and Kilborn; *tick fever* of Australia; *Tristeza* of South America; *Rooi water* of Austral Africa; *hæmoglobinuria of cattle* of Finland, etc., etc. *Piroplasmas* cover an immense field; they are found in every part of the globe and everywhere; *ticks* are also found as the agent of transmission and spreading of the disease.

These remarks that we found in the minutes of the *Bulletin de la Societé Centrale* refer to the report of a case of *canine piroplasmosis*, observed by Profs. Nocard and Almy, which they had observed in a dog suffering with hæmoglobinuria, and not from hæmaturia, as the owner thought. The examination of the blood revealed the presence of the hæmatozoas. The parasites were analogous to those of Texas fever, and presented themselves under the form of little globular masses, with well defined borders, rarely occupying the centre of the red corpuscles, more commonly nearer one of its poles, sometimes single, sometimes two in one corpuscle, and again as numerous as four in number. The history of the case was that the dog had been taken by his owner duck shooting, and that when he came back he was covered with ticks. The dog became sick shortly after. One of the ticks brought to the author was full of blood and ready to lay eggs. Further experiments will be done with those. At any rate, the disease was communicated by injection of the blood of the sick dog to another which exhibited all the symptoms and microscopic lesions that had been found in the first animal. Series of experiments have been established, which will be made public later on, and will serve to illustrate the whole history of this new disease of the dog.

There is, anyhow, one point of importance derived from the few facts presented by this case: it is the danger that dogs run when going in localities infested with ticks, and the necessity that imposes itself for all owners to see that these insects are removed from their skins as early as possible. We hope later on to let our friends know the results of the experiments carried out by Prof. Nocard on this subject.

* * *

GERMANY TO THE FRONT IN HIGHER EDUCATION.—The question of the importance of higher education as a means of elevating a profession is certainly one which all parties interested are always attempting to realize by all kinds of requirements, which are demanded from those who desire to reach a professional degree. Every country in its own way and accord-

ing to the mode in which education is organized, has its manner in proceeding. In countries where education is left to personal efforts, the methods used proceed slowly and by degrees, while in those where the Government has the last word to say, the changes can be made more radical and imposed *nolens volens.* Those conditions are well illustrated by what has occurred in veterinary education in the United States for the last few years and recently taken place on the continent, in Germany.

In its last seating the Reichstag discussed a petition from the German Veterinary Council to the effect of requiring from candidates to admission in veterinary schools "the same university requirements that are demanded for medical students." In the public discussion which took place, every political party expressed their opinions on the subject. The project was adopted with a large majority and returned to the Chancellor of the Empire with the recommendation of the Reichstag.

This is considered as an immense success for German veterinarians; the honor of which being due to the veterinary council and to its president, Professor Hoffmann, and Professor Schmaltz, of Berlin, who, through the press, fought valiantly for it. In no country, not even in France, has such a system of recruiting students been inaugurated, either for faculties or veterinary schools. The experiment which is going to be attempted in Germany is and will be an interesting one to follow. The single fact that it can be recommended shows in what high esteem veterinarians are held in national representation. Years will certainly have to elapse before anything like it is to be found for veterinary institutions in the States.

* * *

A PRIZE FOR IMMUNIZATION AGAINST FOOT-AND-MOUTH DISEASE.—In one of our last chronicles, we called the attention of our readers to the creation of the Audiffret Prize in relation to the discovery of a cure for tuberculosis. Another disease has just been added to the list of those which, having baffled the skill of our sanitarians and of our practitioners, suggested the idea of financial stimulus for new researches. To-day it is foot

and-mouth disease, that terrible scourge which prevails so extensively of late through Continental Europe, which recently has reappeared in England, after being rid of it for several years, and which in fact has assumed such character as to call the earnest attention of our ever-watchful guardian, Dr. Salmon. In its general meeting, the association of Italian cultivators voted one thousand francs as the starting point of a subscription, to which are to take part the Government, provinces, communes, and agricultural institutions of Italy, to create a prize of one hundred thousand francs to be granted to the one who, in Italy or other country, shall discover an absolutely certain method to give immunity against aphthous fever in bovines for at least a period of two years, without injuring their health. As the study of immunization has already called the attention of many serious and hard investigators on the continent, some even having partly succeeded, it is more than probable that the prize will not remain long without being won. A. L.

A. LIAUTARD.

We reproduce as a frontispiece to this number a late photograph of Prof. A. Liautard, which was recently presented to us as a token of friendship. Since the subject is personally known to most American veterinarians, a large number of whom were his "boys," as he always affectionately refers to those who were so fortunate as to be his pupils, and as he has been absent from America for a number of years, we thought they would appreciate the opportunity to again look upon his pleasant features. Although time has whitened his abundant locks, it will be observed that his eye is as bright as of yore, and from the great volume of scientific work which he accomplishes—much of which is in the interest of REVIEW readers—his spirit is as undaunted, his energy as great, as in the days when he stood at the helm of the embryonic profession of America, championing its interests and assailing every element which threatened its progress. Now that the great cause for which he labored so

long and well is firmly established among the learned sciences, he may well rest upon his laurels, with the satisfying assurance that his name is lovingly enshrined in the hearts of his American colleagues. R. R. B.

THE ASSOCIATION SEASON.

While the details of the programmes of the larger association meetings of the early fall cannot, of course, be presented in this number, sufficient outlines will be found in the department devoted to society meetings to make the assertion that the year 1901 will witness large gatherings of veterinarians at many points to participate in most valuable scientific and practical deliberations. Especially are we gratified to see most perfect arrangements developing in New Jersey, where the National Association will meet for the first time in its nearly forty years of existence; the headquarters, Assembly hall, and clinic amphitheatre have already been secured; Secretary Stewart announces a long list of important papers for consideration and discussion; there are many surgical demonstrations already listed, and the Committee of Arrangements are working incessantly that nothing may be left undone to produce those happy results which alone are secured by perfect arrangements. With prosperity crowding upon veterinarians all over the country, we feel sure that the New Jersey meeting will establish a record for interest and attendance.

In the same department New York's annual meeting is outlined, and the prediction of Chairman of Arrangements Williams that this year's meeting will far exceed in all respects that of 1900 is an assuring indication that there will be a great treat in store for the large number who are sure to attend.

Pennsylvania will hold her annual meeting the week following the National, and, as usual, it will be full to overflowing with all that is best in the Keystone State from a veterinary point of view.

It behooves all who can do so to begin now to shape their affairs to take in as many of these important events as possible.

ORIGINAL ARTICLES.

BOVINE TUBERCULOSIS.

PERIOD OF INCUBATION—AGE OF LESIONS — EXPERIMENTAL RESEARCHES.

By MM. Nocard and Rossignol.

Translated for the Review by J. F. Winchester, D. V. S., Lawrence, Mass.

REPORT OF THE EXPERIMENTS MADE TO DETERMINE THE PERIOD OF INCUBATION IN BOVINES AND THE AGE OF TUBERCULAR LESIONS.

By MM. Nocard and Rossignol.

To the Minister of Agriculture, the Presidents and Members of the Conseils Generaux of Seine, Seine et Marne, Seine et Oise, of the Agricultural Societies of Fontainebleau, Melun, Versailles and of the Society of Practical Veterinary Medicine.

Gentlemen :—In presenting our report we desire at first to state the reasons why the experiments which have been recently conducted at Pouilly le Fort and Alfort were undertaken, before giving the details of them.

Since 1888 our sanitary laws prohibit the sale of tuberculous cattle; but the traffic in such animals continued and the buyer was unable to get any redress, it being impossible for him to prove the existence of the disease at the time of purchase.

The experts whose duty it is to examine the diseased animals cannot give a categorical statement of any case, since they are without knowledge of the period of incubation of tuberculosis or the age of tubercular lesions.

On July 31, 1895, on the motion of M. Darbot, Parliament passed an act amending the laws of July 21, 1881, and August 2, 1884, relative to the sales and exchanges of domestic animals.

This act tended to prevent in a more efficacious way than before the sale of animals afflicted with contagious diseases; unfortunately M. Cledon introduced the following amendment to the Darbot bill :

" However, in cases of tuberculosis in the bovine species, the

sale shall be null and void only when it shall relate to an animal previously condemned by competent authorities."

The object of this amendment was evidently to place tubercular animals beyond the provisions of the law of July 31, 1895; for the sale of a condemned animal will seldom take place, owing to the fact that such a sale is a criminal offense, its author being amenable to the law.

Soon after the Darbot bill took effect lawsuits were numerous, some favorable to Mr. Cledon's theory, others to Mr. Darbot's interpretation, which was more in conformity with the principles of equity; this interpretation is, in fact, the following:

"Every purchaser of an animal suspected to be tubercular must, before he can resort to an action in nullity, fulfill the requisite formalities as regards the administrative authority; such interpretation has been adopted by several Courts of Appeal and affirmed by the Court of Cassation.

There still remained a chance for evasion and for that reason the Society of Practical Veterinary Medicine at its meeting February 12, 1896, proposed the following resolution, which was submitted to the Minister of Agriculture:

"WHEREAS, the act of July 31, 1895, amending certain articles of the act of August 2, 1884, relative to redhibitory causes and of the act of July 21, 1881, relative to sanitary measures, has through obscurity and ambiguity the effect to multiply lawsuits, instead of reducing their number, as it was intended;

"WHEREAS, the Cledon amendment aimed at tuberculosis and passed by Parliament, has resulted in the majority of cases to deprive the purchaser of the redhibitory remedy which he had under the former laws; be it

"*Resolved*, That the act of July 31, 1895, should be revised in the interest of agriculture and that the Minister be requested on behalf of the Government to present such a bill."

M. Darbot, appreciating the necessity for such a revision as requested by the Society of Practical Veterinary Medicine, pre-

sented a new bill which was passed by the Senate in 1899. In order that it may be effective it must pass the Chamber, where it may be opposed by a new Cledon amendment. The text of the law as adopted by the Senate is as follows:

"Exhibiting or selling or offering for sale any animal afflicted or suspected to be afflicted with a contagious disease is prohibited;

"And if a sale has been made, it is of right null and void, whether or not the vendor had knowledge of the existence of the disease with which his animal was afflicted or suspected to be;

"However, no action on the part of the purchaser, by reason of said nullity shall be maintained, when more than thirty days in cases of tuberculosis, and more than forty-five days in cases of other diseases shall have elapsed since delivery, in the absence of public prosecution."

This new law marks some progress, although the burden of proving the existence of the disease on the day of the contract is always on the vendor and there are no data to fix the period of incubation or the age of tubercular lesions.

Messrs. Gallier de Caen and Laquerriere have tried to remedy this by submitting to the Society of Practical Veterinary Medicine a proposed law requiring for contagious diseases a delay commensurate with their period of incubation and carrying a legal presumption of anteriority.

The society approved the principle of this proposed act, but difficulties arose when it became necessary to state the periods of incubation of the various diseases.

The Laquerriere bill fixed the period of incubation for tuberculosis as nine days, but the Society of Practical Veterinary Medicine did not agree with this act.

The society at a meeting held the 9th November, 1899, decided that experiments should be made in order to determine the period of incubation of tuberculosis and also the age of tubercular lesions.

Mr. Laredan, the President, when speaking on this ques-

tion, said that experiments were necessary to determine, as accurately as possible, the time which elapses between the tubercular infection and the first symptoms in the infected animal.

It seems to me that those experiments could be conducted by our society, and in this connection I would ask for the co-operation of Mr. Rossignol. I now request him to prepare a plan and our society will decide whether it is possible to undertake experiments which appear to me to be absolutely indispensable in view of the difficulties met with by experts in ascertaining the age of the lesions.

In reply Mr. Rossignol said he was convinced that the proposed experiments would be very valuable and he would aid the society, but money was very essential and where shall it come from? I will cheerfully prepare a programme and have it ready for the January meeting.

The programme was presented at the January, 1900, meeting, discussed at the February meeting, amended by Prof. Nocard, and finally adopted, as follows:

The Society of Practical Veterinary Medicine, desiring to establish as accurately as possible the period of incubation of tuberculosis in bovines and approximately the age of tubercular lesions in bovines experimentally made, presents the following plan:

Ten Breton heifers and two milch cows of the same breed shall be bought and subjected to the following experiments:

1st. All these animals shall, not later than *two* days after their arrival at Pouilly le Fort, be subjected to the tuberculin test in order to discard any animal which might react.

2d. The committee appointed shall, four days after the tuberculin test of said animals, proceed as follows:

1. Four heifers shall be infected through the digestive organs in the following manner: tubercular material taken from the lungs of tuberculous animals shall be given them with their solid and liquid food.

II. Four heifers shall inhale tuberculous *dust.*

III. Two milch cows shall be infected by injecting into their teats an emulsion of tubercular material.

IV. One heifer shall be infected by an injection of tubercular emulsion into the trachea.

V. The last heifer be submitted to an intra-veinal injection of the same emulsion. The temperatures of the subjects shall be regularly taken A. M. and P. M.

Every eight days they shall be subjected to the tuberculin test, in order to determine as accurately as possible the exact time when they shall begin to react.

Thirty days later one subject from lot I; one subject from lot II; one subject from lot III; and the two subjects of lots IV and V shall be killed and autopsied with care; fifteen days later, that is, at the end of forty-five days, another subject from lots I and II and the last subject from lot III shall be killed.

The two animals remaining in lots I and II shall be killed at a later date to be fixed by the committee. In order to carry on these experiments it is thought best to ask for a subsidy from the Minister of Agriculture, the Conseils Generaux of Seine, of Seine et Oise and of Seine et Marne and also from the societies which were kind enough to contribute to the success of the experiments on peripneumonia.

This programme was unanimously adopted, and the association decided that the committee shall consist of all the members of the Board and of Messrs. Nocard, of Alfort; Moussu, of Alfort; Constant and Teyssandier, sanitary inspectors in State Department of Agriculture; Duprez, chief of sanitary office for Seine; Laquerriere, V. S., a delegate from Seine; Warnesson, Departmental Veterinarian for Seine et Oise; Fugio, of Paris; Vigier, of Paris; Hollard, of Guignes; Rabutin, Seine et Marne; Bavary, Jr., of Brie Comte; Robert, Seine et Marne; Paul Rossignol, of Melun.

The members of the society who desire to attend these experiments are requested to inform us to that effect.

Requests for subscriptions were sent to the Minister of Agri-

culture, to the Conseils Generaux of Seine, of Seine et Oise and Seine et Marne, also to the agricultural societies which had been kind enough to contribute for the experiments made by the Society of Practical Veterinary Medicine and by the Melun Agricultural Society, with the following result:

The Minister of Agriculture,	1000	francs
The Conseil General of Seine,	1000	"
The Society of Practical Veterinary Medicine,	1000	"
The Conseil General of Seine et Marne,	200	"
The Conseil General of Seine et Oise,	200	"
The Melun Agricultural Society,	300	"
The Seine et Oise Agricultural Society,	200	"
The Fontainebleau Agricultural Society,	100	"
	4000	

The thanks of this association are due to Mr. Duprey, Minister of Agriculture; Mr. Darbot, who interested the Minister in our project; Mr. Barrier, director of the Veterinary School of Alfort; Conseiller General of Seine, who has done effective work with the Conseil General of Seine, the Presidents and members of the Conseils Generaux of Seine, Seine et Marne, Seine et Oise, especially Messrs. Savary, Legendre and Brandin, and also the Presidents and members of the agricultural societies of Melun, Versailles and Fontainebleau, and finally the Pasteur Institute, which was so kind as to furnish us gratis the tuberculin required for our researches.

In accordance with the programme adopted March 14, 1900, thirteen Breton cattle were purchased by Mr. Guilloury, V.S., of Redon (elle et Vilaine).

They arrived at Pouilly le Fort the 1st of May, when, after a few days' rest, they were submitted to the tuberculin test.

Cow No. 6 gave the following temperatures: May 6th, 6 A. M., 39°5; 9 A. M., 38°7; noon, 38°8; 3 P. M., 40°2; being a suspicious animal she was condemned and killed May 8th. The temperatures recorded of the animals under observation on the 2d, 3d, 4th, 5th and 6th of May, are as follows:

MAY.	2	3	4	5		6			
				M.	S.	6 A. M.	9 A. M.	NOON	3 P. M.
Cow No. 1	38.4	38.5	38.6	38.5	38.1	39.	38.6	38.5	39.
Cow No. 2	37.6	37.8	39.3	39.	38.7	39.	38.5	38.8	39.1
Cow No. 3	38.2	38.	39.9	38.4	37.8	38.6	38.8	38.7	39.
Cow No. 3	38.	38 5	37.8	38.9	38.5	39.5	38.7	38.8	40.2
Cow No. 4	38.7	38.6	38.7	38.2	38.5	38.3	38.6	38.5	38.6
Cow No. 5	38.5	38.3	38.8	38.8	39.2	38.8	38.7	38.6	38.8
Cow No. 6	38.6	38.6	39.	38.7	39.1	39.	38.9	38.9	39.2
Cow No. 7	37.5	38.5	39.2	38.5	38.8	39.1	38.8	39.1	38.9
Cow No. 8	38.4	39.5	37.2	38.6	38.8	38.3	38.2	38.2	38.3
Cow No. 9	37.4	38.7	37.2	38.7	38.6	38.6	38.1	38.7	39.
Cow No. 10	37.6	38.8	38.4	38.8	38.9	38.7	38.4	38.3	38.8
Cow No. 11	38.4	38.6	38.6	38.5	38.5	38.5	38.6	38.5	38.6
Cow No. 12	38.6	38.5	39.3	39.4	39.3	38.9	39.1	39.	39.4

(*To be continued.*)

FILARIOSIS OF THE SUSPENSORY LIGAMENT OF THE FETLOCK IN HORSES.*

By J. Pader, Veterinarian to the 19th Regiment of Artillery.
Extracted from the *Archives de Parasitologie*, by A. Liautard, M.D., V.M.

History and Nature of the Affection.—This affection of equines is due to *Filaria reticulata* (Diesing), Creplin.

This parasite, discovered in 1840 by Hermann and Blisweis, of the Veterinary Institute of Vienna, has been since observed by others—German, Austrian, Italian and Russian veterinarians. Professor Tshulsowski, of Kasan, has made of it a special study. The results of his observations are found in the *Notices de l'Institut Veterinaire de Kasan* (1884-1888), and reprinted in the Oesterr *Monatsch. für Thierhulkunde*, 1888.

The *filaria reticulata* was observed in France by Prof. Railliet in 1891 under the name of *Spiroptera reticulata*, which had received that name from Diesing. Students of Alfort, while dissecting, found a very fine worm in the cervical ligament of a

*This paper obtained the Pangoué prize of the Société Centrale de Medecine Veterinaire in 1900.

horse. This Railliet recognized as the parasite discovered by Hermann and Blisweis. Shortly after, Mr. Moussu found it in the perforatus and perforans tendons of a horse killed for dissection. Finally, M. Comte, of the Toulouse School, found this filaria in the suspensory ligament of the anterior leg of a horse, treated for lameness of that extremity.

It results from the bibliographical study of this parasite that the *filariosis* that it gives rise to is relatively little known, especially in France, where the few rare cases in the records are very incomplete. The parasite itself is little known, and its zoological study remains to be made.

Still, *filaria reticulata* is not rare in equines. Our observations justify us in believing that the majority of adult individuals of that species are affected with it—for the region of Nimes at least.* And if these cases of parasitism have not been observed oftener, it is because attention has not been called to them. It must also be said that occasions for minute examinations at post-mortem of the suspensory ligaments occur seldom.

We have said that this parasite has been found in the cervical ligament, in the flexor tendons of the foot, and in the suspensory ligament Diesing has also observed it in the thickness of the coats of the collateral artery of the cannon and in the peritendinous connective tissue.

For ourselves we have seen it in the suspensory ligament, the cervical ligament, seldom in the connective tissue of the tendons and once only, out of more than 60 observations, in the thickness of the perforatus tendon ; and in this case, the parasite was single and represented by a thin thread which had not produced any apparent lesion in the tissue.

We cannot at present express an opinion as to the more or less frequency of the presence of filaria in the cervical ligament, as we have not looked specially in that direction†. But in the

* Where the author is in garrison.

† We, however, can affirm that it is quite common in the cervical ligament of horses killed at the abattoirs and particularly in those with thick necks. One may ask himself if there is not some relation between those *hanging necks* and the invasion of the ligament by the parasites. They encyst themselves into the connective tissue of the liga-

extremities of equines, at least in horses and mules (our observations on donkeys are not sufficiently numerous to justify approximation) it is on the *suspensory ligament of the fetlock* that it has its preferred lodging, preference which seems explained by the structure of that cord.

Like others, we have found it sometimes in the connective tissue, 8 or 10 times out of 60. It is then generally in the immediate neighborhood of the suspensory ligament. Once, however, we found a double parasitic nucleus, resting on the perforans tendons, but without being involved with it.

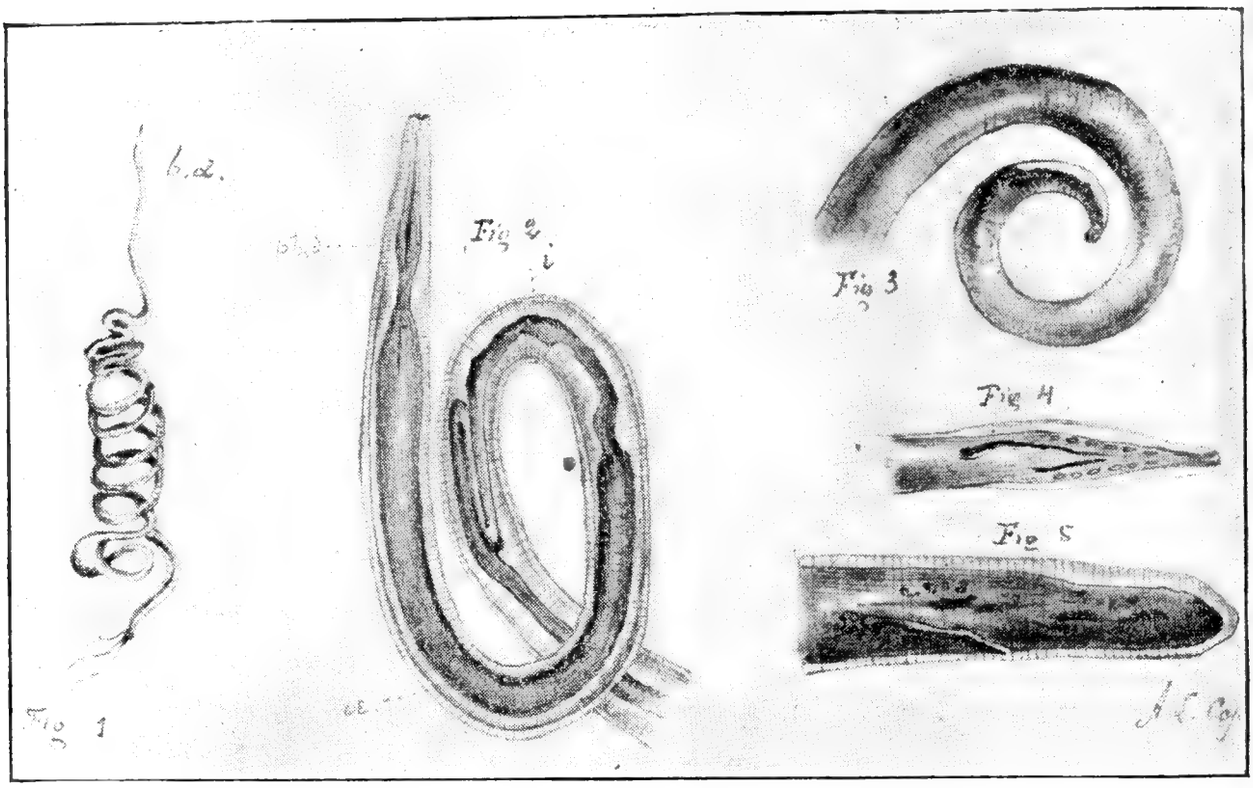
In the cases where the worm has been found in the middle of the connective tissue, without communication with the suspensory ligament, it was always curled on itself or through the meshes of the connective tissue, forming a nodule resembling a large dried bean in color and in size. To avoid repetition, we shall speak of these as *parasitic nodules.* They are formed by the body of the worm, rolled, curled in an inextricable manner with the connective fibres by an adenoid tissue and adipose cells. A more or less thick coat of fibres surrounds the whole.

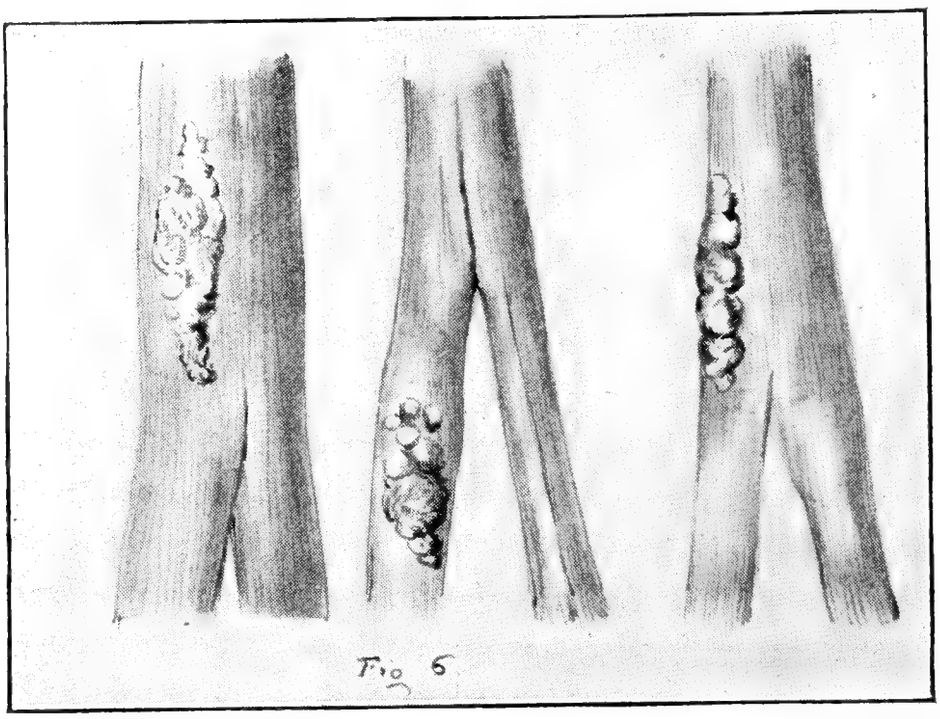
THE PARASITE.

How to Obtain It.—All means that have been used to obtain a complete worm have failed. Dissection under the magnifying glass or the microscope, of pieces of invaded ligament, maceration in various liquids and principally of solution of baryte of soda, have given us only pieces, more or less long, but impossible to assemble.

The simplest method has given us the best results. It consists in dividing the suspensory in pieces two or three centimetres long, and squeezing them between fine cloth. Pieces of worms, divided by the knife, are seen bulging out. With a fine forceps they are taken hold of and pulled out carefully until they break. In this way pieces of various lengths can be obtained, varying between one and several centimetres. By

ment and promote statosis Once dead they undergo calcification with the connective tissue surrounding, in such a way as to form irregular masses, sometimes sufficiently numerous to invade the entire cord of the ligament.





(*From the Archives de Parasitologie.*)

EXPLANATION OF THE FIGURES.

1. Anterior part of a female, b.s. genital end.
2. Anterior extremity of filaria reticulata. i, intestine; œ, œsophagus; ph, pharyn.
3. Posterior extremity of the male.
4. Terminal extremity, viewed by the ventral side, showing spicules and papillæ.
5. Posterior extremity of female.
6. Three fragments of suspensory ligament showing parasitic nodules.

patiently repeating these extractions one will obtain the extremities of the worm, which only are characteristic.

The thickest threads, which are also the more numerous, belong to the body of the female. The tight and sinuous curling does not allow the removal of long pieces—those are ordinarily between 2 and 6 centimetres. We exceptionally obtained once a thread 30 centimetres long, without the head or tail.

The male is finer in structure and more white. It forms less curls in its length, and its curls are looser; it yields more to the traction and furnishes longer pieces. We have easily had some 10 centimetres long; and once got one 15 centimetres without either head or tail.

Method of Study.—It is on the end pieces that the natural openings can be studied; the head and vulva of the female, the spicules and tubercles of the anal region of the male. All the elements necessary to establish the species may thus be studied. To study the internal organization, one must proceed by sections, either in making series upon the tendon itself or by incisions in celloidine.

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MACROSCOPIC LESIONS DUE TO THE PARASITE.

Externally, filariosis of the suspensory ligament can be overlooked and escape most minute exploration, while again it may give the impression of the ligament being enlarged to various degrees.

The aspect of the ligament on the amputated leg varies much according to the time the parasite has invaded it and the importance of the lesions it has produced. The form and color of the organ may not be altered. But most often, especially where the worms are in numbers, the ligament appears bigger than normally, paler in color, and more or less yellow-reddish in color. This swelling may involve only a part of the ligament or its entire structure. It may sometimes be twice or even three times its normal size. Sometimes the inferior branches

are affected, at others one more than the other, and then again they are both clear and the body of the ligament is swollen.

These lesions belong surely to the parasitism; they always are connected with the presence of the filaria, accompanied with the new formations it gives rise to.

In the case of recent invasion, the transverse section of the ligament shows nothing abnormal, or, at the very most, one may see in the interfasicular connective tissue one or two holes, resembling arterioles without coats. In pressing on the section, one will see oozing through these holes a whitish translucid thread, visible to the naked eye; it is the body of a nematode.

If the lesions are older and more numerous, the section is of dirty yellow or greyish color, with marbled lines of cicatricial tissue. The canalicular pores are numerous, and sometimes quite large, as having mingled several together. By pressure the worms are squeezed out, isolated in fragment or in bundles.

The connective tissue surrounding has changed its white nacreous aspect and become of a dirty yellow tint; it is thickened. On a longitudinal section of a dried piece one may, by translucidity, observe the spires and sinuosities formed by the nematode. Quite frequently the ligaments present on their surface irregular nodosities, more or less projecting, forming sometimes quite large nodules. These, one or two in number, seldom more, are observed once in every five or six cases of diseased ligaments. These swellings are formed by the worm, which has come out of the fibrous fasciculi of the ligament to come and curl itself in the peripheric connective threads.

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PATHOLOGICAL CONSEQUENCES OF FILARIOSIS OF THE SUSPENSORY LIGAMENT.

The pathological importance of filariosis of the suspensory ligament of the fetlock of the horse depends evidently on its frequency and its severity.

Frequency of the Affection.—It is very common. In a series

of 32 horses, of all ages, most of which were 15 to 20 years old, killed at the abattoirs, 26 were found affected with filaria most commonly on the four legs.

Among the 6 healthy ones, 2 were four and a half and five years old, one seven, the others fourteen. Among the 26, one was five years, two were six years. The one five years old had the tendons healthy, but three ligaments out of four had parasites. One of these ligaments had one of its bifurcations twice as big as the other. The horse of six years had the four ligaments diseased, and, without being apparently bigger than normal, were literally stuffed with filaria.

Besides that series we have a number of other animals, 3 donkeys and 9 mules, in which filaria were found in the suspensory ligament and also the perforatus tendon. This is the only case where we have found this organ diseased.

To resume: out of 43 animals, horses, donkeys or mules, only 8 were found free of parasitism of the suspensory ligament —an average of 82 per cent.

Severity of the Disease.—The severity of an affection of domestic animals, outside of the mortality that it may bring, depends on the functional disturbance it produces, and its greater or lesser facility of recovery.

Let us consider these two conditions :—Naturally one must heve a tendency to believe that so common an affection which has remained overlooked so long, cannot be serious.

This would be correct if one was certain that errors have not been committed on the origin of diseases which must be related to it and for which other causes have been attributed.

Unfortunately, this must have been the case in relation to certain blemishes of the extremities, tendinous or others, which ought to have been considered as due to the parasitic alterations of the suspensory ligament.

Let us first consider the blemish of the suspensory ligament itself.

We have found in our dissections about *two-thirds* of the ligaments, diseased at various degrees, were evidently swollen.

This swelling involved the whole or only part of the organ. In some it was limited to the branches of bifurcation, or even to one only ; sometimes the ligament was three times its size. We believe that in one-third of those animals the diagnosis could have been established during life by careful examination.

It is evident that a practitioner called to give his opinion might have diagnosed them in many cases as chronic sprains or distensions of ligaments. We made that error many times ourselves. And yet in all our 43 cases of filariosis that we have examined we have never found lesions belonging to sprains or distensions.

Such facts make one think. And we cannot ignore those statistics which have established such relation between the frequency of sprain of the tendons proper and the enlargement, the distension of the suspensory ligament. Truly, we do not deny this ; it is an accident that may occur ; cases of rupture at the two bifurcations are recorded; but we believe that outside of acute accidental or traumatic cases, one must be very guarded in his diagnosis, and the question may always be asked to what extent can a primitive lesion of the tendon contribute to its giving away.

If, now, we consider the influence that the parasitic condition of the ligament can have upon the tendons and the fetlock apparatus, the question is less clear, although the influence cannot be doubted. Although the number of our observations is limited, we will nevertheless take them for basis.

By our table of statistics we find that in every one of our forty-three subjects, where the suspensory ligaments were more or less parasitic, *five* only had sprained tendon, more or less serious. In the five, it was the perforatus ; in one both flexors were affected.

A fact to remark is, that in all five, neither the carpal nor tarsal sheaths were affected.

This seems to prove that lesion of the suspensory ligament does not necessarily imply disease of the tendons.

It is also to be remarked that it is always the perforatus

which was diseased. The perforans was only once affected with its congener.

We can therefore properly say that the parasitic alteration of the suspensory ligament promotes sprains of the tendons, and specially that of the perforatus.

Our statistics show also that out of our 43 subjects, 12 had hypertrophied carpal or tarsal sheaths. In those 12 the *tendons were absolutely sound*, while the ligaments were extensively diseased.

The sequelæ of the functional deficiency of the suspensory ligament is also certainly felt upon the fetlock ; but here again, more than anywhere else, it is difficult to define them exactly. It is about impossible to make a right distinction between what is due to conformation, excess of work, accidents, etc., and what belong to insufficiency in the means of support.

* * *

TREATMENT.

Having thus considered the pathological facts that belong to filariosis of the suspensory ligament, let us see if an efficacious treatment can be applied against it.

Unfortunately the answer must be negative. *There is no practical treatment known at present against ligamentous filariosis.* Surgical removal of the parasitic nodules has already been done, when in the connective tissue of the leg. It might be when the deposits are on the ligament itself. These operations are useless, as the growths are caused to disappear by resorption and are not likely to give rise to lameness or impede the action.

The principal indication is to be cautious and watchful every time one will be in the presence of certain tendinous lesions. When it will be principally swellings of the carpal sheath and of the suspensory ligament existing together, it will be necessary to take into consideration the character, acute or not, of those lesions, and take in careful consideration the history of the cases as far as the possibility of traumatism is concerned, and when those will be wanted, if the swelling is quite exten-

sive and little painful, remember that those lesions are frequently the stamp of filariosis.

One must be cautious and sometimes have courage enough to *do nothing*, or at least to abstain from all treatment likely to blemish the animal without doing any good.

And yet, if something must be done, let it be an inoffensive treatment, douches, massages, absorbing embrocations; the rest that they will impose will likely avoid more serious accidents.

Keep the heels of the foot cut low, to relieve the stretching of the suspensory ligament and of the perforatus.

* * *

To resume: Filariosis of the suspensory ligament in equines is a very common affection. It does not reach sufficient severity to interfere with the working function of an animal and consequently does not reduce his market value.

But it is quite frequently the cause of chronic swelling, weakness of the suspensory ligament and, as a consequence, of a compensating hypertrophy, principally of the carpal band and of tendinous and periarticular lesions.

There is reasons to believe that it enters for great portions in the cause of some blemishes, exclusively attributed to this day to accidents or overwork.

Its prophylaxy is still unknown, and we remain powerless against it to a therapeutical point of view.

THE DISSEMINATION OF INFECTIOUS DISEASES BY INSECTS.

By Charles F. Dawson, M. D., D. V. S., Baltimore, Md.

Probably few observant persons would doubt that one of the ways in which infectious diseases are disseminated is through the agency of insects. Those who are cognizant of the conditions necessary for the transportation of bacteria will admit that insects as a rule form an excellent means of carrying disease-producing bacteria from sick to healthy individuals. When we

consider the life-histories of the house-fly and the mosquito, that filth is a natural and seemingly necessary condition for their reproduction, can we doubt that when they arise from their filthy breeding places they carry with them large numbers of bacteria, some of which may be capable of producing disease? Can we doubt that in the sick-room of the ignorant and careless, where flies are allowed to alight upon tuberculous sputum, the dejections of cholera and typhoid patients, that they may and do transport these deadly enemies of mankind? When we consider the many favorable conditions for the spread of disease by this means, even in carefully-kept houses, the wonder is that we escape the constant dangers.

The literature on this subject shows that there are numerous reported cases, some of which are supported by experimental data, where all evidence points to the fact that the disease had been transmitted by insects.

In the *Medical Record* of Sept. 17, 1892, is the following:

"Bed-bugs, according to Dr. Dewevre, may be carriers of tuberculous contagion. His attention was called to this possibility by a case of tuberculosis occurring in a young man who slept in a bed formerly occupied by his brother, who died of the disease. The room had been thoroughly disinfected, but the bedstead for some reason had escaped this sanitary process. Dr. Dewevre observed that the young man had been bitten by the insects, and securing some of these, found them to be full of tubercle bacilli. He afterwards put some presumably healthy bugs in contact with tuberculous sputum, and was able to obtain from these, several weeks later, some excellent cultures of tubercle bacilli."

Sir William Moore (*Brit. Med. Journal*, Vol. I, p. 1154, 1893), while in the Indian service, writes as follows:

"When mentioning the necessity of protecting food from flies coming fresh from the evacuations of a cholera-stricken patient and so conveying the cholera poison to articles of food they might investigate. My impression, long held, that flies

conveyed cholera poison, received confirmation from the researches of Savtschenko. This observer states that the specific bacilli had been supplied to them; preparations from these flies showed numerous bacilli which had multiplied on the bodies of the flies. Cholera bacilli later from the bowels of these flies killed guinea-pigs as quickly as the original culture. In connection with the matter it may be mentioned that cholera chiefly prevails when flies are most numerous. If cholera may thus be spread, it is certainly probable that other diseases may be disseminated in a similar manner — enteric fever, phthisis, anthrax, leprosy, for example—especially in a country where, outside of hospitals, no care is taken as to the disposal or disinfection of excreta, or to the disinfection and washing of soiled clothing."

In Jonathan Hutchinson's "Archives of Surgery," Vol. VI, pp. 368-378, 1895, we find a chapter on flies, fleas, etc., as agents in the dissemination of disease. The authors say:

"Flies have, by many observers, been accused as the means of contagion in the ophthalmia which prevails in armies and especially in hot countries. I have long believed that they were responsible for much that we notice in reference to school ophthalmia in this country, and possibly other maladies. The hypothesis was one which seemed most probable in the instance of the school epidemic reported to the Ophthalmological Society two years ago. In this instance every precaution had been taken as regards the use of towels, handkerchiefs, etc., yet the disease had continued to spread. In several instances boys sleeping in adjoining beds had been attacked simultaneously, or in rapid succession. The disease had also spread in the city in which the school was situated, and it had been especially noted that it was at its height during the hot summer weather. Almost parallel observations have been made upon "erysipelas eczema," which recently prevailed as an epidemic in some of our workhouses. It too had been a disease of hot weather, had appeared to spread from bed to bed, although now and then attacking those who had been little exposed. There are, in

reference to the eyes, certain peculiarities which make them more likely to receive contagion in this way than any other part of the body. In hot weather flies become thirsty, and access to fluid is sometimes difficult; under the circumstances, the eyes offer special temptations, and are especially likely to be attacked during sleep. Open wounds offer like and even superior attractions, and it may have been the truth that flies were the real means of contagion in epidemics of sloughing phagedæna, which used to occasionally prevail in our hospitals.

"In connection with the above speculations, it is of much importance to remember that not only the proboscis of the fly but its feet may carry contagion, and, further, the period in which contagion may live under such conditions is quite unknown.

"Enough of suspicion has been established to make it most desirable that in the case of epidemics, spreading of maladies in wards or institutions, the most careful endeavors should be made to exterminate flies. It may even be a fact that flies are sometimes the means of contaminating the drinking water, milk, or other articles of food. In any maladies which prevail, especially in summer weather, the possibility of their influence should be kept in mind."

Other authors, Mendini and Bignami, look upon the mosquito as the direct agent in the transmission of malaria.

Lavaran, who has given so much time to the study of malaria, believes that not only is malaria spread by means of the mosquitoes, but that other diseases, such as tuberculosis, yellow fever, and cholera may also be carried by insects. He also believes that the bite of the tsetse, *glossina morsitans*, of Central Africa, is particularly dangerous because it inoculates its victim with a pathogenic hæmatozoan.

Dr. Theobald Smith has shown beyond doubt, that the parasite of southern cattle fever, a disease popularly known as Texas fever, is carried by the cattle-tick, and that when the ticks bite the cattle, they inoculate them with the parasite,

which lives at the expense of the red blood-cells, finally destroying them.

In a paper entitled "The Etiology of Yellow Fever," read before the Pan-American Medical Congress in Havana, Cuba, February 4–7, 1901, Drs. Reed, Carroll and Agramonte, surgeons U. S. A., show quite conclusively that yellow fever is an insect-borne disease. While they were able to produce it, by subjecting willing patients to the bites of the mosquito (*culex fasciatus*), they failed to discover the identity of the causative organism. They conclude that *B. icteroides* of Sanarelli stands in no causative relation to the disease, but merely fills the rôle of a secondary invader. That mosquitoes serve as the intermediate host of the parasite of yellow fever, and are absolutely necessary for the ordinary spread of that disease. However, the disease may be produced experimentally by the inoculation of blood from an infected person. That a house may be said to be infected, only when there are present in it mosquitoes which have bitten persons suffering from the disease, and that the disinfection of clothing, bedding and merchandise supposedly contaminated by contact with the disease, is unnecessary. These observations are of immense scientific and economic importance. They agree closely with the facts, as we now know them, thanks to the brilliant researches of Theobald Smith, concerning the etiology of Texas cattle fever. Possibly, in the near future, it will be shown that, as in Texas fever, the parasite of yellow fever is either a protozoan and, therefore, at present, uncultivatable by our primitive methods, or that it is a bacterium having such strict parasitic characters that it cannot be cultivated artificially; or that it is, like the organism of bovine contagious pleuropneumonia, invisible because of its extreme minuteness.

In order to show that disease agents may be carried by insects to the animal kingdom, and especially by flies, I captured one with a pair of sterilized forceps from the exposed abdominal viscera of an experimental guinea-pig which had died of symptomatic anthrax. The fly was placed under the skin of a healthy

guinea-pig, with the result that it died within 18 hours of a typical attack of symptomatic anthrax. I was also able to secure the bacillus from the local lesion and liver of the dead guinea-pig. Control experiments were not considered necessary, as in the event of other flies not infected with symptomatic anthrax proving pathogenic, we should still prove that flies carry pathogenic organisms.

That they do ordinarily carry pathogenic organisms was proven by another experiment in which a fly that had been in contact with the affected organs of a tuberculous guinea-pig was placed under the skin of a healthy guinea-pig. The pig died on the second day of malignant œdema, showing that the bacilli of malignant œdema, or their spores, were adherent to or in the fly's body coincidently with its infection with the tubercle bacillus. Further, a fly was allowed to partake of a liquid culture of the bacterium of swine plague. This bacterium is uniformly fatal to rabbits. The infected fly was placed under the skin of a rabbit, with the result that it died within 24 hours, and I was able to demonstrate the presence of the bacterium of swine plague in the liver and blood of the dead animal.

In another experiment made to decide the question of flies being able to convey tuberculosis by means of their excrement when fed on material containing the tubercle bacillus, I captured a vigorous fly, placed it under a bell-glass along with a cover-glass on which was spread some of the tubercle film from a glycerine-agar culture of the bacillus. In about one hour, the infected cover-glass was removed and fresh clean ones were slid in under the bell-jar. The next day several of them were "specked." A microscopic examination of one of the "specks" showed that the bacillus had passed through the alimentary canal of the fly and had been deposited on the cover-glass with the excrement. In order to determine if the bacilli were alive and virulent, one of the "specked" cover-glasses was placed in a ½ cc. of glycerine-bouillon and shaken in order to wash off the excrement. A healthy guinea-pig was inoculated intra-abdominally with this suspension, with the result that when two

months later the guinea-pig was chloroformed, it was found to be in an advanced stage of tuberculosis. The liver was greatly swollen and exhibited green and yellow necrosed areas. The spleen was enlarged about four times and was extremely diseased. The omentum was the seat of an extensive infiltration of millet-seed-sized tubercles. The lymphatic glandular system throughout was also involved, the individual glands being enlarged from ten to twenty times, and upon section were found to be hard and gritty.

It was also demonstrated by an experiment upon rabbits similar in plan to the foregoing, that hog-cholera can be transmitted by means of flies.

Vegetable pathologists have shown that certain infectious plant diseases are distributed by insects.

Several years ago, Mr. Waite, of the Department of Agriculture, called my attention to an experiment he was carrying on, in which he was repeating his former observations on the distribution of the "pear-blight" organism. Near the pear tree upon which he was experimenting there was a bee hive. Certain of the lower limbs of the tree had been inoculated with the "pear-blight" organism, and some of the upper limbs were protected by mosquito netting. The bees could be seen visiting the trees, including the infected limbs. "Pear-blight" soon appeared in all the upper limbs not protected by the nettiug.

Dr. Erwin F. Smith, of the Department of Agriculture, has shown in a bulletin on "A Bacterial Disease of the Tomato, Egg-Plant and Irish Potato," that the Colorado potato beetle is a factor in distributing that disease. Dr. Smith has also shown by control experiments that an infectious disease in cucurbits is distributed by certain living insects. The insects were sprayed with the liquid cultures of the bacillus (*B. tracheiphilus*), and were then turned loose upon the plants. During a period of nine months in which the experiment was carried on, none of the plants which were protected by being covered with bell-glasses, became infected, while the unprotected ones succumbed to the disease.

MALIGNANT CORONITIS.

By Coleman Nockolds, M.D., V.S., 1st U. S. Cavalry, Batangas, P.I.

I call this trouble "Malignant Coronitis" for want of a better term. It is a disease in which that part of the foot directly under the coronary band becomes inflamed, swells up, and eventually bursts, giving rise to a profuse discharge of purulent matter.

During the winter of 1898-99 there occurred an outbreak in and around Grand Rapids, Michigan, all classes of horses being affected. Whether the etiology of the disease that occurred during the winter in Michigan, and that which now exists among our troop horses and transportation animals in this portion of the Philippines is identical, I am unable to determine. In both instances micrococci and streptococci were very much in evidence in the discharges from the affected feet, but, although the post human doctors and myself have examined many specimens of discharge from different animals, we have been unable to find any specific cause. In Michigan we attributed the disease in question due chiefly to the effects of salt used to melt snow upon the trolley tracks, and in part to frost, and the irritating effects of mud and slush occurring as the result of a thaw. There are, of course, neither salt, frost, nor thaws here, but this outbreak certainly commenced during the rainy season, when the animals had to stand in mud from a foot to several feet in depth. There is no doubt but what this tropical mud is very rich in bacteria of many varieties; the least scratch upon the legs or body of an animal after coming in contact with this mud usually turns into an unhealthy ulcer.

As mentioned, this disease first attacked the feet of several horses and mules during the rainy season, which ended in November, and it is now April, and we have had but little rain since November, but every now and then a fresh case occurs among the troop horses or transportation animals. The first sign noticed is a slight lameness, soon a swelling appears on the coronary band, generally well along towards the heel.

The point of the swelling is hot and tender, and in a few days the tumor breaks and discharges a yellowish pus, streaked with blood. If left alone the inflammatory process works along the coronary band towards the front part of the foot, as is shown by the progressive swellings and discharging, until the whole length of the coronet is affected and perforated from heel to heel. Usually after the abscess bursts the animal is not as lame as during the forming of same. Not only does the disease attack the superficial structures, but there are sinuses formed, which penetrate the deeper parts of the foot, behind the lateral cartilage into the fatty cushion, deep down between the horny wall and coffin bone, attacking the sensitive laminæ; finally the joints become attacked, the capsular membranes, bursæ, and even the articulations, and often there occurs separation of the horny box from the foot. In severe cases constitutional disturbances occur, which result in fever, anorexia, and emaciation.

About eighty cases came under my observation during the outbreak in Michigan, and the majority were sent to the glue factory. Of four that were operated upon three made good recoveries and one was destroyed.

Case I.—A standard-bred mare, used by a physician to make professional calls about city. Liveryman had been treating mare with poultices, caustics, etc., for about three weeks, when a veterinarian showed up who guaranteed to cure the foot in a month at a certain figure, and animal was taken to his hospital. At the end of that month, the animal was examined by me and there were present on the inside quarter of the coronet of the near hind foot two openings about the size of quarters, from which was running a copious discharge of pus. The heel of the foot was much swollen, probing showing several sinuses running down towards the sole and one in towards the fatty cushion. These sinuses were freely incised and horse-hair setons were passed from one opening on coronary band to frog, and the other from coronet to about two-thirds the distance from coronet to ground surface of wall, coming out through a hole made through the horny wall, so as to establish free drainage. The wounds were

dressed by injections of solution of perchloride of mercury, and the external openings dusted with iodoform. The animal was also given a laxative, followed by powders of iron and arsenic internally. After ten days the setons were removed and the wounds rapidly closed. In three weeks, as the animal walked and trotted sound, she was put to work and behaved very well for about a month, when she again went lame and a swelling appeared upon the coronet about one inch and a half in front of the most forward original wound. Soon the swelling burst and the foot was apparently in worse shape than at first. The mare was cast and an anæsthetic given; a section of the wall of the hoof was removed by sawing through about one inch from the ground surface and separating it above from coronary band and stripping it off. About one-third of the wall was removed in this manner; the sinuses were then thoroughly curetted and cauterized with the thermo-cautery (which, by the way, is not a good instrument to use when part operated upon is very moist), and dressed with iodoform gauze, oakum and bandaged. After a week the patient was sent out to a pasture owned by a veterinarian, who attended closely to the injury. This was in May. The following September the mare was shod with suitable shoes and put to work, and I have reason to believe that, with the exception of a slight irregularity of the hoof, the patient has made a good recovery.

Case II.—Grey gelding, aged, belonging to Little Sisters of the Poor, and used to draw a heavy carriage. This was a similar case, and was operated on at once by the last method mentioned. As there was apparently no improvement after two months treatment, and as the animal was almost valueless, even when sound, destruction was advised.

Case III.—Work horse, used for heavy draught, was operated on by slitting the sinuses and passing hot iron through sinuses and out at the side of the wall and introducing seton for drainage, dressing with strong mercuric chloride solution.

Case IV.—About same condition as Case No. III, and operated upon by same method, both making a good recovery and

returning to work in about four weeks. The cases occurred during the time that there were a large number of horses suffering from the same condition during the winter. As spring advanced the number of animals attacked gradually decreased and the trouble ended before the hot weather came on.

The number of horses suffering from this foot disease in my regiment at the end of the rainy season in November was: Troop I, ten; Troop L, ten; Troop K, five; Troop M, nine, band horses, two; transportation animals at post, six; one of my own saddle horses. Since that time various other cases have occurred.

Troop I has been stationed here all the time and Troop K is stationed only six miles from here, so that I have been able to keep tally on those horses. Troop L was ordered away, and, although I operated on all diseased feet before they left, reports from them are not altogether satisfactory. Troop M I have seen only once; they are in charge of a civilian veterinarian, being too far away for me to visit often. The veterinarian in charge reports that the disease is not growing rapidly less. The band horses and transportation animals are of course always here.

Among the various treatments that have been used by the troop farriers and the quartermaster's veterinarian stationed at this post and myself, are:

(1) Introduction of crystals of blue vitriol into sinuses.

(2) Nitrate of silver (stick).

(3) Poultice of flaxseed or wet dressings of corrosive sublimate.

(4) Injections of creolin or solutions of creolin.

(5) Iodoform dressings.

(6) Curetting and injecting of solutions of formalin, or solution of nitrate of silver.

(7) Burning with round iron and introducing seton with exit through wall of hoof, about one inch from ground surface, and using corrosive sublimate solutions.

(8) Denuding foot of horn from diseased portion, curetting, cauterizing and antiseptic dressings of iodoform, oakum, bandage.

Of these methods the first five are, of course, useless, except in cases of very slight severity, and only affected very superficially, in which cases injections of creolin solution and dusting with iodoform are sufficient. The sixth method was successful in a few cases, but is generally followed by the appearance of a new swelling further forward on the coronet. I have noticed the best results from the seventh method of treatment. If the disease should continue or appear again after treating in this way, the removal of that portion of the horn and denuding affected area will usually be followed by good results. Of course, the great objection, especially with troop horses, is the length of time that such an operation keeps the animal from duty, and often an irregularity of the growth of new horn. However, this does not interfere with the usefulness of a troop horse. Sometimes a too luxuriant growth of granulation tissue occurs, which can be remedied with the scissors and nitric acid or other caustic.

I have yet to hear of a simple effective treatment for this class of cases, and will be very grateful to any of my *confrères* who will suggest some routine line of treatment for these bad feet.

We are fortunate in not being troubled with many diseases out here. The native ponies suffer considerably from glanders, and we have had a few cases among the public animals. My own horse had to be destroyed because of his bad foot becoming infected with the *bacillus malleus*, as was plainly demonstrated by its not being amenable to treatment, the general signs of farcy, and the appearance of the germ in the discharge from the ulcers which occurred upon the leg, and which apparently started from the bad foot.

Specific pan-ophthalmia is common among the native ponies, and am sorry to state that a number of animals in our regiment have become infected. Will report upon this later on. Other troubles among troop horses out here are a few cases of founder, colic, heat exhaustion, thrush and broncho-pneumonia, and a miasmatic fever. The general health of the government animals is very good.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

PERFECT OCCLUSION OF UTERUS IN COW.

By JOHN MINCHIN, V. S., Goshen, N. Y.

On April 6th was called to see a cow that was making very strong efforts at parturition all day, but no sign of calf could be found. Got to the place about 8 P. M. Found several men on hand; did not know there were any examinations for the calf till I made it myself. When I reported the situation one of the party said: "I told you so," and told me he did not see what could be done. There was not the least sign of any place where I could insert one finger—everything as tight as a drum. The cow would lie down, stretch out and moan, strain violently, etc. As this was the second case of the kind I had ever seen, I told the owner I thought there was very little chance to save the cow, even if I tried to use the scalpel, as I had never done so before, and left it for them to say what to do. All concluded it would be a very dangerous "job," and to let the poor thing die, which I did. But here is the chief cause of my letter—I went to the "knackers," or, as we call it, the "boneyard," and made a post-mortem, which revealed the uterus as tight as a drumhead; not the remotest sign of the os, and when cut through was almost one inch thick, and dilated to its full extent. Then, and there, I concluded if I ever met another similar case to try the knife, and here it is. On the 23d of the same month had another call, but this time could get one finger in the os, and, no matter how I tried, no more. The cow was in a great state of tenesmus, and would bawl when my hand entered. She would not stand. I procured my slings; had a man to hold her by the nose, one on each side, when I made her hind parts a little elevated. Made lateral cut both ways, and with some traction delivered her of the trouble. As there was quite some hæmorrhage I irrigated the parts for fifteen or twenty minutes with plenty of cold water; a few spoonfuls of chloride of sodium thrown in. My syringe is an old English one, with ball at bottom, which forces the solution just where I want it. Now, the great surprise to me. I let the cow down easily, gave her a stimulant of whiskey, had her fed on soft mashes, etc. And at present (June 4) is doing well.

Although I have never seen anything of the kind before, and don't claim to be infallible, I write to you to let you know what may be done where we least expect it. I hope this may be of some value to the veterinary profession, and to see it on record in the REVIEW.

RECOVERY FROM RABIES—SOME INTERESTING QUESTIONS FOR REVIEW READERS.

By A. JASME, V.S., Savannah, Ga.

I wish to put before you a case that I consider very interesting, and ask your opinion. The subjects are, an English setter bitch, 5 years old, her pup, a year old at the time, very gentle.

December 21, 1900, the mother bit the daughter badly, on several occasions. On 23d, while hunting, the mother was very *cranky* and bit daughter several times. On 23d, P. M. (8 or 9 o'clock), very acute case of dumb rabies in the mother; she was destroyed on the 25th. No doubt as to the character of the disease, which is often met with in Savannah.

On January 23d, 1901, the *daughter* showed all the symptoms of dumb rabies, and was all day unable to close her jaws, eat or drink. On the 24th no difference in symptoms. 25th, as I was thinking that I must part with my last dog, and thinking of chloroform, etc., etc., the groom informs me that he succeeded in making *her* swallow a piece of meat. Not being desirous to destroy her anyway, I gave 10 grs. of calomel, thinking I was only prolonging agony. In the afternoon, she ate a little more, and I think could swallow a little water. On the 26th she ate and drank, although with much difficulty, and recovery was complete two days later.

Now, I do not see any possible doubt as to the diagnosis. She is now entirely well. I have read in the reports of the Bureau of Animal Industry that subjects inoculated with rabid virus have recovered after showing symptoms of the disease. I had much experience with the disease. I shall therefore contend that the daughter had rabies and recovered. I would like to know your opinion in the matter. Also, is this dog, living and lying at my feet now, PROOF against attacks of rabies? That is, does an attack confer immunity?

Will also state for information that I gave the mother on December 24th, 27 grains of morphine in 8 hours, using every hour 3 gr. vet. tabl., hypodermically, when she was not much asleep yet, as she would raise her head and wag her tail when

called after taking 9 tablets. I had to destroy her with aconitine, morphine seeming useless.

LAPAROTOMY IN THE BITCH, WITH OVARIECTOMY AND REMOVAL OF THE PREGNANT UTERUS, CONJOINED WITH TEARING LOOSE OF THE LEFT KIDNEY THROUGH ACCIDENT — RECOVERY.

By C. H. JEWELL, D.V.M., Dunkirk, N. Y.

In November, 1900, I was called upon to perform ovariectomy upon a young spaniel bitch, about eight months old. I saw the animal was pregnant, and asked the owner how far along she was, and he stated about four weeks. Thinking I could easily operate if no farther in gestation, I proceeded with the operation. Upon entering the abdominal cavity I saw the animal was at least seven weeks along, but I proceeded with the operation at the request of the owner. In withdrawing the pregnant cornu I tore loose the left kidney, which I proceeded to bring to the exterior with the pregnant horn; removed the ovary, and brought the other cornu to view, and tore loose the gland. Then emasculated the entire uterus with my fingers and sutured the wound. The animal was very weak following the operation, and had considerable hæmorrhage. The next day appeared quite smart and made a complete recovery. The operation convinced me that laparotomy in the bitch can be easily performed, and removing of one kidney in the dog is without serious sequelæ.

LOSS OF PORTION OF THE TONGUE IN THE HORSE BY ACCIDENT —NO SERIOUS CONSEQUENCES.

By C. H. JEWELL, D.V.M., Dunkirk, N. Y.

In August, 1900, I was called to see a gelding, about 14 years old, which the owner said had lost a portion of his tongue by some accident which he could not explain, since the portion was never found. The animal was away from home at time, and accident was not noticed until reaching home. The owner was greatly alarmed, thinking the animal must be killed, but I informed him he would get along just as well without the lost portion as he did before. The part torn away was anterior to the frænum linguæ, consisting of fully four inches. I advised as treatment feeding gruels, followed by cleansing of the mouth and then washing with creolin solution, 3 per cent.. The animal got very thin in flesh, but made a good recovery, and

now feeds as well as any animal with the exception of requiring a little more time to eat.

PARTURIENT PARESIS.*

By R. C. Hill, V. S., West Alexandria, O.

Having noticed different opinions on the curative effects of iodide of potassium in the treatment of parturient paresis, I have watched with greater interest and kept a record of the last 12 cases. I will not detail each and every case, as the symptoms are apparently the same. Of course there is a difference in the severity of the attacks, owing to how soon it has followed parturition, etc., but as a rule, when the veterinarian is called, the patient is unable to rise and lies in that same old position.

Mode of Treatment.—Wash off udder with tolerably warm water. Have instrument thoroughly sterilized. Dissolve iodide potassium, ℥ ij, in a quart of water that has been boiled. Have water as warm as you could drink it without any inconvenience at time of injection, and inject one-half pint in each teat. Turn the patient on her back and work the solution well through the udder. Then place the patient on her sternum and support her there. Draw off the urine, cover patient well, and give nux vomica, ℥ ij, on tongue, following with the nux every three hours. Leave irritant to be applied on lumbar region in an hour. With this treatment 75 per cent. recovered, and in every case, *except one*, the patient was on her feet within six hours. This one I gave a second injection at bed time, and left her go for the night. On arrival next morning she was up and eating.

I do not wish to be radical, but the three cases that died were no fair test for the iodide of potassium, as they had been given large drenches, horns bored, tail split, etc.

EVERSION OF UTERUS.†

By R. C. Hill, V. S., West Alexandria, O.

Last spring I was called to see a cow which had complete eversion of the uterus. The owner stated that he noticed her straining in the evening and thought she would have the calf by morning.

So, I suppose from all appearances, the uterus had been out most of the night, for it was so congested that it was the color of liver and full of dirt and chaff. But, luckily, the after-birth

* Read before Ohio State Veterinary Medical Association.

† Read before Ohio State Veterinary Medical Association.

was still on, which protected the uterus to a great extent. I started at once to get it in shape to return—washed it off with warm water; had a sheet held under to support it, and removed the after-birth; then washed it with antiseptic wash. I took part of the sheet and laid over it, and started it back. I got it just at the turning point when through went my fist.

But I went ahead and returned it, thinking if I could get good contraction started it would be all right. I got ice and started to pack her; used about a bucketful, the pieces being as large as my two fists, and it worked very nice. Put on a truss for safety, went to see her next day, and she was in better shape than a good many I had that I did'nt ram a hole through the uterus.

MARE WITH TWIN MULE COLTS.

By B. O. MINGE, M. D. V., Maryville, Mo.

On May 29 I was called out to the country to arrest the hæmorrhage from a horse cut on the wire fence, and while there I noticed a mare grazing in the pasture, with two mule colts, and upon inquiring if both of those colts were hers I was informed that they were. The mare gave birth to both colts about 6 o'clock Saturday, May 18, and had no trouble whatever—anterior presentation, with the fore legs extended under the chin. One colt was up and sucking in fifteen minutes, and the other one in thirty minutes. One is a bay male mule colt and the other a black mare mule colt. They are now about two weeks old and are doing splendidly. In fact, are a fine looking pair. The mare has done all right and been bred again—and everything is lovely.

DEPARTMENT OF SURGERY.

By L. A. AND E. MERILLAT,

Chicago Veterinary College, 2537-39 State Street, Chicago, Ill.

SURGERY OF THE EYE, EAR AND UPPER AIR PASSAGES.

This series of articles will be a review of what all veterinarians have carefully studied during their college course, with probably one or two new operations that have sprung into existence during the past few years. We hope that what will be considered upon these subjects will be interesting to the read-

ers of the department. We will begin with the operations upon the eye, and will be pleased to publish any veterinarian's methods of operating upon the eye, ear and upper air passages when presented to us for publication. The surgery of the eye, which we shall briefly consider, will be divided as follows:

A. Operation upon the eyeball.
1. Operation for pterygium.
2. " " symblepharon.
3. " " trachoma.
4. Periotomy.
5. Surgical treatment of superficial wounds of eyeball.
6. Subconjunctival injections.
7. Tattooing of cornea.
8. Sclerotomy.
9. Operation for staphyloma.
10. Enucleation of eyeball.
11. Evisceration of eyeball.
12. Iridotomy.
13. Iridectomy.
14. Operations upon lens.

B. Surgery of appendages of the eye.
1. Removal of eyelashes.
2. Operation upon canthus.
3. Ablation of chalazion.
4. Operation for entropia and trachiasis.
5. Surgical treatment of ectropia.
6. Operation for ptosis.
7. Irrigation of lachrymal duct.
8. Excision of lachrymal sac.
9. Excision of lachrymal gland.
10. Surgical treatment of diseases of membrana nictitans.
11. Surgical treatment for blepharoptosis.

C. Operations on orbit.
1. Treatment of fracture.
2. Removal of tumors from orbit.
3. Surgical treatment of abscesses.
4. Surgical treatment of orbital fistulæ.

D. Prosthesis oculi.

A. *Operations upon the Eyeball.* — In ophthalmic surgery, every detail of asepsis must be practiced at all times, no matter how simple the procedure may appear; all instruments, needles, suturing material and dressings must be surgically clean; they should be boiled and placed in an antiseptic bath until needed.

The bath used for this purpose may consist of absolute alcohol, or a 1.20 carbolic acid solution. The best method of sterilizing small and sharp instruments is by the use of formaldehyde vapor. Dressings should be modified to suit each case, and consist of an antiseptic gauze, applied either moist or dry. Small pieces of sterilized gauze are preferable to sponges to remove blood from the seat of operation. If sponges are used they should be sterilized by heat and washed in an antiseptic solution, or a normal salt solution made with sterilized water. Silk or catgut sutures may be used; if either is used it must be properly prepared and kept in alcohol or bichloride of mercury (1.1000). The indication for general anæsthetics in ophthalmic surgery is limited to operations requiring delicate manipulation and those in which the pain cannot be relieved by local anæsthetics, such as enucleation.

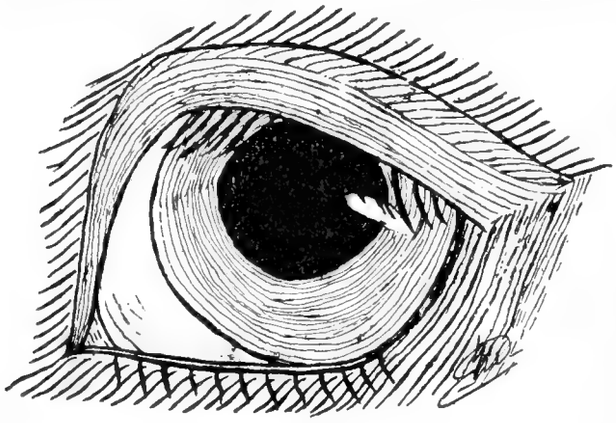


FIG. 52.
NORMAL HORSE'S EYE.

General Preparation of Patient.—The patient must be placed in the best possible physical condition. The administration of a laxative a few days prior to the operation is advisable. The patient should be free from chronic diseases, and must not be subjected to an ophthalmic operation when affected with any acute disease. Patients with pulmonary or renal diseases should not be operated upon during cold weather, and those that are plethoric during hot weather.

Preparation of Skin Around the Eye.—It is necessary to shave the hair and clean the skin around the seat of the operation. After removing the hair the skin must be washed with soap and hot water, then with etherial soap or alcohol, followed by a bichloride or formalin solution. Irritating solutions, such as bichloride or formalin, must not be allowed to enter the eye; for this reason the ciliary margin must be cleaned with soap and water and very mild antiseptics. When the site has been thus prepared, it must be covered with a compress of cotton or lint saturated with a weak antiseptic solution, and kept in position for at least an hour before operating. The preparation of the seat of the operation depends much upon the nature of the operation. It is impossible to make the conjunctival sac aseptic, and irritating antiseptics must never be used in attempting to

make it so; but it may be irrigated with a 4 per cent. solution of boric acid, or a normal salt solution. The inner canthus can never be thoroughly cleaned on account of being connected with the nostril by the lachrymal canal, which is a conduit for pus cocci; therefore, when operations are performed in this region all that is necessary is to wash the parts with soap and water and a weak solution of boric acid or a normal salt solution, which will reduce the vitality and number of pus organisms. The lachrymal canal should be irrigated and thoroughly cleaned, which will obviate the accumulation of tears and lessen the danger of infection. If the canal is open the passage of the lachrymal discharge through it to the nose will convey the pus cocci away from the eye, and lessen the danger of infection from this source. When the canal cannot be opened, the inner canthus may be closed with iodoform to prevent the lachrymal fluid from being infected in this manner.

(A) Operation Upon the Eyeball.—The conjunctiva covering the eyeball is a very vascular structure and when wounded, either accidentally or surgically, it heals very rapidly; large wounds in it can be successfully treated by a thorough cleaning and carefully suturing them. The after-treatment, in most cases, requires nothing more than protection; this can be accomplished by closing the eyelid, and applying a hood with a compress adjusted over the eye.

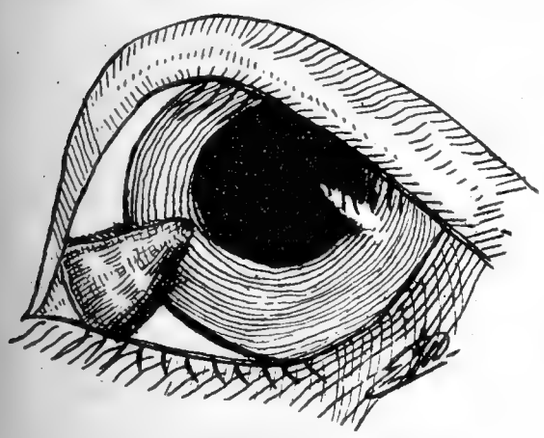


Fig. 54.
PTERYGIUM.

1. *Operation for Pterygium.*—Pterygia are patches of hypertrophied conjunctiva which extend from the nasal canthus to the cornea; they are usually triangular in shape with the base at the canthus and the apex pointing toward the pupil. The instruments needed for the operation are an eye speculum, sharp-pointed knife, pair of dissecting forceps, pair of scissors, probe, needles and sutures.

Operation.—In most every instance a local anæsthetic is sufficient for the operation, which should be performed in the simplest possible manner. It is necessary to save as much of the conjunctiva as possible, and to remove all of the diseased tissue from the corneal surface, and when possible that of the scleral surface also. This, however, cannot always be accomplished, especially when the base is very broad. If the ptery-

gium is narrow the operation is simple and very successful. The object in every case is to thoroughly remove all the growth from the cornea, and this is done by beginning to dissect it at the apex, and grasp it with a pair of forceps, and with gentle traction separate it from the anterior limiting membrane (*Rev., XXV., p. 208*). If all of the diseased tissue is not removed in this way, the remnants must be scraped out with a sharp knife and let the denuded space near the cornea cicatrize, which generally leaves no opacity. The actual cautery has been recommended by some operators in removing diseased tissue, but would not recommend it when knife will answer the purpose. During the last few years, electro-cautery has also been used for this purpose, but cautery used for such purposes is not an advisable surgical procedure. When the wedge shaped structure is removed, the conjunctiva must be loosened along the edges and the edges brought as near to each other as possible by the careful application of sutures. After the wound has been well washed with a boric acid solution, normal salt solution or with sterilized water, the eye should be closed with sterilized lint, gauze or cotton and bandage applied over the eye, and over this a hood should be securely fastened. The wound may be redressed every day and the stitches allowed to remain as long as they do not irritate, which is generally three or four days. When the stitches are removed it is not necessary to dress the wound, but the eye must be kept clean by washing it occasionally; the patient must be kept in a place where the light is not too bright. It is not advisable to keep such patients in a very dark place during convalescence.

Operation for Symblepharon.—Symblepharon is the adhesion of the eyelid to the eyeball, or to each other. This condition is generally a congenital anomaly, but may follow neglected wounds of the eyelids or diseases which involve the inner surface of the eyelid. The condition is observed in various forms; those which adhere to the eyeball usually involve the lower lid; those in which both eyelids unite (*ankyloblepharon*) seldom adhere to the globe. The most common of these conditions is the union of the lids at the external angle (*blephrophymosis*), which lessens the palpebral opening.

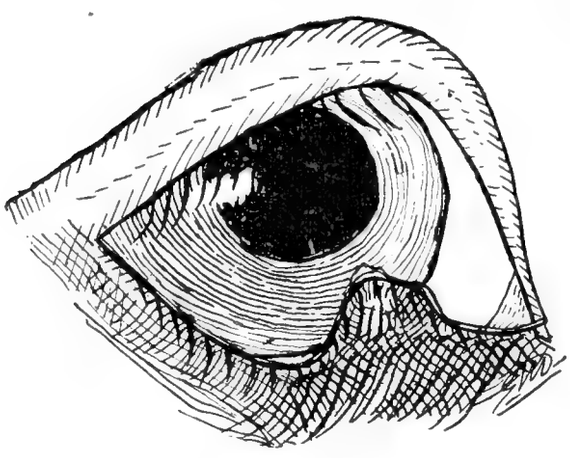


FIG. 53.
SYMBLEPHARON.

Operation.—The instruments necessary for the operation are: eye speculum, probe, scissors, dissecting forceps, spatula, needles, sutures and several sharp-pointed knives. When we have but slight adhesions, a local anæsthetic is all that is necessary, but when they are extensive and require careful dissection it is best to administer a general anæsthetic. When the lid adheres to the ball, the operator should first attempt to separate them with a probe or spatula, but if the adhesions are too firm they must be dissected apart and a rubber shield placed between the lid and eyeball and left in place until the parts have healed. When the eyelid is distorted it must be shaped as near normal as possible by surgical means. If it becomes necessary to clean the parts, the shield must be removed during the intervals of cleaning, and thoroughly washed before replacing it. The eye must be covered with gauze or cotton and bandaged or covered with a hood.

When the eyelids are united to one another and not to the ball the operation is very simple and with careful attention the results are generally good. In such cases the lids are separated with a knife, making the incision as long as necessary to make the palpebral opening as long as its fellow. The condition of these new formed edges will depend much upon the care that they receive. The conjunctiva may be dissected from the lids for a short distance along the edges and sutured over the new formed edges, but this is not always necessary and in some cases not advisable, because the sutures increase the danger of infection and cause irritation. Very good results follow careful dressing without sutures. Aseptic dressings of gauze placed between the edges and covered with cotton and properly bandaged is generally all that is necessary.

SURGICAL ITEMS.

In the *Journal of the American Medical Association*, June 15, 1901, we notice an editorial on the increase of fatal cases of tetanus in large cities resulting from wounds inflicted by explosives used in celebrating the Fourth of July, in which is mentioned that "According to Wells, 27 boys ranging from 10 to 17 died from Fourth of July wounds in Chicago last year. * * * The period of incubation varied from five to eleven days after the accident"; and it recommends that such wounds be treated surgically and a prophylactic dose of tetanus antitoxin administered. (5cc.) The editorial also refers to the success that veterinarians have had with this antitoxin as a prophylactic meas-

ure; and to its inefficiency as a curative agent. The use of tetanus antitoxin as a prophylactic measure was discussed at the last meeting of the Chicago Veterinary Association. We were surprised to hear of the number of veterinarians that use it for this purpose; and of the number of firms that demand that their veterinarians treat all nail-pricks and suspicious wounds with tetanus antitoxin. Dr. Hughes mentioned upon this occasion that a few weeks prior to the meeting in question, he punctured his hand with a piece of wire which he had removed from a horse's foot; two or three days' later the horse developed tetanus, and, fearing that he might also be infected, he requested his physician to treat him with tetanus antitoxin, which was done as a prophylactic measure. The horse developed tetanus, but Dr. Hughes did not.—(*E. M.*)

Chloroform versus Chloral Hydrate in Surgical Anæsthesia of the Horse [Written for the Department of Surgery by W. E. A. Wyman, M. D. V., V. S., Milwaukee, Wis.]—The more or less perfect means of restraint of to-day apparently permit the surgeon the performance of most operations without employing anæsthetics. Practice, nevertheless, teaches a different lesson. There is no means of restraint known to-day, starting with the latest introduction—Dollar's operating table—down to the numerous hobbles, harnesses, etc., by which the horse can be held with safety to himself and surgically quiet—an important feature of aseptic surgery apropos of Dollar's operating table. This mechanical appliance, while a decided improvement over any of the other tables used by the profession, at least those known to the writer, exhibits the following leading objectionable features: First, the difficulty of getting most horses into it; and, second and last, but not least, the impossibility of getting the balance near it. The time consumed and energy expended in this way is often sufficient to throw, chloroform, operate and return the creature to its stall. That much for Dollar's operating table. Asepsis and surgical quietness are, to say the least, desirable features. As previously stated, they cannot be granted with to-day's means of restraint for our equine patients. Neat surgery and unexpected movements of the field of operation—asepsis and struggling on account of its dust, etc.—are incompatible. Therefore general, or at least topical, anæsthesia must be used to get the best possible results. While in a great many instances topical anæsthesia suffices—general anæsthesia, at least to a state of total loss of consciousness, is imperative in all capital operations. Of the many acci-

dents which are liable to occur while operating, even when a local anæsthetic is used, a condition which, for want of a better name, may be termed "struggling myositis," has furnished me the greatest number of deaths. Among the local anæsthetics a ten per cent. cocaine solution is the most reliable one; a saturated aqueous solution of chloretone cannot take its place, as most patients will react, and some so violently as to question its positive anæsthetic properties, at least in the horse. Three agents demand attention for general anæsthesia of the horse: Chloroform, chloral hydrate, ether, and as a fourth morphine may be added. All have undesirable properties, but chloroform is the safest and most agreeable general anæsthetic to give, excepting ether, which the writer cannot discuss, as it has never been used by him in general anæsthesia of the horse. L. A. Merillat, on page 816 of the *Journal of Comparative Medicine and Veterinary Archives*, Vol. 14, No. 12, in an able discussion on chloroform narcosis, reports but four deaths out of about 15,000 chloroformizations. He says, "As to the danger of deaths, records of approximately 15,000 cases show but four deaths, all of which were traced not to cardiac lesions, as might be expected, but to careless administration, especially in failing to observe the arrested respiration in time to apply restorative measures." The writer has used chloroform liberally the past three years without any accidents worth mentioning. In 1898 chloroform was employed 412 times; in 1899, 589 times; in 1900, 601 times, giving a total of 1602 horses. The main objection to morphine lies in the fact that it is unreliable in its action. It does not produce a deep narcosis, and a great many animals subsequently become very restless at times for hours afterwards, thus seriously interfering with bandages, asepsis, leading to secondary hæmorrhage, etc. Chloral hydrate was employed 16 times. Twice intravenously, the horses weighing 1202 and 1025 lbs. respectively. Both got 40 grammes into the jugular and died half an hour afterwards. In the other cases it was employed per rectum. Those two who received it intravenously began to stagger in a few moments after they got the dose, fell down, sleeping soundly. The mucous membranes became more and more cyanotic, the pupil dilated, respiration slower and slower until death, in spite of artificial respiration, taught the writer a lesson on the narcotic effects of chloral hydrate given intravenously. Chloral hydrate per rectum was employed as follows: First the rectum was emptied by hand. To do away with the irritating properties of

chloral hydrate it was infused well diluted in the last ten cases, as proctitis and prolapsus recti was observed in the first four cases where it was infused at 125:1500. The formula used in the last ten cases, freshly prepared each time and infused at body temperature, was: Chloral hydrate, 125.0; mucilaginis, 75.0; aq. destillat, 3000.0, M. A great deal of this injection was thrown out again, and to overcome it the hand was held over the anus to prevent that occurrence. The narcotic effects of this chloral hydrate emulsion began to show all the way from 25 minutes to 1 hour after entering the rectum, apparently depending on the individual disposition of the animal. Thus lymphatic horses succumbed quicker than the highly bred nervous one, while the younger ones were affected most violently. Some sway to and fro, knuckling over behind and in front, even falling down; others simply sleep soundly, snoring loudly. In all cases the chloral hydrate infusion was made in the operating room, as the writer feared that the muscular inertia would render it unsafe to lead the animal from its stall to the operating room. Chloral hydrate in a safe dose does not produce complete and deep anæthesia, the patient reacting during neurectomies. The psychic depression lasts from 45 minutes to 4 hours. The majority of the animals thus treated could get up soon after the operation was finished, although a decided want of coördination was exhibited, the creature swaying and knuckling. The 8th one narcotized with chloral hydrate was down and unable to rise for 4 hours. In the first four cases proctitis plus prolapsus of the rectum followed about four hours after the chloral hydrate infusion had been administered. The mucous membrane was swollen and covered with little red points. One of the prolapsed recta was replaced some eight times before it remained *in situ*. This same case discharged a tubular membranous mass on the sixth day. One animal fed against the writer's orders soon after it was returned to its stall was reported to attempt to vomit. He suffered with a pharyngeal choke, as it is so often seen when animals are fed immediately after they awaken from a narcotic state, at the same time easily avoided by keeping food and water from them for about one hour after they are returned to their stall. The explanation lies in the relaxation of the pharyngeal muscles, that is their wanting tonicity, as the result of which the bolus becomes lodged in the pharyngeal cavity. Quite contrary to the generally accepted rule to give chloroform drop by drop and with air, the writer follows the method described so well

by L. A. Merillat (referred to above), namely, the patient, so to speak, is choked off with a good dose of chloroform as quickly as possible, but without any air at all. While this may seem theoretically wrong, every-day practice supports it as correct and safe. More than one minute has never been consumed by the writer to deeply chloroform a horse. When a continuous narcosis is essential afterwards chloroform is given in small quantities and mixed with air. On an average 10 to 15 minutes are required for the animal to regain its feet after coming out of the chloroform; occasionally after a prolonged session one half hour may be necessary before the animal gets up without tumbling about. Animals fed soon after their return from the operating room usually show attempts at vomiting and may expel a greenish, slimy mass or even suffer subsequently with a fatal deglutition pneumonia. The disadvantages of the chloral hydrate narcosis and the advantages of chloroform according to the writer's experience are as follows: *Chloral Hydrate.*—(1) The necessity of raking the rectum; (2) The necessity that a person must keep the anus covered with the hand to prevent the escape of the emulsion for 25 minutes to 1 hour; (3) The possibility of a proctitis and prolapsus recti unless very dilute and fresh preparations are used; (4) The waste of time before narcosis sets in, 25 minutes to 1 hour; (5) The waste of time before the animal can rise safely after the operation is finished, 45 minutes to 4 hours; (6) Deep narcosis cannot be obtained with a dose safe to the animal. *Chloroform.*—(1) Narcosis is obtained in 20 to 45 seconds; (2) Complete anæsthesia is surely gotten; (3) The patient almost invariably regains its feet in from 10 to 20 minutes after the operation is finished; (4) With ordinary care it is the safest and most complete general anæsthetic for the horse.

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D.V.S., Bureau of Animal Industry, Milwaukee, Wis.

A RARE CASE OF BRADYCARDIA.—By bradycardia (hypodynamia, adynamia cardis) is understood a diminishing in the number of the heart beats, resulting from an irritation of the vagus or the vago accessorius. The irritation may take place in

the vagus centre, in the peripheric course of the nerve, or by a reflex action. It may be observed as a symptom of different organic diseases, in intoxications and in certain diseases of the nervous system. According to the causes, bradycardia is divided into a physiologic, idiopathic and a symptomatic form. To the first form belong such cases which are brought about by size, age, temperature, food and work, while the symptomatic bradycardia manifests itself in some organic diseases (hydrocephalus chronicus internus, hyocarditis), the cause of the idiopathic bradycardia cannot be explained. Truffer speaks of a transitoric and permanent bradycardia, but it seems to be more proper to differentiate between a physiologic and a pathologic form. In veterinary literature very little is mentioned about the occurrence of this disease. Vogel and Nordheim each observed a case in a horse, in which the number of pulse beats were diminished to 19, respirations 15. The autopsy in one case proved hypertrophy of the left heart, in the other case a dilatation of the heart. Fröhner observed in a nine-year-old bulldog a pulse frequence of 20 beats, and found at the autopsy a dilatation of the aorta close to the semilunar valve. Dickerhoff observed two cases in the horse, in which the beats of the pulse in one case were reduced to 17 and in the other to 12. The author had an opportunity to observe carefully a case in which the pulse frequence dropped to 9 per minute. The case occurred in a stallion 3½ years of age, which was brought to the veterinary clinic at Budapest with the history that the horse during a day frequently staggered, backed and finally fell with the hind part. These symptoms were shown more pronounced during riding, to which the dyspnœa and roaring point. The minute examination which was made with the aid of all the diognostic means brought to light the following picture of the disease: Intestinal catarrh, coprostasis, considerable indican in the urine, fæces acid in reaction, and undigested. Heart's action strong, 32 beats per minute, but on the following day arythmia was audible in the manner that both heart sounds were split, the systolic sound being even doubled. The treatment consisted of the administration of saline salts, although without success. The patient was repeatedly galloped for ten or fifteen minutes at the time without noticing the staggering given in the history, or any other change. On the tenth day the horse was galloped again for ten minutes, after which he broke down in the hind part, but soon got up without assistance. The arythmia was now more pronounced;

at one time the fifth, then the eighth, or another sound ceased; sometimes the systolic, other times the diastolic sound was absent. Eleven minutes after splitting of the sounds as before was audible. The weak, small, empty and irregular pulse was 30 per minute, and on the following day 28. From now on on the consecutive days the number of pulse beats were diminished to 24, 16, 14, etc., to observe on the 22d day a diminishing to 8 beats, which was never seen yet. To strengthen the diminished action of the heart, the patient received 500.0 gm. alcohol in two doses, and three times 10.0 gm. doses of the tinct. of strophanthus daily; also Carlsbad salts and winesups, but all failed to prove successful. The horse died with the appearance of great dyspnœa and attacks of convulsive spasms. Autopsy: Gastritis composa, enteritis hæmorrhagica, hæmorrhagica subepicarditis, degeneratio parenchymatosa myocardii. The author considers the pronounced bradycardia as reflectoric produced by the diseased condition of the stomach and intestines, in which the irritation of the nerve fibres in the walls of the stomach, was forwarded in a centripetal direction to the vagus centre, where it was transmitted to the inhibitory fibres of the same nerve, causing the bradycardia. The parenchymatous degeneration of the heart muscle, which often would accelerate the heart's action, is to be considered as a result of the existing condition. Further to be seen in this case, that the bradycardia was symptomatic, which in favorable termination of the diseased condition of the stomach and intestines, presumptively would have caused only a transitory diminution in the number of pulse beats.—(*Koch's Monatschrift.*)

To the Differential Diagnosis of Tristeza* and Anthrax [*Lignière*].—Tristeza can be very readily mistaken for anthrax, but regarding the symptoms and the course of the two diseases, a distinct differentiation is possible. In most cases of anthrax the disease runs a rapid course, so that we hardly ever see the animal sick; recovery is an exception. The mucous membranes are of a violet color. In tristeza we also may observe cases running a rapid course, but as a general rule the disease lasts from four to eight days. Recovery is more frequent, the mucous membranes are very pale. In tristeza there is always hæmoglobinuria; in anthrax in cattle hæmaturia might be present in exceptional cases. The fæces in anthrax are very loose, and mostly of a bloody color, while in tristeza they are

* Tristeza, as proved by Lignière's investigations in Argentina, is the same disease as Texas fever in this country. See January (1901) Review, page 754.

of a specific rusty brown color, mixed very rarely with blood. On autopsy these differences are not so well marked. The most important signs of the macroscopical changes can be differentiated in the following:

Tristeza.	*Anthrax.*
Spleen enormously enlarged, of a dark color and of a firm consistence.	Spleen very much swollen, pulpa black, soft and semisolid.
Liver yellowish, considerable cloudy bile.	Liver always violet, bile liquid.
Kidneys almost black or very pale.	Kidneys always hyperæmic.
Hæmoglobinuria.	No hæmoglobinuria, rarely hæmaturia.
Lymph glands, slightly hypertrophic, rarely hæmorrhagic.	Lymph glands very hypertrophic, frequently hæmorrhagic and black, surrounded by an extensive œdema.
Muscles of a normal healthy color.	Muscles always grayish colored, having the specific febrile odor.
Blood mostly clear, coagulates well, first bright red, later becoming dark.	Blood thick, violet; as soon as leaves the vessel of a dirty red color.

Especially the appearance of the muscles is considered by the author as the most characteristic difference between anthrax and tristeza. The microscopical examination proves two entirely different diseases. In the place of bacteria, in tristeza, the red blood corpuscles (especially the ones in the kidneys) contain pear-shaped or round parasites, which will not take Gram's staining, but take well the methylen blue. Also the number of the red blood corpuscles can be used in the differentiation of this disease. In tristeza their number is very small, while in anthrax this is not the case. Finally the differential diagnosis is supported by test inoculations. Tristeza is only transmissible to the bovine species. Guinea pig, rabbit, sheep, goat, hog, horse, etc., are insusceptible, while anthrax is fatal to all animals.—(*Recueil de Med. Vet.*)

Extirpation of a Melanotic Degenerated Parotid Gland [*Dr. Vogt*].—The right parotid gland of a gray gelding gradually increased in size to such an extent that it interfered with the turning of the neck to the right, and also affected the function of respiration. As this happened to be a gray gelding, the diseased condition was considered to be of a melanotic nature. It was concluded to extirpate the gland. An incision was made into the skin extending the whole length of the gland, which was then dissected from the gland, after which the bluish-black gland was visible. The inferior portion of the gland was

then dissected, elevated, and the auricular vein ligated by a double ligature, almost the entire gland was then removed by twisting. The temporal vein bled considerably, but could not be reached; the bleeding was stopped by pressure (tampons). The recurrens, facial, carotid, and the tendinous portion of the sternocleido-mastoidens were spared. A very small portion of the gland, situated towards the ear, could not be removed. The removed mass weighed 390 gm. The cavity of the wound was packed and closed with a few stitches. The next day considerable swelling made its appearance, which interfered with mastication. The remaining portion of the gland was daubed with tincture of iodine, which then gradually became lighter and finally covered with granulations. A remained salivary fistula was easily closed by the use of the nitrate of silver stick. Respiration and action in neck became normal.—(*Deutche Thier. Wochenschr.*)

To the Harmless Effect of the Juice from Sterilized Tuberculous Meat [*Dr. A. Fiorentini and Dr. E. Garino*].—At the June meeting of the Associazione Sanitaria, in Milan, Garion reported experimental investigations, which he performed in communion with Fiorentini. It was to be ascertained if the meat of tuberculous animals after boiling contain any toxins which would be injurious to the human health. For this experiment samples of juices were used, which were taken from a Rohrbeck's apparate of the Milan abattoir, during the sterilization of tubercular meat under steam pressure. As test animals healthy and inoculated tubercular guinea pigs were used, which received subcutaneous or intraperitoneal injections of the juice. As to the results of this experiment, it was proved that the test animals as the result of the injections, did not show an impairment of their health in either a general or local way. The guinea pigs affected with tuberculosis, did not develop new inflammatory conditions around the tubercular herds, which was regarded as characteristic to the influence of tubercular toxins. Therefore the adoption would be admissible that as well in human beings, the consumption of sterilized parts from tubercular animals would not involve the health. Fiorentini and Garino as a result of their careful investigations came to the conclusion that the toxic products which are formed in the living organism of tubercular cattle are quickly eliminated from the system. This also explains why we frequently find cattle in an advanced state of tuberculosis, which are in well nourished condition.—(*Bolletino di Assoc. Sanit. Milanese.*)

FRENCH REVIEW.

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

Funiculitis of Castration in the Cat [*By L. Magnin*].—A seven months' old cat was castrated by enucleation, torsion and scraping of the cord. The operation was followed by repeated hæmorrhages, which weakened the animal very much. A week later the parts were much swollen; the right side apparently healed, while on the left there escaped bloody pus. The stump of the cord was hard and swollen. Examination of the pus with the microscope gave negative results as to the mycotic nature of the trouble. Iodine was applied to the swelling, which seemed to reduce it. On the right side the swelling increased, forming a hard, painful mass and running upwards along the cord. Iodine and afterwards poultices were applied, which were followed by improvement and reduction of the enlargement, which became more and more marked and ended ultimately by radical recovery. As the primitive operation had been done antiseptically, the author thinks the animal was infected by rubbing himself against shavings or in scratching the earth of a garden where he used to play. In conclusion Mr. M. believes that castration by ligature is preferable to scraping of the cord and insists on the necessity of avoiding infection of the wound afterwards by antiseptic precautions. One must not be too hasty to resort to another operation.—(*Rec. de Med. Vet.*)

Aneurism [*By M. Mouquet*].—This relates to a horse which was affected with intermittent lameness of the right foreleg. When visited by the author, the horse did not show his lameness, but presented a peculiar appearance, which was attributed to an aneurism. The result of the examination is described as follows: Looked at full face, the chest shows a marked asymetry. The left pectoral muscles seem much larger than the right, and a marked projection is observed, principally over the left sterno-humeralis muscle. Looked at by side view, the right side of the chest is normal, the left is evidently deformed. On examining the regions situated on each side of the trachilian prolongation of the sternum, it is observed that on a level with the left sterno-humeralis muscle the swelling is depressible, elastic, not œdematous, diminishing under pressure and giving to the hand a peculiar feeling. By pressing over it, obliquely from downwards, upwards and from forwards backward, weak pulsations are detected, sometimes absent and being felt generally a little

later than those of the facial artery. By auscultation, a vibratory fremitus is heard analogous to the vibrations heard with the phonendoscope when auscultating an animal which trembles. This fremitus is louder at some moments than at others. The author made a diagnosis of aneurism of the inferior cervical artery or perhaps also of the tracheal trunk.—(*Bulletin Soc. Centr.*)

CARIES OF THE RIGHT BRANCH OF THE INFERIOR MAXILLARY, ALVEOLITIS, AND CARIES OF THE TWO FIRST CORRESPONDING MOLARS [*By Rousselot and Savary*].—A four-year-old colt received a kick on the right side of the lower jaw. A trauma resulted, which was treated with simple antiseptic treatment, there being no fracture. There remained, however, a thickening which was rebellious to all treatment, and the primitive wound assumed the aspect of a fistulous injury, which on being explored revealed a manifest carious condition of the maxillary bone. Treatment was immediately instituted; free incision of the fistulous tract, and antiseptic dustings, with liquor of Van Sweiten and iodoform gauze. At first this treatment seemed to succeed, and it was thought that the continuation of injections of cresyl and dusting of iodoform would be followed with recovery. However, the improvement was temporary, and another probing of the wound revealed that the first lower molar was diseased. A small splinter of bone was removed; there was a characteristic odor; the case was not only one of maxillary caries, but complicated with alveolitis and dental caries. Severe surgical interference imposed itself, with all its dangers, principally that of possible fracture of the jaw bone. This, however, was decided upon, the animal cast and secured, the parts disinfected, the maxillary exposed by V incisions, and trephined on the two tangent places in such a way as to reach the roots of the first two molars. Once the external plate of the maxillary was removed, an escape of greyish sanious, nauseous pus took place, fragments of the maxillary and of the roots of the teeth were removed, and finally, not without difficulty and great care, the first tooth was extracted with nippers, the second gouged out. The after treatment consisted of injections of weak cresyl solution, iodoformed gauze in the wound and suture of the cutaneous wound. The food was made of soft liquid mashes and gruel. After two weeks the fistulous wound was considerably reduced, and a month after the operation the animal was discharged radically cured.—(*Rec. de Med. Vet.*)

COMMINUTED FRACTURE OF THE HUMERUS CONSEQUENT UPON A LUXATION OF THE SHOULDER JOINT [*By H. Martin*].—In jumping over a low fence, a horse slipped with the left fore leg over a stone and suddenly stopped; the hind quarters had not passed over the fence. The animal remained standing up, the left fore leg slightly flexed, touching the ground with the toe of his foot. The region of the shoulder was swollen. Palpation over the joint was painful and revealed crepitation over the entire region. The arm was the seat of an abnormal mobility, and when the animal was made to move crepitation of the fractured end was felt and heard. The animal could move only on three legs and it was with great difficulty that he was brought back to the stable. The diagnosis of fracture of the humerus imposed itself, and he was destroyed. At the post-mortem were found abundant bloody infiltration through the subcutaneous tissue, the muscles of the shoulder and arm being all torn; the humerus was fractured in seven pieces, the superior epiphysis entirely separated from the body of the bone and broken in two pieces; the inferior epiphysis was intact and attached to the diaphysis, which was broken into three pieces, one of which being itself broken in two others. In studying how the accident took place, the author concludes that after jumping the fence and coming down to the ground, the horse slipped on the stone, which produced an exaggerated extension of the shoulder, a luxation, and that the entire weight of the body having thus been thrown entirely on the left fore leg, the humerus received the whole shock and was fractured.—(*Rec. de Med. Vet.*)

UPON THE PROGNOSIS OF TRAUMATIC ACCIDENTS IN SOLIPEDS [*By M. Cadeac*].—Making allusion to the facility with which serious prognoses are made hastily in some cases where the lesions are very extensive, the author relates three cases in which he points out the error which would have been committed, if in these three cases the verdict of death had been carried out. *Case No. I.*—A horse knocked down by the machine of a tramway and dragged for some distance was found with a wound on the right side of the neck, 45 to 50 centimeters in length, and extending from the base of the ear to the middle third of the neck. The skin, the muscles, and all the tissues of that side were injured, except the parotid, the longus colli, and the vertebræ. The carotid, the jugular, the œsophagus were exposed, the trachea still covered by the muscles and skin. Deglutition was difficult and so painful that the animal would not swallow

his saliva ; although regular in its middle, the wound ended inferiorly in a *cul-de-sac*, and complications of suppuration and of infiltration were possible. This animal was condemned by several veterinarians and at last treated by the author. Aseptic cotton, disinfection of the edges of the wound and of the superior part of the neck with sublimate solution, was the treatment which was prescribed. After two months the animal resumed his work. *Case No. II.*—In traveling fast, a horse made a misstep and fell a somersault, on his head, thus protecting his knees, which escaped injury. There was a complete denudation of the greater part of the face. The frontal bone was exposed, scratched, its periosteum removed, and gravel incrusted in its substance. The nasal bones were exposed in two places. The wound measured 40 centimeters in length and 12 in width. Washing with sublimate solution, dressing with tannin powder, boricated vaseline, and after six weeks of that treatment the wound was granulating well and closing rapidly. During the treatment there was sloughing of several little pieces of necrosed bones. *Case No. III.*—A horse was hurt by the shaft of a truck, which entered obliquely from forward backward, at the elbow of the rear side, a little below the subcutaneous abdominalis. Almost the entire skin was torn off as far as the sheath. There was an immense piece hanging down ; an abundant hæmorrhage took place and the animal was very weak. The hanging flap of skin was freely excised and an aseptic bandage, renewed every day, was applied. After ten days the wound had assumed an excellent aspect and the animal was out of danger. After recording these three cases the author alludes to other wounds, which, on the contrary, were not deep, and still almost always demand a severe prognosis, such as those in the neighborhood of the anus, where complications are very often met with by the presence of septic germs contained in the fæcal matters or inoculated by the impinging body.—(*Journ. of Zootechnie*).

A Few Observations on the Subject of Castration in Cryptorchids [*By Prof. A. Labat*].—In previous communications the author has made known the results he had obtained in a series of operations of castration made on cryptorchids, and expressed the thoughts that these operations had suggested to him. Since their publication he has operated upon a number of subjects, and now he wishes to establish statistics which will show that the operation, although delicate and difficult, is not necessarily followed by threatening compli-

cations. Gathering the material of all his operations into one list, he gives an interesting statistic in relation to the nature and frequency of each kind of cryptorchidy. For instance, out of 151 cases he has met with: 19 cases of double abdominal cryptorchids, 72 of unilateral left, and 44 unilateral right abdominal cryptorchidies, 6 of unilateral left and 7 unilateral right inguinal cryptorchidies. Out of the 170 operations which those cases have required, there has been only a mortality of five individuals, and among those none having inguinal cryptorchidy. Out of 154 operations for the abdominal form of the disease, the average mortality has been 3.24 per cent. The *modus operandi* has been that described by Prof. Degivé.—(*Revue Veterinaire.*)

ENGLISH REVIEW.

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

Cases of Fracture of the External Tubercle of the Humerus [*D. Pugh, F.R.C.V.S.*].—Similar injuries have not been frequently recorded and the recoveries which accompany the three cases herewith presented are very interesting. They are three cases of fractures of the external tubercle of the body of the humerus, accompanied with nearly the same symptoms, submitted to similar treatment and followed by a like result—recovery in comparatively short time. The three cases had about the same cause, a kick from another horse while being turned to pasture. Lameness, more or less swelling of the leg from the shoulder to the knee, great pain on manipulation, crepitation, and more or less discharge from a wound which occupied the seat of the injury. The treatment consisted in local anæsthesia in one case and general in the two others, free incisions down to the fracture, dissection and extraction of the external tuberosity of the humerus with fragments of bone varying in size from three-quarters of an inch in one case to as much as three inches in another. The balance of the treatment was very simple, the parts being simply treated as an open wound.—(*Journ. Comp. Path. and Therap.*)

Hysterectomy in the Bitch [*By H. A. Woodruff, M.R.C.V.S.*].—Two interesting cases, followed by excellent results, thanks to the thorough disinfection of the wound area, instruments, etc., to the washing out of the peritoneal cavity,

and to the general antiseptic precautions observed. In the first it was a pug bitch, six years old, in a weak condition from protracted labor, which had passed a dead and partly decomposed puppy, and had one left which could not be removed in a natural way. In the second case, a half-bred bull and fox terrier bitch, over due, with labor pains without results, and very offensive discharge from the vagina. When operated upon five dead pups in a semi-putrid condition and fully developed were found in the uterus. The *modus operandi* was as follows: chloroform, careful and thorough disinfection, incision on the median line from just behind the umbilicus, a ligature applied to the fundus of the uterus and the latter cut through immediately in front of the ligature; then the body of the uterus was lifted out of the abdomen, the right horn incised and the fœtuses extracted. Next a ligature was placed above each ovary and these organs removed, together with the whole uterus, the broad ligament being torn. The peritoneal cavity and vagina were washed with a 1 per cent. solution of chinosol. In one animal a few drops of putrid fluid had escaped into the abdomen from the uterus as this was removed, but on account of the washing with chinosol nothing occurred. Both animals did well.—(*Journ. Comp. Path. and Therap.*)

Fracture of Eight Ribs [*By H. Taylor, M.R.C.V.S.*].—This is certainly a very unusual case. Kept in slings for some two months to be treated for an open fetlock joint in the off fore leg, a heavy Clydesdale gelding had ultimately to be destroyed as being incurable. At the post-mortem which was made it was found that eight ribs on the near side had been fractured, some showing attempts at repair, with more or less union, while others showed the fractured ends very smooth by rubbing against each other. As on inquiry into the previous history of the horse, nothing had been elicited as to the cause of the extensive lesion, it is probable that the fractures occurred some time while the animal was in slings, as he occasionally used to throw his whole weight into them. There was no osteoporosis with him or other bone disease.—(*Veter. Journal.*)

A Case of Poll-Evil [*Arthur New, M.R.C.V.S.*].—Cases of poll-evil and fistulæ of the withers are long and tedious, and not infrequently their rebellious condition is due to the fact that the true centre of the disease is not sufficiently exposed; dead structures have had no chance to escape and cicatrization has thus been prevented. In the case recorded by the author, however, the length of time was short, considering the extent of the

disease. It was a horse which had three fistulæ of the poll for five weeks. These had been freely opened, broken tissue had been removed, decayed structures taken off, and free injections and dressings of chinosol resorted to. After a month of treatment, although the external wounds seemed ready to close, the bottom was still diseased. No granulations were forming and the suppuration, quite abundant, was increasing in considerable quantities. It was then that the author cut very freely forward, between the ears, and finding the occipital bone bare and rough, he scraped it and dressed the part with icthyol. From that moment, with the exception of the formation of two little abscesses on the near side, the wound went rapidly on to healthy granulation. The horse was operated on, say, about the end of June, and was convalescent enough to be sent out to grass on the 16th of July. He was put to work later, having made a perfect recovery.—(*Vet. Record.*)

FRACTURE OF THE DENTATA.—In the *Veterinary Record* there is reported a case of fracture of the dentata, which had taken place in a four-year-old filly while being led out of her box. She was led into the yard by an ordinary hemp halter, and after going a few yards, without any warning, she reared up and fell right over on some granite stone pavement and died immediately. At the post-mortem a great deal of extravasated blood was found underneath the skin in and around the atloido-axoid articulation, and on further examination it was found that the dentata was broken into three pieces—fractured through the odontoid process and the body of the bone. The spinal cord was severed and much lacerated.—[A similar case occurred some years ago in one of our patients, but the animal was suffering with osteoporosis. The specimen was placed in the museum of the American Veterinary College.—A. L.]

TRAUMATIC PERITONITIS [*By H. Swann and Billingherst*].—A cart mare received a punctured wound between the 15th and 16th ribs, about a foot from the spine, on the near side. The wound was sufficient to admit a quill. Black oil had been used to dress the wound and pus had gathered into a pocket, owing to the destruction of the tissues by the sulphuric acid. The temperature of the animal was 104°, pulse 68, respiration hurried, mucous membranes injested, appetite poor. There was danger of deep cauterization and possibility of peritonitis. Still, by proper treatment, free incision, antiseptic dressings, etc., the wound assumed a better aspect and the animal seemed to go on towards recovery. The temperature

was down to 102 4-5, 101 3-5, 100 2-5; the pulse had improved—66, 64, 50. Respiration remained hurried. One morning she died after severe abdominal pains which lasted two or three hours. Post-mortem: External wound closing well, quite healthy. Blood and pus escape as the abdomen is opened. Peritonitis is well marked. On the abdominal wall near the external wound there is a black mark, in the centre of which is a small scar. Between the omentum and the spleen there was a large quantity of pus. The superior extremity of the spleen was gangrenous and in it there was a cavity containing about a quart of pus with broken-down spleen tissue.—(*Vet. Record.*)

TRIP TO THE PHILIPPINES.

By HAL C. SIMPSON, D. V. S., Denison, Iowa.

After making arrangements by correspondence, I reported to the Depot Quartermaster at Seattle, Wash., where I was informed that I was to have veterinary charge of the transport *Oopack*, from Seattle to Manila. Most contracts for this service are signed for one year, but I had the privilege of signing for one trip.

On the U. S. boats there is an army officer in charge, called the ship's quartermaster. Under him are the veterinarian, chief electrician, and quartermaster's clerk, who get cabin accommodations. They are paid $100 per month. Then come two electricians and an assistant veterinarian at $75, with messroom accommodations, that is, with the engineer; two wagon masters at $75, four assistant wagon masters at $60, and teamsters at $40. The wagon masters and teamsters have a cook and messroom aft. The wagon masters are responsible for the care of the stock. The veterinarian has nothing to do except to tend to sick ones, and the assistants do that under his directions. I made it a point to see every animal once daily, and then was called at any time if needed to attend a sick animal. On the United States chartered transport *Oopack* stalls were provided for each animal. We loaded 364 horses and 400 mules, the animals being backed into the stalls and a breast strap of canvas put up in front to keep them in. All were fed on the floor. Were fed and watered as follows: 6 A. M., water, then hay; 9 A. M., grain; 3 P. M., water, then grain; 6 P. M., hay. Stalls were cleaned every day if the weather was suitable. After transfer sheets were made out, one mule developed strangles very bad, with suspicions of glanders, so was shot. Third day

lost one from azoturia. Fourth day, one mule was choked, due to guard sleeping. We had very rough weather and a number of seasick animals. Some were badly bruised by the vessel's rolling. There were a great many abscesses formed on the external angle of the ilium, also on the ischial tuberosities. The ceilings were very low, and where there was a framework a large animal couldn't stand comfortably. Sometimes during a sudden roll an animal would throw his head up so as not to lose balance, and bruise it quite badly.

After a very rough passage, arrived in Japan, where we stopped for a week. Unloaded the stock and turned them in a corral. They felt so good to get loose, with room to roll, that they hardly took time to eat for a day or two. The third night they stampeded; nearly all got out and ran over the country. Three were killed by the train. During our stay in Japan had a few wounds to treat. The rest of the time was put in sight-seeing.

Upon reloading, caught the weakest ones and put them on the main deck, where they could get the most air. Had a day or two of rough weather after leaving Japan, then it got fair and began to get warm. Arrived in Manila Bay all right, having lost but six. If we could have unloaded the next day, wouldn't have lost any more, but there were two ships ahead of us. It was three days before we began to unload. In the meantime had lost four from heat exhaustion, and had others beginning to show symptoms—temperature from 104° to 108°, respirations accelerated and labored, pulse fast and weak, almost imperceptible, abundant sudation—in fact, had never seen animals sweat so freely. Convulsive movements of the extremities, generally going down never to get up again. Treatment, stimulants and cold water, applied very freely to head.

While on board had a great many with strangles, average about 60 per day for trip, treated with stimulants, occasionally febrifuges if fever was excessive; opened abscesses and observed surgical cleanliness as far as possible. Did not separate sick from healthy, because part of the time it was impossible on account of weather being so rough that ship rolled so they couldn't have been moved, and besides they had better be sick on board than ashore, opportunities for treatment being better. In a few cases had pneumonia as a complication.

Upon reporting for duty, was told to make out a list of drugs and instruments needed. In that respect the U. S. service is much ahead of the English. The water on most boats is very

rusty, the tanks having, as a rule, been used previously for salt water. If the water is fit, I think plenty of potassium nitrate dissolved in it is a splendid treatment. Magnesium sulphate in the mash about once a week is a good treatment also, as it helps to keep the bowels regular, constipation being one condition that has to be guarded against. Had plenty of disinfectants on the *Oopack*.

Had an uneventful voyage on the *Oopack* to San Francisco, and from there returned home.

AUTOMATIC SAFETY-VALVE STOPPER.

A DEVICE PREVENTING THE BURSTING OF PEROXIDE OF HYDROGEN BOTTLES.

The great trouble with peroxide preparations is that if the containers are tightly corked, the oxygen which separates and is set free, slowly but constantly as time passes, accumulates, until the bottles can no longer stand the pressure and burst, or the corks are driven out. Of the two alternatives, the bursting of the bottles is the most objectionable feature on account of the danger attached to it.

Containers of the hydrogen peroxide, U. S. P., which is a comparatively weak solution of H_2O_2, yielding but 10 volumes of oxygen, may be closed with a wooden stopper, which, by the porous nature of the material, permits the escape of the gas almost as soon as it is set free, thus avoiding explosion and rupture of the bottles or the driving out of the corks.

a

(*a*) Puncture.

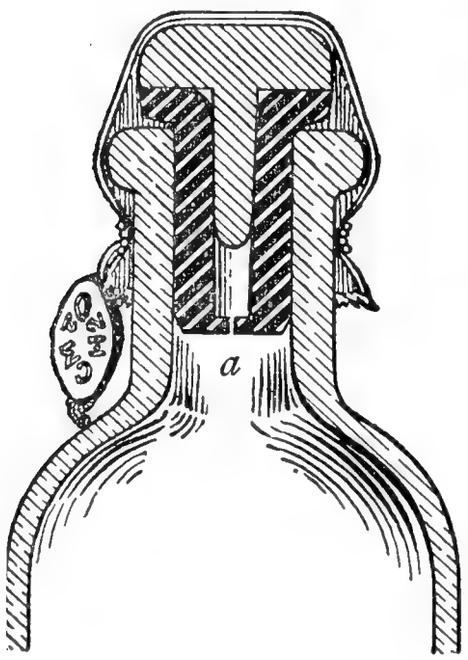
Cut No. 1. Illustrates the cross section of the safety valve rubber cork, showing the wooden top and the puncture at the bottom. A thin strip of parafined paper is inserted into the puncture.

While these wooden stoppers answer very well for solutions of H_2O_2 responding to 10 volumes of oxygen or less, with stronger solutions, such, for instance, as Marchand's peroxide of hydrogen medicinal (15 volumes), or his hydrozone (30 volumes of oxygen) they are quickly attacked by the solutions, as are also the ordinary corks, and within four months are completely oxidized, not merely bleached, but rendered so soft that they cut like pot cheese. From that time the goods are unfit for sale.

In order to prevent these difficulties and especially to obviate the bursting of the bottles containing hydrozone. Mr. Marchand, the manufacturer of that article and other well-known brands of

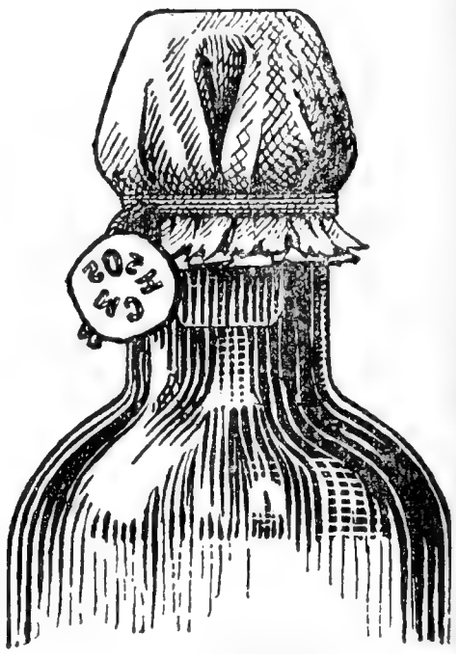
peroxide of hydrogen, has devised an ingenious stopper which he calls the "automatic safety valve rubber cork," and which is shown in the illustration.

The material of the stopper is vulcanized rubber. The beveled end is punctured through in such a manner that when the pressure in the bottle rises above 5 to 8 pounds to the square inch (according to the thickness of the rubber at the bottom, which may vary slightly), the excess of free oxygen finds free egress and thus relieves the tension.



(*a*) Puncture.

Cut No. 2. Illustrates the cross section of a bottle corked and capped with vegetable parchment and parafined muslin; no wire.



Cut No. 3. Illustrates the top of the bottle with the seal.

This device is first inserted, and a plug of porous wood is then driven in, thus stiffening the rubber and completing the operation of "corking."

The capping consists of vegetable parchment covered with parafined muslin, no wiring being used or needed.

It is easily seen that this style of closing the bottle obviates the possibility of bursting. Assuming even, that through some imperfection of the stopper, the puncture should close, as soon as the pressure rises to a point far within that required for rupture of the bottle, the stopper, not being wired down, will yield and be forced out.

Retail druggist who have for so many years been the chief sufferers and losers from the bursting of the peroxide containers, and the deterioration of the substance otherwise from the causes indicated above, will welcome Mr. Marchand's invention as a happy solution of what has to them been a very serious problem

in the past, since it will enable them to supply their trade with the higher solutions of hydrogen peroxide, and especially that preparation of Marchand's, for which the stopper was particularly designed, "hydrozone," which carries 30 volumes of oxygen.

The device described above—the automatic safety-valve stopper—having entirely obviated the danger arising from the explosion of bottles in handling, there is certain to be a largely increased demand for Marchand's concentrated solutions of the peroxide of hydrogen (which alone will be corked with the patented stopper), since physicians anxious to obtain quick results will never prescribe anything but the most active solutions, or those richest in active oxygen, and since druggists will be protected absolutely against loss by deterioration or explosion. The medical profession is being thoroughly advised of Mr. Marchand's new method of closing his bottles of "peroxide of hydrogen medicinal" and "hydrozone," and will be certain to avail themselves of the advantages thus guaranteed them.—(April, 1901, issue of *National Druggist of St. Louis.*)

NOTE.—Remember there is no popping when corks are removed.

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

Dr. Wm. Herbert Lowe, chairman of the Committee of Arrangements, advises us that the committee has selected the Rudolf Hotel at Atlantic City as the meeting place and headquarters for the convention of 1901. "The Rudolf" is located on the ocean front and is well adapted for our purposes. The Assembly Hall in the Rudolf is light and well ventilated. It is *away from the noise of the ocean*, and is quiet and suitable.

The management of the Rudolf Hotel at Atlantic City offers the Committee of Arrangements, American Veterinary Medical Association, space at the rear of the hotel to erect a tent and construct seats where the surgical clinic may be held. This is considered by the committee to be a good location and offers the advantage of being convenient to the headquarters.

A letter from Secretary Stewart, dated June 24, contains the following outline of the arrangements to that date: The programme for the Atlantic City meeting is gradually being completed, and the following papers have been promised, with several more under consideration:

"Lameness," by Dr. W. C. Fair, of Cleveland, O.

"Municipal Meat Inspection, with Special Reference to that in Vogue in Nashville," by Dr. Geo. R. White, of Nashville, Tenn.

"Distemper in the Dog," by Dr. Wm. McEachran, of Windsor, Ont.

"Treatment of Tuberculosis by Salts of Copper," by Dr. D. P. Yonkerman, of Kalamazoo, Mich.

"Contagious Abortion of Cattle," by Dr. G. W. Dunphy, Quincy, Mich.

"Ethics of Veterinary Education," by Dr. R. S. Huidekoper, Philadelphia, Pa.

"Texas Fever in Native S. C. Cattle," by Dr. G. E. Nesom, Clemson College, S. C.

"Skin Disinfection, and Wound Infection," by Dr. V. A. Moore, Ithaca, N. Y.

"Vaccination as a Preventive in Hog Cholera," by Dr. A. T. Peters, Lincoln, Neb.

"Attitude of the Farmer towards the Tuberculin Test," by Dr. Carl W. Gay, Syracuse, N. Y.

"Anthrax and Preventive Inoculation in Louisiana," by Dr. W. H. Dalrymple, Baton Rouge, La.

"The Value of the more Common Surgical Operations on the Horse," by Dr. L. A. Merillat, Chicago, Ill.

The titles of papers by the following members have not been ascertained:

Dr. C. H. Higgins, Montreal, Que.
Dr. C. A. Cary, Auburn, Ala.
Dr. L. Van Es, Mobile, Ala.
Dr. C. C. Lyford, Minneapolis, Minn.
Dr. S. B. Nelson, Pullman, Wash.

Letters are being received from members in various parts of the country telling us that they expect to attend the meeting if possible, but business is rushing and may possibly interfere. It is hoped that the collection end of business will be so good that the members will feel justified in suspending practice for a week or ten days to enjoy the advantages of the Atlantic City meeting. The local committee of arrangements has secured headquarters at the New Rudolf Hotel, which offers very moderate rates to our membership and provides a desirable and quiet convention hall, with committee rooms, etc.

The railroads have granted one and one-third fare transportation on the certificate plan, which insures a low rate from all parts of the country. Those who live west of Buffalo will pos-

sibly find it more economical to travel through that city, buying return tickets to Buffalo on account of the Exposition, and repurchasing tickets from there to Atlantic City. Further information will be given for publication in the next number of the REVIEW relative to transportation.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

A recent letter from Prof. W. L. Williams, Chairman of the Committee of Arrangements, states that the programme and arrangements for the meeting in September are in a thoroughly satisfactory condition, and that the meeting of 1901 will surpass in interest and value to those who attend that of 1900. A number of papers and case reports have already been secured from leading practitioners, and the committee is actively at work completing this part of the programme. These will be on topics of every-day interest to the practitioner, all will be brief, so as to permit of free discussion, as well as giving room for a larger number.

The clinics will be varied from last year in a large measure, and will consist of practical, every-day operations. Some cases for operation have already been secured and operators engaged. Like last year, as a rule, duplicate subjects will be secured for operation to avoid risk of disappointment by the failure of the animals to be presented, while an ample supply of operators will be on hand to carry out any operation where the announced surgeon fails to appear. The operations will be conducted in a simple manner with equipment available to the ordinary practitioner.

Arrangements with railroads are in course for one and one-third fare for the round trip. Numerous veterinarians from a distance have already signified their intention of attending the meeting, especially after attending the Atlantic City convention during the previous week. Such veterinarians from west of Buffalo can buy exposition tickets to the latter place, then one and one-third fare round trip tickets to Atlantic City via Lehigh Valley Railroad and returning can abandon their ticket at Ithaca.

The completed programme will be ready for August REVIEW. New York veterinarians willing to aid the programme with papers, case reports, or operations, are requested to communicate with the chairman of the committee at once.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The forthcoming semi-annual meeting will be held on Thursday, July 11th, 1901, at Stettler's Assembly Hall, 844 Broad Street (adjoining Broad Street Station), Newark, N. J.

A surgical clinic is to be made a feature of this meeting and the President's determination that "less time be spent in the transaction of routine business and more time devoted to the consideration of scientific and practical problems of the profession" will be carried out so far as possible.

GEORGE W. POPE, *Secretary.*

NEWS AND ITEMS

DR. LOVEJOY has been reappointed State Veterinarian of Illinois.

DR. J. W. SAVAGE, of Colorado Springs, Col., has returned to that city after a most healthful trip to South Africa in charge of a British transport of horses and mules.

VETERINARIAN WM. V. LUSK, Second Cavalry, U. S. A., has returned to duty at Matanzas, Cuba, after a four months' leave. He has entirely recovered from the fever which prostrated him in his early tropical experience.

THE firm of Wright & Merillat, of Chicago, have found it necessary to employ two assistants, Dr. Black, of the class of '89, Ontario Veterinary College, and E. Merillat, formerly dean of the McKillip Veterinary College.

DR. W. B. TRENBETH, of Cresco, Ia., and Dr. H. H. Conenour, of Pana, Ill., are among the successful candidates that took the Civil Service Examination for meat inspectors in Chicago last April. Both have been assigned to Chicago.

DR. R. S. HUIDEKOPER has assumed active editorial control of the *Journal*, Dr. Hoskins retaining the business management. The latter has been doing the work of the *Journal* almost single handed for a number of years, and the new arrangement will greatly relieve his overtaxed energies.

THE NEW HAVEN AUTOMOBILE COMPANY has withdrawn its public vehicles from the streets of that city, complaining bitterly that the citizens would not patronize them, as the company had been led to believe they would when they introduced them.

A PREPOTENT BITCH.—A small water spaniel bitch in Brooklyn, N. Y., in May of this year gave birth to six healthy

pups, she being at the time twenty-three years old, and not having been pregnant for ten years previously. This circumstance occurred under the observation of Dr. Bell, of the REVIEW, and is narrated with the idea that it constitutes a record in canine breeding.

AN ENZOÖTIC OF CATARRHAL INFLUENZA broke out in New York City and its environments about the middle of June, and it is estimated that 75,000 animals were victims. Not since the great epizoötic of 1872 were so many horses simultaneously affected. Veterinary surgeons reaped a rich financial harvest. But few horses died—only such as became complicated, or were exhausted by being overworked while suffering from fever and refusing nourishment.

THE ARMY VETERINARIAN NOT A CIVILIAN EMPLOYÉ.—The War Department has issued a circular stating that veterinarians of the Army are not civil employés, as stated in Circular No. 55, A. G. O., of Nov. 23, 1899, and that a uniform as per the following extract from G. O. 53, April 18, H. Q. A., has been presented: "*Uniform of Veterinarians.*—26½. Veterinarians will wear the undress and field uniform of a second lieutenant of cavalry or artillery, according to the arm of the service. omitting the shoulder straps; collar and shoulder ornaments to be of white metal."

THE CHICAGO VETERINARY COLLEGE.—Word reaches us that Drs. L. A. Merillat, Jas. M. Wright and E. Merillat have affiliated themselves with the Chicago Veterinary College. Dr. L. A. Merillat takes the chair of surgery, Dr. James M. Wright, cattle, sheep and swine pathology and obstetrics, and Dr. E. Merillat, physiology and demonstrator of anatomy. This college is to be congratulated on this strong acquisition to its faculty, as the gentlemen named have long been regarded as able teachers and successful practitioners. The alteration and extension of the curriculum to make room for these gentlemen will add materially to the thoroughness of the course as heretofore given by this old and reputable institution, and will undoubtedly redound to the advantage of attending students and the profession generally.

A TEN THOUSAND DOLLAR ENDOWMENT FOR THE FLOWER VETERINARY LIBRARY. — The Roswell P. Flower Veterinary Library, founded by a gift of $5000 by the late Governor of New York, for the use of the New York State Veterinary College, has just been endowed by Mrs. Flower with $10,000. The library now contains 1754 bound volumes, mostly recent and

up to date in their respective subjects, and forming a collection of the very highest value to the student and investigator in comparative medicine and allied subjects. Taken in connection with the large accumulation of books in the same fields, in the university library, this makes an unexcelled field for study and research, and it is confidently believed that the constant additions of the best modern publications will keep the library at all times up to date, as an unique centre of contemporary knowledge and achievement.

HEREDITARY LAMENESS.—Mr. F. R. Whipple, McKillip College, class of 1902, writes as follows of an interesting circumstance: "During the summer of 1899 a Mr. Ingram bought a fine looking six-year-old sorrel mare, which was very stiff. He thought she had been foundered, but as he wanted her for breeding purposes only, paid no attention to its stiffness. In April, 1900, she gave birth to a fine looking horse colt, which did well until some time in the fall, when it became affected in the stifles. I was consulted about the mare, and found she was suffering from navicular trouble, and told the owner that unnerving would be the only thing that would do her any good. On June 2 I operated, and to-day she goes as sound as any horse could. I have since found out that the party who raised her said she had given birth to one colt while he owned her, which became affected when about four months old, and was killed later; also, that the mare was affected this way before she was three years old. If the mare had navicular trouble, what was the trouble with the two colts?"

AMERICAN VETERINARY REVIEW.

AUGUST, 1901.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

ECONOMICS OF VETERINARY TEACHING.—Under this title the *Veterinary Journal* for April last has a very excellent article in behalf of a Scottish college. Our worthy colleague gives, as a support for its claim, figures which seem so ridiculous that it can scarcely be understood how a staff of good worthy teachers can be expected. It acknowledges for the teachers fees which vary from 30 pounds to 125 guineas for each session, and it bases those figures on the presence of a class of 100 students. In his remarks the editor said: "Of course there will always be enthusiasts in the country, men who are born teachers and must find an outlet for these powers at whatever sacrifice to themselves. There will be unselfish men, easy-going men, and martyrs of science, who will take the posts and do credit to them, but is it right to take advantage of our neighbors' zeal or good nature?"

From 30 to 125 guineas for a session's work—say from 150 to 625 dollars; and our English colleague complains, and calls those who have received that amount martyrs! Well, well; he must know but little of the economics of veterinary teaching in the United States, or what would he say? We believe that the majority of the veterinary teachers who have for years done work, as good, thorough and conscientious as it could be, would consider the fees that our *confrère* presents as satis-

factory, theirs having been for years and remaining yet we know far below the ones he mentions. Why should it be so? It is because, so far, and with very few exceptions, veterinary teachings have been mostly private undertakings, and that only in the two or three institutions which were endowed special fees were paid to teachers; but if rumor is true these last schools were obliged in some way or another to change their mode of operation; yes, suspend work!

Veterinary teaching as a private undertaking has no business to exist.

Veterinary institutions that cannot afford to remunerate their teachers in a proper manner cannot expect to ask much from their faculties unless, as has been the case in countries where veterinary education was established but recently.

Veterinary schools in large numbers, as we are threatened to see them in some parts of the world, would be much better if that number was reduced, if the few colleges which would remain were patronized by the State, supported by the State, and their faculties sufficiently remunerated by the State.

The remarks of the worthy editor of the *Veterinary Journal* are well to the point, and although the plan he suggests may receive less of private support, there can be no doubt that by them he has made public and corrected a too much admitted error, that veterinary teaching was a sinecure. It is not in England, nor in Scotland, and far less in the United States, as we know by long experience. Is it better on the continent, where the schools are under the control of the State? That is the question.

* * *

A Goat Dairy Farm, and Its Advantages.—At one of the last meetings of the *Société de Médécine et de Chirurgie Pratiques* in a long discussion on the treatment of tuberculosis, Dr. Ch. Levassort took up the question of the influence of milk as a factor of the contagion, and after a severe criticism on the condition of the cow's milk, brought about the advisability of resorting to the use of goat's milk as food for children, in

preference to that of the cow, when by some cause or another human milk could not be given to them.

His principal remarks were to the effect that cows are subject to tuberculosis; their milk is often the carrier of the bacilli. Cases of contagion on record are quite numerous. Pasteurization is scarcely a sure guard; boiling only seems to give this result. The milk of the mother is the perfect food. Between the two, the milk of the goat finds its calling. Tuberculous bacilli are very rare in it, and in organic principles it is close to that of women; almost equal to it. In antiquity goats were with women considered as the true nurses, etc., etc.

The subject is not new; the question has already been agitated even during the congress of 1900, and will probably be considered again in that which is to be held this summer in England.

At any rate, our friend Pion, in the *Semaine Veterinaire*, tells us that there is actually in Paris an establishment where goats are kept strictly for their milk production.

For years back visitors to the French capital were awakened by the sounds of pandean pipes, played by a man, a shepherd from the mountains of Switzerland (unless he came from the suburbs or other places closer by). He was accompanied by a flock of eight or ten goats, with pendulous udders, gorged with milk, which he would milk and sell. Another trade which will have seen its end with the birth of the twentieth century, providing the farm for the goats is a success.

At any rate, there will be great probability that the milk obtained from the new farm will be safer to consume than that of the Swiss shepherd. On the farm the stock will be submitted to every sanitary precaution; they will receive good food, be kept with the best rules of hygiene, will be tested with tuberculin; while the poor beasts of which they will take the place were, no doubt, deprived of such good treatment, and in many instances had to satisfy their appetites by searching for and eating whatever they could find in the ash barrels or boxes in the streets; and every one knows that goats are not very particular as to the selection of their *ménu*. A. L.

ATLANTIC CITY, SEPT. 3, 4, 5 AND 6.

All arrangements, save a few details, are now complete for the thirty-eighth annual meeting of the American Veterinary Medical Association, which convenes in the new Hotel Rudolph at Atlantic City on Sept. 3, and unless all signs fail we are to have a full and glorious meeting. Details of the preparations and programme will be found in the news pages, and we are sure there is enough of vital importance to engage the attention of every veterinarian in this country. Aside from this vast array of material, the recent announcement of Prof. Koch before the Tuberculosis Congress of London that there is no relationship between the bacilli of human and bovine tu berculosis will engage the attention of those distinguished sanitarians who form so large and valuable a part of the association. This disturbing declaration of one high in the ranks of veterinary scientists will throw a huge stumbling block in the way of progress along the line of preventive medicine, and be taken up and reechoed by those who have right along striven to retard the work of checking the spread of the "white plague," and Dr. Koch's conclusions, if deemed fallacious, should be stamped as such in no uncertain manner at this meeting.

Every item of the programme appeals to you. Be ready for Atlantic City the first week in September.

A SCIENTIFIC INVESTIGATION AND A PRACTICAL RESULT.

A fatal disease of calves in Ireland has for a few years so decimated the herds of some counties as to render the losses too great for the unfortunate stockmen to bear. The British government instituted in April of this year an investigation to discover the cause and to suggest a preventive. The eminent veterinary scientist, Prof. Nocard, of France, was intrusted with this important mission, and how well he has justified the confidence reposed in him will be shown in the report made to the Department of Agriculture of England before he returned to

France. Through the special facilities which the REVIEW enjoys of securing from first hands the earliest account of important scientific movements in Europe, it is enabled to present to its readers a translation of the document as presented to the Société Centrale de Medécine Veterinaire by the distinguished investigator and this almost as quickly as it is published upon the Continent. The article referred to is entitled "A New Pasteurellose: White Scour and Lung Disease of Calves in Ireland," and will be found in the department of "Original Articles."

A TUBERCULOSIS SENSATION.

As the forms for this number of the REVIEW are closing, Prof. Robert Koch, the eminent German scientist, has startled the medical world by a statement of his remarkable conclusions upon the subject of tuberculosis before the London Congress. While we are, of course, unable to present to our readers at this time the full text of the paper which he read, we shall do so as early as possible. The distinguished professor has become convinced that there is nothing in common between human and bovine tuberculosis, and is persuaded that the human family cannot be inoculated by the bacillus of the disease of cattle, and therefore all the precautions exercised throughout the civilized world to prevent the contraction of the disease in humans through the meat and milk of tuberculous cattle are worse than useless. Judgment should be withheld until the mode of reasoning by which his conclusions have been reached are known. If Prof. Koch is correct, then a great many eminent investigators are wholly wrong, for our own Bureau of Animal Industry has staked its reputation upon the fatherhood of the bacillus tuberculosis being identical in all species of animals from man to the guinea-pig.

THE programme of the meeting of the New York State V. M. Society, to be held at Ithaca, Sept. 10 and 11, will be found elsewhere, and is full to overflowing.

ORIGINAL ARTICLES.

BOVINE TUBERCULOSIS.

PERIOD OF INCUBATION—AGE OF LESIONS—EXPERIMENTAL RESEARCHES.

By MM. Nocard and Rossignol.

Translated for the Review by J. F. Winchester, D. V. S., Lawrence, Mass.

(*Continued from page 257.*)

BEGINNING OF THE EXPERIMENTS.

The experiments were commenced May 8 at Poully le Fort. There was a large gathering of veterinarians and farmers at the meeting, although the weather was disagreeable.

Mr. Constant, inspector of sanitary bureaus, represented the Minister of Agriculture; the School of Alfort, by Profs. Nocard and Moussu; the Conseil General of Seine, by Mr. Duprez, veterinarian chief of the sanitary bureau; the Conseil General of Seine et Oise, by Mr. Savary, Conseiler General of Boissy Saint Leger; the Conseil General of Seine et Marne, by M. A. Brandin, President of the Agricultural Society of Mélun, and Conseiler General of Brie, Comte Robert.

The Agricultural Society of Mélun, by Messrs. René Auberger, Chantecler, Delamarre, and Paillet.

The Agricultural Society of Fontainebleau, by Mr. Cornet. The Society of Practical Veterinary Medicine, by its President, M. Guillemard; Vice-President Moreau, Secretary Morel, and Messrs. Liautard, Holland, Savary, Jr., and Paul Rossignol. The army veterinarians were represented by Messrs. Touby and Roup of the 18th Dragoons, Joly and Bourgueil of the 7th Dragoons and Deysine of the 5th, and last Mr. Felix Buxareo Oribe, the Honorable Secretary of the Uruguay legation, was in attendance.

The twelve animals were marked by numbers on the right horn, divided into six lots and submitted to the following experiments:

First lot consisted of animals 1, 2, 3 and 4 and were submitted to the gastro-intestinal tubercular infection. In order to accomplish this 475 grams of pleural tubercles, cut fine and mixed with bran, were given each subject.

No. 3 was the only one that ate the whole of the mixture; No. 2 ate about 100 grams mixed with three (3) liters of water.

Cows Nos. 1, 2 and 4 having refused to eat the tubercular food, they were each drenched, May 14th, with 250 grams of tuberculous material taken from a mediastinal gland. The emulsion was made with lukewarm water.

The infecting material for the other subjects consisted of an emulsion of a growth of Koch's bacilli, taken from the milk of a tubercular cow, the emulsion being twice filtered through fine cambric.

Four guinea-pigs were inoculated under the skin of the thigh with one drop of this emulsion, causing them to die between the 29th and 42d day after the inoculation.

The *second* lot consisted of Nos. 5 and 6, and they were made to inhale tubercular dust. This operation was performed by Mr. Nocard and his laboratory clerk. To accomplish this a cylinder of ducking two metres long, kept open by metal hoops and closed at one end, was used. A strap passed around the neck held the bag in place as high as the eyes, and a circular strap held the bag tightly against the face, permitting the animal only to breathe the air contained in the bag. A Collin insufflator was fixed into the small end of the apparatus and by this means 3 cubic centimetres of impalpable tubercular dust, obtained by the dessication at 37° of the emulsion above referred to, then pulverizing and sifting the dessicated matters, it was introduced into the air contained in the bag.

The operation lasted five minutes for cow No. 5 and four and one-half minutes for cow No. 6.

The *third* lot consisted of cows No. 7 and 8. The experiment on cow No. 7 was made with the aid of the cloth bag

above described, and a large Guasco atomizer. In six (6) minutes 100 cubic centimetres of a saturated tubercular emulsion was atomized.

For cow No. 8 a common atomizer had to be used, the other having got out of order, and the infecting tubercular emulsion had to be injected in the immediate vicinity of the nostrils, and in five minutes 100 cubic centimetres was so atomized.

The *fourth* lot consisted of cow No. 9, and an intraveinal injection of 10 cc. of the tubercular emulsion was made.

Fifth lot were milk cows Nos. 10 and 11. They were cast on a straw bed, a fine round-ended tube was passed through the teat, so as not to wound the gland or the mucous membrane, and 5 cc. of tubercular emulsion was injected in each of the left anterior and right posterior mammæ.

Sixth lot was cow No. 12, about to calve. 10 cc. of tubercular emulsion was injected into her trachea.

It was agreed that her calf, if born alive, would receive every day not only its mother's milk, but also that of the two cows, Nos. 10 and 11, already submitted to the intra-mammary injection.

It was agreed that the twelve cows submitted to the experiment shall every six days be subjected to the tuberculin test.

Each lot will be considered in succession from the beginning of the experiment to the killing of the animals.

FIRST LOT—GASTRO-INTESTINAL INFECTION.

This was composed of cows Nos. 1, 2, 3, and 4, and they resisted the tubercular infection for a very long time, and at the time of their death they were apparently in the best of health.

On the 32d day, that is the 9th of June, there was observed a slight reaction in consequence of the tuberculin injection, the 8th, with cows No. 3 and 4.

No. 3.—6 A. M., 39.5; 9 A. M., 39.5; NOON, 38.6; 3 P. M., 39.1.

No. 4.—6 A. M., 39.6; 9 A. M., 38.9; NOON, 38.2; 3 P. M. 39.3.

They were sent to Alfort the same evening, arriving there the morning of the 10th.

Autopsies.

Cow No. 3.—The lungs, the pleura, the pericardium, the bronchial and mediastinal glands are absolutely sound. The liver is affected with distomatosis to a slight degree, but its ganglions are normal; the same of the spleen, the kidneys, the pancreas, the uterus, and all the lymphatics of the abdominal cavity. The mucosa of the mouth, the velum of the palate, the pharynx, the larynx, the subglossal and retropharyngeal ganglions present no noticeable alteration.

The intestine is opened its entire length; on the mucosa of the ilium are found numerous pisiform nodosities filled with greenish pus or suppuration. They are probably parasitic. The only suspicious lesion found is at the beginning of the large intestine; the mucous membrane appears thickened, to be infiltrated, the congested parts being more compact than elsewhere; portions of the mucous membrane are removed and put in absolute alcohol for bacteriological examination.

This examination has shown a pronounced leucocytic infiltration of the deep strata of the mucosa, such infiltration extending between the glandular *culs-de-sac;* but it was impossible to find a single Koch's bacillus. This autopsy has not revealed the tubercular lesion which caused the tuberculin reaction.

Cow No. 4.—The viscera of the thoracic and abdominal cavities do not present any tubercular lesions. However, we preserved for histological examination several Peyer's glands which appear thickened and granular. The mucous membrane of the mouth, the velum of the palate and the pharynx are apparently sound, but the retropharyngeal ganglions are enlarged, filled with a serosity and evidently infiltrated in their cortical layer with tubercular granulations. The tubercular nature of the ganglionic lesion has been confirmed by the bacteriological examination; not so with Peyer's glands. The cellular infiltration of the deep layer of the mucosa did not show Koch's bacillus.

Cows Nos. 1 and 2 were kept until July 1st, when they were sent to Alfort and killed and autopsied.

The tubercular infection did not begin to manifest itself in Cow No. 2 until the 21st of June; that is, 44 days after the contamination. Tuberculin injected June 21st gave the following temperatures:

6 A. M., 40; 9 A. M., 40; NOON, 39.7; 3 P. M., 39.5; 6 P. M., 39.4.

Animal No. 1 was tested eight times without giving a reaction.

Cow No. 1 revealed all the organs and tissues normal with the exception of a large number of pisiform nodosities in the intestines of a parasital nature.

Cow No. 2.—The mouth, the velum of the palate, the pharynx, the larynx and the trachea have no noticeable lesion. The retropharyngeal glands on the right side are distended, hard and knotty and present on cutting a number of miliary yellowish caseic tubercles. The other pharyngeal glands and those of the throat region are normal.

A careful examination of the intestinal mucosa shows a few Peyer's glands thickened in places and suspected of tubercular infiltration; in their vicinity the mesenteric glands show in their cortical layer a few miliary, yellowish and caseic tubercles.

The right lung shows on its anterior lobe a nodule, yellowish, caseic, not softened nor calcified, the size of a large pea; the bronchial glands normal.

SECOND LOT, COWS 5 AND 6.—INHALATION OF TUBERCULAR DUST.

Until May 27 these two animals appear in the best of health and as a result of the tuberculin test Cow No. 6 shows a reaction at 5.30 A. M. 39.1, 8.30 A. M. 39.1, 11.30 A. M. 39.4 and at 2.30 P. M. 39.5. The next day, May 28, the temperature becomes normal. The same animal injected with tuberculin June 1 gives on June 2 at 5.30 A. M 40, 8.30 A. M. 39.7, 11.30 A. M. 40.1, at 2.30 P. M. 40; the hypothermic state maintained itself until the next morning, 39.5. Tested a third time, June 8, the

reactions on the 9th as follows : 3.30 A. M. 39.5, 6.30 A. M. 40, 9.30 A. M. 39.7, 12.30 P. M. 39.6.

The continued use of tuberculin did not prevent a reaction.

Close observation of this animal from the first reaction showed short breathing, a certain cough, short, irregular at rather long intervals. Good appetite and airiness lasted until her departure on the 9th of June.

As regards Cow No. 5, the infection did not manifest itself until after the tuberculin test of June 8th, when the following temperatures were noted : 3.30 A. M. 40, 6.30 A. M. 39.5, 9.30 A. M. 38.6, 12.30, 39.8. This high temperature remained the whole of next day, 39.5.

June 14th she was again injected with tuberculin and the following temperatures were noted : 6 A. M. 41, 9 A. M. 40, NOON 40.3, 3 P. M. 40-6, 6 P. M. 40.4 ; the hypothermic state lasted for forty-eight hours.

On the 21st of June the resistance to the action of tuberculin began to manifest itself, but it ended on the 28th of same month. Both animals were really infected ; No. 5 on the 32d day ; No. 6 on the 19th day. With both immunity was very slight and slow to come.

Autopsies.

Cow No. 5 (killed July 2d).—The mouth, the pharynx, the larynx and the trachea, the glands of the throat region and of the pharynx appear to be free from all lesions. Both lungs are filled with a considerable number of miliary tubercles, the sizes of which vary from those of a cabbage seed to those of a small pea ; many are still translucent ; many also show in the centre an opaque, whitish or yellowish spot ; a few, the larger, are hard, dense and yellow. A cut shows them to be formed of a fibrous shell containing caseic substance, not yet softened or calcarious. Nowhere does the pulmonary tissue appear to be congested or inflamed, not even in their immediate vicinity. All the bronchial and mediastinal glands are hypertrophied, hard, knotty, overfilled with a milky serosity ; they show in their cortical layer a great number of miliary

tubercles, which are yellow, hard, but not softened or caleified.

The viscera of the abdominal cavity and glands are normal.

Cow No. 6 (killed June 10th).—The mouth, the velum of the palate, the pharynx, the larynx and the trachea do not present any noticeable lesion. The pharyngeal glands are rather large and granular on cutting (histological examination has shown them to be sound).

Both lungs are filled with fine miliary granulations, most of them being translucent, a few being opaque about the centre. All have developed under the pleura or on the periphery of the lobules; there is no trace of congestion or inflammation of the pulmonary tissue in their immediate vicinity. The bronchia being incised their whole length show the mucous membrane to be intact. The bronchial glands are hypertrophied, distended with a serosity, but free from all noticeable lesions, but the posterior mediastinal glands are almost all affected, but in different degrees; one has increased its volume ten-fold; its cortical layer literally filled with very fine nodules, which are still translucent, being at the first stage of evolution.

The viscera of the abdominal cavity and their ganglions are normal.

THIRD LOT, COWS 7 AND 8—INHALATION OF TUBERCULOUS EMULSION.

May 21, Cow No. 7 gives a slight reaction, 39.5, but the reaction was not marked until the 27th, when at 5.30 A. M. 39.7, 8.30 A. M. 39.4, 11.30 A. M. 39.3, 2.30 P. M. 39.4. The 2d of June the reaction is hardly noticeable, immunity becoming almost perfect until the last moment.

In this particular case the period of incubation has been from 13 to 19 days. As to Cow No. 8 she did not react until the 27th of May, that is on the 19th day, when the temperatures were at 5.30 A. M. 39.8, 8.30 A. M. 34.4, 11.30 A. M. 39.7, 2.30 P. M. 39.5.

The 2d of June the reaction was more pronounced than on May 27, being at 5.30 A. M. 40.7, 8.30 40.5, 11.30 40.9, 2.30 P. M. 40.7, and June 3 the temperature was 40. June 9 again re-

acted but to a less degree. This animal was killed June 10 and No. 7 July 2d.

With the animals of this lot immunity was slow and irregular.

With the exception of a few coughing spells these animals remained in apparent health.

Autopsies.

Cow No. 7 (killed July 2d).—The mouth, the velum of the palate, the pharynx, the larynx and the trachea do not present anything abnormal. The sub-glossal and pharyngeal glands are swollen and succulent, but they do not seem to show any tubercular lesion.

Both lungs are infiltrated with a considerable number of tubercles, miliary or pisiform, sound, hard and firm. A cut shows them to be formed of a thick fibrous shell, containing a small caseic focus nowhere softened or calcified.

The ganglions of the mediastinum are almost all infiltrated with miliary nodules in process of caseification, but their lesions are not as gross as those of the glands of Cow No. 5.

The bronchial glands present the same alteration, only a little more advanced. All the viscera of the abdominal cavity and their lymphatics seem to be normal.

Cow No. 8 (killed June 10).—The mouth, the velum of the palate, the pharynx, the larynx and the trachea are sound. Two retropharyngeal glands are hypertrophied and saturated with a serosity. They are infiltrated at their anterior extremity, with a few miliary tubercles, translucent or opaque, not yet caseified.

Both lungs are teeming with extremely fine miliary tubercles and the most are translucent; a few attain the size of a small pea; their centre is opaque, whitish and caseic, having but a thin envelope of gray tissue, rather transparent.

The left bronchial gland and the two large ganglions of the posterior mediastinum are hypertrophied, hard and knotty to the touch, their cortical layer is infiltrated with a large number of fine tub erculous granulations, some translucent, others opaque and caseic.

Excepting some distomatosis of the liver the organs of the abdominal cavity show no apparent lesion.

(*To be continued.*)

A NEW PASTEURELLOSE: WHITE SCOUR AND LUNG DISEASE OF CALVES IN IRELAND.

By Prof. E. Nocard *

Since several years, breeders of the southwest of Ireland suffer much; they lose more than half of their calves. They mostly die in a few days, during the first week from their birth, after having a white, foaming, incoercible diarrhœa (*white scour*): others, in smaller number, die later, when eight or ten weeks old, after exhibiting signs, not well marked, of lung diseases; at the post-mortem, numerous and large caseous or suppurative lesions of the pulmonary structures are observed (*lung disease*)

The epizoötic prevails principally in the counties of Limerick, Cork, Clare and Tipperary. All the farms do not have it; some have never lost a calf with white scour; but where it breaks out, it makes enormous ravages. One farmer has lost more than 100 calves in three years; another has saved only one out of 35 born in 1900; with a third 22 have died out of 29; in a fourth 60 out of 70. Generally speaking, it may be said that, where the disease prevails, the mortality goes far beyond 50 per cent. of the births.

The Department of Agriculture for Ireland has done me the honor to give me the scientific study of this severe disease; I have been three weeks at Limerick, and in this short time which I thought would not be sufficient to organize my work, I have been fortunate enough to be able to elucidate the etiology of the disease and to suggest a simple and practical prophylaxy, which I hope will prove efficacious.

Allow me to present you the report that I have addressed to the Chief of the Department of Agriculture.

* Remarks made by the author at the Soc. Centrale. (Translated by Prof. A. Liautard, M.D.V.M.)

To Sir Plunkett, Vice-President, etc.:

SIR:—Allow me before leaving Dublin to report to you, at least briefly, the results of my short but laborious campaign that with the precious assistance of Prof. Mettam, Colonel Steel and Mr. Ryan, I have just carried out in the southwest of Ireland.

I.—First of all, allow me to say, that we have been able to establish the close relation that existed between "white scour" and the "lung disease."

White scour appears early after birth and kills calves in a few days; the evolution of the lung disease is much slower; the sick do not die much before the eighth week. Besides this the symptoms presented by the sick animals and the lesions observed at the post-mortems are very different, in such a way that one would be tempted to believe that the diseases have nothing in common and that they are entirely distinct one from the other. However, it was known that the lung disease appears only where white scour has prevailed, and interested farmers have observed that calves that have recovered from a mild attack of white scour are, so to speak, condemned for the majority of them to contract the lung disease.

The post-mortems that we have made during our inquest show the correctness of this opinion.

Although lung disease is rare in April,* we had the opportunity to observe one of the most characteristic cases, in a six weeks calf, which a few days after birth had had a temporary diarrhœa and which since had shown no other symptoms except a lack in general condition, some cough and labored breathing. The owner said he had lung disease. (In three years he had lost more than 100 calves, and he knew, by long and sad experience, that the few subjects that seemed recovered from white scour die of lung disease when they are about two months old.) The animal was killed; he had an enormous pulmonary lesion; the two posterior thirds of the left lung formed a compact mass, very heavy; on its surface, which was here and there bosselated and fluctuating, the pleura was thickened, covered with vegetations

* The month when the investigation was made.

and adherent by fibrous bands to the diaphragm and to the hypocardia. The tissue of the lung was the seat of an extensive sclerosis and hollowed with numerous cavities filled with thick grumous pus of a dirty white color, resembling mortar.*

Besides this important lesion, there was another, much smaller and evidently more recent; the anterior lobe of the same lung was the seat of grey hepatization with small caseous centres, analogous to those that we had previously observed in calves suffering with the slow form of white scour. And in all these cases the bacteriological examination of the alveolar exudate revealed the presence of the same pathogenous microbe.†

Finally, if in the acute forms of white scour the pulmonary lesions are missing, they are almost constantly present in the subacute forms, which develop between four and six days; in general they are not extensive, and affect the form of small diffused centres of broncho-pneumonia, of œdematous catarrhal or nodular pneumonia, or simply of atelectasia; but there is no doubt that those are the beginning, the initial phases of lung disease, because there also the same pathogenous microbe is found. Hence, it is easier to understand why calves which have had white scour die almost certainly of lung disease; recovery from the intertarsal infection does not prevent the already formed pulmonary lesion to continue its progressive development.

II.—Most ordinarily white scour is fatal; but death occurs more or less rapidly.

Sometimes the calf dies the very day of its birth, without showing the ordinary signs of the disease; it seems as if the diarrhœa has had no time to appear.‡

* These pulmonary lesions are indeed promoted by a polymorphous bacillus which takes the *Gram* and which seems identical to the bacillus of ulcerous lymphangitis of horses or of the caseous broncho-pneumonia of sheep.

† This lesion resembled much the softer tubercles of chronic pulmonary phthisis; but it was easy to distinguish them because the bronchial glands were healthy and the bacilli of Koch absent from the pus.

‡ We heard of a farmer who this year has lost 14 calves, of these 6 died without the ordinary symptoms of white scour; the others succumbed the very day or the day after birth, without having had any diarrhœa.

Most often the disease lasts several days (from 3 to 6 or 8 days); it is characterized by an intense intestinal discharge; the expelled matters are always diarrhœic, white, foaming; the sick ones lose flesh rapidly; their flanks are hollow, belly retracted, back arched, eyes hollowed in their orbits, coats dull and staring; they make violent expulsive efforts and groan pitifully while making them; the nose is hot and dry; there is little discharge of mucus from the nose; the temperature is elevated, but towards the end falls back to normal and the animals remain lying on the bed or on their fæces, unable to rise or even to stand up.

Finally, *at other times*, not so commonly, however, the symptoms are less severe and recovery takes place more or less rapidly; but, as we have said before, this recovery is only in appearance, as most of the calves die several weeks later with the pulmonary form of the disease.

Sometimes, *also*, other symptoms less frequent are observed, and yet they have a no less real importance.

It is not rare to see, in cases with rapid march, the diarrhœa mixed with blood in various quantities.

In slow forms it is not rare to observe acute, multiple and very painful arthritis appear, which prevents the animal from resting on the lame leg. When arthritis exists on several legs together, the animal cannot stand up; he looks as if paralyzed.

The *lesions* found at the autopsy vary according to the march of the disease. There is, however, one which is never missing; it is that of the umbilicus and of the umbilical blood vessels. In *all* the calves affected with white scour that we have seen we have found an umbilicus, very large, with indurated walls, containing a clot somewhat hard, at times soft and purulent; in all, also, we have observed bloody extravasations, sometimes very extensive, along the umbilical vessels and the urachus, extending sometimes to the posterior third of the bladder.

In *rapidly progressing cases* lesions of true hæmorrhagic septicæmia are found; all the organs are congested to excess;

their surface is covered with petechia, ecchymosis or subserous bloody infiltrations; the capillary network of the peritoneum, of the pleura and pericardium are very much injected; the omentum is particularly so. The intestine is highly congested, specially at the floating colon; the mucous membrane is thick, engorged with blood; Peyer's patches are thick, projecting and transformed into a kind of bloody substance, or again ulcerated, as in anthrax fever; their contents are mixed with large quantities of blood.

The mucous membrane of the abomasum is also much altered, but to a smaller extent. It is covered with interstitial hæmorrhages, especially prominent on the free border of the folds.

The mesenteric glands, especially those of the colon, are enormous, filled with red serosity, or sometimes with blood.

The mucous membrane of the bladder is often covered with petechias; the urine is clear and limpid, but always very albuminous. (In one case where it was analyzed it contained more than 4 grammes of albumen for one litre; a curious fact is that it contained also 4 grammes of sugar.)

The lungs were engorged with blood like the other visceræ; at times they were evidently œdematous, but generally the tissue was supple, elastic, permeable, and without apparent lesion.

In the *subacute forms* the lesions are much less serious.

The intestinal mucous membrane is congested to a less degree; at times there is submucous œdema. The mucous membrane of the abomasum is often dotted with brown-reddish patches, marks of capillary hæmorrhages, which take place at the beginning of the disease; the mesenteric glands are enlarged, engorged with serosity, but not hæmorrhagic.

The liver is large, with a yellowish tint on sections; the spleen is little changed; the urine always albuminous.

The lungs are rarely entirely healthy; most often they present here and there little diffused centres of catarrhal pneumonia, nodular broncho-pneumonia or only of atelectasia; those lesions are so much more constant, extensive, and dense that

the animals have resisted longer ; they represent then the transition between the simple atelectasia of the beginning and the suppurative lesion of lung disease.

Articular lesions, when they exist, are very interesting ; all the periarticular tissues are infiltrated with yellowish and somewhat gelatinous serosity ; the synovial serous membrane is covered with very rich vascular arborisations, which seem to extend on the borders of the cartilages of the articular surfaces ; the *culs-de-sac* of the synovials are distended by a great quantity of thick and limpid synovia, strongly yellow or reddish in color, and in which more or less dense and abundant clots of fibrinous exudates are floating. When the lesion is older, instead of synovia there are thick, dense, and firm fibrinous exudates, which fill the *culs-de-sac* of the serous membrane and are infiltrated between the articular surfaces. In these cases the lesion resembles exactly those of the peripneumonic arthritis of suckling calves.

III.—The bacteriological study of the first cases that I observed had given me little encouraging results. Direct examination had shown nothing positive nor characteristic. All the cultures, liquid or solid, had given only abundance of very variable microbes, whether they were done with blood from the heart, an umbilical clot, the pulp of the liver, spleen or kidneys or of the lymphatic glands ; the microbian collection of white scour appeared as very rich, too much so, indeed, to draw a useful indication. It is then that besides the coli bacillus, I found para-coli, para-typhic, white and aureus staphylococcus, streptococcus, streptotheric, and fluorescent bacillus and a pneumo bacillus, liquifying gelatine, very near relation to that of Arloing. Among all those suspects, which was the guilty one ? The inoculation of any of those that I had succeeded in isolating remains without results.

I was somewhat discouraged with the negative results of those researches, when Mr. Steel brought me the femoro-tibio-patellar joint of a calf killed the day before, on account of a slow form of white scour.

It was a typical specimen of those cases of fibrinous arthritis which I mentioned above. The bacteriological examination showed, among numerous ordinary microbes, such as staphylococci, streptococci, coli bacilli or para-coli, a very small immobile bacteria, coloring with difficulty, not taking the germs, not coagulating milk, not growing on potatoes, not producing indol, in one word, belonging to the group of microbes known as pasteurellas, among which so many are highly pathogenous.

Cultures made on various media confirmed my previous experience and allowed me to isolate a typical "pasteurella," whose extreme virulency was proved to me by inoculations.

Inoculated at the dose of a few drops in the peritoneum of a guinea-pig or in the veins of a rabbit, this microbe killed in a few hours, from 6 to 18. At the post-mortem, severe lesions of hæmorrhagic septicæmia were found resembling very much those of the very acute form of white scour; the microbe exists in abundance in the blood and in all the visceræ; and, curious fact, recalling what is observed in white scour, if the autopsy is not made immediately, the blood and all the tissues are invaded by various microbes, coming from the intestines or from the lungs and the cultures obtained from them resemble entirely that of white scour; they are exceedingly rich in microbes of all kinds, among which it becomes difficult to find again the inoculated pasteurella.

This point being established, the question was to know if this pasteurella was surely the agent of white scour, or if it was not, like the others, a microbe from the intestine and able only to promote the articular complication.

What one is already acquainted with can be found again easily; I took up again the study of the products taken from the calves previously destroyed, and I was fortunate enough to find again, in the middle of all the microbes already seen, the same pasteurella—equally pathogenous to the guinea-pig and to the rabbit—in the blood of the heart and in the umbilical clot of three out of the five calves killed before. I have since made the post-mortem of nine calves suffering with white scour.

In seven of those calves, I found again the same pasteurella.

In three cases, with very acute evolution, this microbe existed almost all alone in the blood of the heart, in that of the spleen ; the liver, the lymphatic glands and the umbilical clot contained besides many other microbes ; in a fourth case, it was this exudate of a very recent arthritis alone and without any other microbe ; in the three other cases, where the disease has proceeded slowly, I had to multiply the cultures and the inoculations to isolate it from the crowd of other microbes which had invaded the blood and the tissues.

The presence of a virulent pasteurella in the tissues of calves affected with white scour was not then an exceptional fact, limited to articular complications ; it may be said that it is the rule.

Does it follow necessarily that this pasteurella is the cause of white scour ? A doubt is allowed by its absence in a small number of cases and the presence of other microbes in most of the cases. It was, however, probable that this bacteria is certainly the causal agent of the disease ; because it exists alone in cases whose march is very rapid, and, again, because it is known, by the minute previous study of other bacteria of the same group, specially since the works of my student, Lignière, that pasteurellas have that power to reduce to nothing the natural defenses of organisms, to promote its rapid invasion by ordinary microbes which are so numerous in the intestines or in the bronchii and which are ordinarily harmless, and finally to disappear quickly when the sick are sometimes resistant to those multiple infections.

However, to remove all doubt, it was necessary to produce white scour in a healthy calf, with the inoculation of a pure culture of this pasteurella.

This I succeeded in doing in the following experiment :

April 16, we received at the laboratory two calves : one born the day before, on a farm exempt from white scour. The other, four weeks old, from a farm where the disease existed ; he has been sick, but is considered as recovered, although delicate

and small; he has a good coat, he is gay, and his glance is clear.

We designate the first by the letter A and the second by B.

At 11:15 A is inoculated in the jugular with three cubic centimetres of a pure culture of pasteurella, found in the arthritis, received April 7.

At 1 o'clock B (arrived a little later) is inoculated with 10 cc. of the same culture.

During the afternoon of April 16 nothing well marked was observed; the temperature of both calves goes up a little, specially in B, which seems dull and breathes short; but altogether the two animals seem to support the inoculation well.

The 17th, at 8 A. M., the condition is changed. B has completely recovered of its ill feelings; he is gay, and drinks with relish the milk offered to him; its temperature is normal (38°8).

On the contrary, A seems very sick. It is stretched on its bed, in a mass of diarrhœic matters, yellowish and fœtid in odor; eye is hollow; flank corded; abdomen retracted; stands with difficulty when raised; takes but a few mouthfuls of tepid milk; its temperature is below normal (34°6).

At 1 o'clock the condition of it is markedly worse; he lies flat on the bed, scarcely breathing; at every instant he has spasms, with pitiful groans, followed by the expulsion of a small quantity of liquid, whitish, foaming matters; we try to make him stand, but he falls back on the bed.

At 5 o'clock he is dying; the diarrhœic discharges are mixed with blood; respiration is stertorous; temperature, 33°. At 5:45 P. M., he is dead.

Immediate Post-mortem.—Extensive congestion of all the serous membranes (specially the omentum) and of all the visceræ, liver, spleen, kidneys, thymus, lungs. Slight effusion, clear and yellowish, in the peritoneum, pleura and pericardium. Ecchymosis or subserous petechia over the surface of the spleen, kidneys and heart, in and out.

The mucous membrane of the abomasum is the seat of a

diffused congestion with petechia here and there, and specially on the summit of the folds.

The small intestine contains a foaming liquid, white-yellowish in color; its mucous is but little altered in appearance. The cæcum is in the same condition.

On the contrary, the floating colon is much altered; its contents are mixed with great quantity of blood; its mucous membrane is thick, easily torn; Peyer's patches are prominent, ulcerated or transformed into a kind of reddish pulp, sputtering under pressure; the lesion, which extends all the length of the colon, is specially severe at its insertion on the cæcum.

The lymphatic glands are everywhere hypertrophied, infiltrated with reddish serosity, with small interstitial hæmorrhages; but this lesion is specially developed on the glands of the mezzocolon.

The urine is yellow, clear and very albuminous.

The lungs are very much congested; the third and fourth lobes of the right lung are positively œdematous, and on their surface the thick and reddish pleura is rough, and as if its epithelium was removed.

An important fact to notice is that the umbilicus, the umbilical vein, the urachus and the hypogastric veins are entirely *normal.* It is thus certain that the calf was perfectly free from the disease, even free from the germ.

The bacteriological study of the various diseases of this calf has given interesting results.

The blood of the heart and of the spleen, the serosity of the pleura and that of the pericardium gave absolutely pure cultures of the inoculated pasteurella.

The cultures with pulp of the liver gave, with the colonies of pasteurella, quite a number of others of coli bacilli or of paracoli.

The pulp of the mesenteric glands gave a number of various colonies, at least equal to those of the pasteurella.

Although the disease had progressed extremely fast, and although post-mortem had been made immediately after death,

still the digestive glands were invaded by the common microbes that came from the intestine.

This experiment has then allowed us to reproduce perfectly the natural disease, with its most rapid form, and with lesions identical to those that are found in the post-mortem of calves that died the day or the one after their birth.

It shows besides, with evidence, the pathogeny of those secondary microbian infections, which are the rule in white scour as in other pasteurellosis and will in the slow form of the disease make the research of the original microbe so difficult.*

The calf B, on the contrary, continued to be well. Yesterday, 20th of April, he was gay, strong and drank his milk with relish. His case is very interesting. It shows that a first attack, followed by recovery, gives a good immunity, at least temporary; it shows the possibility (theoretical at least) of vaccinating calves against white scour; but *practically*, vaccination would be difficult, the march of the disease being so quick that it often kills calves the day after their birth or the next.

The solution of this problem must be had elsewhere.

This double experiment confirms in a very happy way the bacteriological study of the products taken at the post-mortem of the sick calves; it throws a strong light on the pathogeny of the disease.

Whatever may be the door of entrance of the specific microbe—and I am convinced that, in the majority of cases, it enters by way of the wound which results from the rupture of the umbilical cord—this microbe proliferates in the organisms and gives rise to a general affection which kills a calf sometimes in less than 24 hours. It is a pure pasteurellosis, with septicæmic form.

If the sick resists for several days—as it is the rule—the organism, deprived of the means of defense by the paralyzing action of the toxins of the pasteurella, becomes the prey of numerous secondary infections, proceeding from the intestines

* The same experiment, made since on calves born at my laboratory in Alfort, where white scour has never existed, was followed by identical results.

and from the lung; hence the various manifestations of white scour, with their more or less rapid development.

Finally, in the rare cases where the sick resists the intestinal infection recovers from white scour, the pulmonary infection continues its slow progress and ends at last by the formation of the massive lesions which characterize the ordinary form of lung disease.

IV.—The *nature* of this disease being well established, it remains to know how the infection takes place.

The principal symptoms being the intestinal discharge, one is likely to believe that the specific microbe is introduced in the organism with the food of the new born calf.

A much spread opinion is that the creation of numerous creameries in Ireland has contributed in great part to the propagation of the disease, because the milk given to the calves is deprived of one of its most important nutritive elements.

This opinion does not stand. Indeed, for one point, the disease existed in Ireland before the creation of the creameries.

And, again, our inquiry has taught us that, in none of the infected farms, no uncreamed milk is given to calves imme diately after birth. They receive pure milk during a variable time: one month, fifteen days, eight days to the minimum; but white scour appears always during the first days following birth, that is before the calf receives any uncreamed milk.

Creameries have then nothing to do with the apparition of the disease.

Yet, it is not unreasonable to think that pure milk given to new-born animals might serve as a vehicle for the agent of infection; to this point of view I have studied: 1. Milk just as it came out of the udder of a cow whose calf had just died with white scour. 2. Milk coming from an infected barn and gathered with special care.

The bacteriological and experimental study that I made of these two samples gave negative results concerning the presence of pathogenous pasteurella.

It is certain this study is insufficient to conclude that milk,

drawn from an udder without care in an infected stable, is never soiled by the dust containing the germ of the disease; but, *besides*, the facts previously established during the minute study of the other pathogenous pasteurellas have established that infection occurs very difficultly through the digestive tracts, and, *again*, we have good reasons to believe that the original infection from which white scour proceeds takes place in an entirely different way.

Indeed, the constant presence of the lesions of the umbilicus and of the umbilical blood-vessels shows that, *most often*, if not always, infection is of *umbilical origin*.

But at what moment does it take place?

Three suppositions are admissible: either the infection is of uterine origin, or again the cord becomes infected at the time of delivery, during the passage through the vagina, whose mucous membrane is always soiled with various microbes; or, finally, the infection is realized after the delivery, when the calf drops on the bedding and when the ruptured cord soaks in the fæcal matter or dirt of the stable.

This intra-uterine infection does not seem to be admissible, although some farmers say that the delivery of calves that will have white scour is most often abnormal. One must guard against those remarks made too late. If the fact was true, it is certain that a greater number of abortions would be registered, as the fœtus would offer a lesser resistance to the pasteurella infection than the new-born animal, which dies sometimes inside of 24 hours.

Our inquiry has demonstrated that everywhere abortion has not taken place or has affected only a very small number of cows.

I much better believe that infection takes place after delivery.

We have witnessed in a well-kept farm a case of labor in a cow. She was in an ordinary barn; nothing had been prepared to receive the new-born. The calf had dropped on a bedding soiled with fæces; he only fell back a little, and there during

15 or 20 minutes, we watching him making his efforts to get up, falling back here and there to the right and to the left or on his belly, dragging the stump of his cord on the ground, in the urine, or even on the fæcal matters. It was only after the mother had well licked her little one, well covered with salt, that the cord was ligated. I am not sure that the umbilicus was cleaned.

I repeat it, this I saw in one of the best-kept farms that we have visited, the farmer being certainly a very intelligent man.

It would be astonishing if, in such conditions, the calf could escape infection.

The squeezing and rubbings to which the cord may be exposed while the fœtus passes through the always soiled vagina may contribute in a certain measure to umbilical infection.

The conditions of the infection being known—and I firmly believe that they are such as I have described—it is possible to foresee the rules of an efficacious prophylaxy.

They could be presented in a notice distributed to farmers in the regions where the disease exists:

"White scour is ordinarily the result of an umbilical infection which takes place at the time of delivery, by the way of the wound made by the rupture of the cord.

"Farmers can protect their stock by the following:

"1. Cows ready to calve shall be provided with dry and clean bedding until after the birth of the calf.

"2. As soon as labor will set in, the vulva, anus and perineum shall be cleaned with tepid solution of lysol in rain water; 20 grammes of lysol for each litre of water. The vagina should be also cleaned by injecting with a large syringe a great quantity of the same tepid solution.

"3. As much as possible the calf shall be received on a clean cloth or at least upon a thick fresh bedding not soiled by urine or fæces.

"4. The cord shall be tied immediately after birth with a ligature kept in a lysol solution, and the cord amputated below the ligature.

"5. The stump of the cord and the umbilicus shall be washed with the following solution:

Rain water - - - - -	1 litre.
Crystals of iodine - - -	2 grammes.
Iodide of potassium - - -	4 "

"6. The disinfection of the umbilicus and of the cord shall be completed by being coated with

Methylic alcohol - - - -	1 litre.
Crystals of iodine - - -	2 grammes.

"7. The operation will be closed, after the alcohol has evaporated, by coating the cord and umbilicus with a thick layer of iodide collodion (1 per cent.) applied with a brush. Once the collodion is dried, the calf may be left to the care of its mother."

Those measures are very simple; they only demand care on the part of the interested. If they are closely followed, I have the conviction that they will be sufficient to protect calves from white scour.*

It is certain that the scientific study of the disease is far from being complete. My intention is to continue it in my laboratory at Alfort, with the material that I have collected at Limerick.

I shall have the honor to make known the results later on.

INTUSSUSCEPTION OF THE BOWEL IN THE OX.

By Dr. Chas. Schmitt, Dodgeville, Wis.

The subject which I have chosen is one that receives but little attention; first, because it is one of the diseases that is not recognized at its early stages; secondly, very little is known about its causes, although its nature and its conditions are quite

* Since this communication I have received from Professor Mettam a letter informing me that this treatment is applied in many farms of the county of Munster. It is yet too early to appreciate the results; but M. Mettam says that in a farm where, out of 21 calves born before the application of the treatment, 12 had died with white scour, none of those born since have succumbed.

well understood. The supposition is that its causes are two-fold, and for this reason opinions differ.

The subject which I bring before you, endeavoring to get some information and enlightenment, is intussusception or invagination of the bowel of the ox. Invagination is the slipping of a portion of the intestine into the cavity of that immediately posterior to it; in consequence of this the natural functions of the intestine are interrupted by a kind of knot, consisting of three successive portions of bowel, the immediate effect of which is obstruction of the passage of the intestinal contents and to the return of blood from the impressing portions of intestine involved, along with some portion of the mesentery.

Both the small and large intestine are subject to it. Instances have occurred, both in horses and cattle, of recovery after sloughing of the invaginated portions. Several writers, such as Siebert's article in *Thierarztliche Wochenschrift* in 1861, relates of several cases. Meyer's Annual Report, 1864, describes several cases. Williams' "Principles and Practice of Veterinary Medicine" has a very short article on this subject. In his opinion cases recover without any treatment far better than with treatment. His own treatment consists of opiates. I consider it out of the race and entirely unqualified to treat cattle whatsoever, and for that reason we may ignore his work.

Möller's "Surgery" describes the disease as a most frequent form of fatal colic, and describes the symptoms as follows: The disease begins with a sudden attack of colic, which may last twelve hours, and is followed by subsidence of pain. Appetite is wanting, rumination ceases, discharge of blood-stained mucus sets in or obstinate stoppage of the bowel occurs. Peristalsis is incomplete, the pulse becomes frequent and small, but the temperature seldom rises. On examination per rectum the invaginated spot may sometimes be felt as a cord-like painful swelling. Slight colicky symptoms, straining to pass fæces and discharge of small quantities of mucus or blood continually recur.

Dr. Merton says the animals show a desire to lie on the back. Friedburger and Fröhner's "Pathology and Therapeutics"

describes the symptoms as follows: "Intestinal invagination is the most frequent cause of colic in oxen, and is more common in this animal than in the horse. It is ascribed to colds, and violent efforts on ground which has an irregular surface, which causes discharge of the peristaltic movements."

Invagination is sometimes latent during some hours following its production. The complications which arise may develop slowly. Ordinarily its symptoms are quite expressive; the animals are suddenly attacked by more or less violent pains without any previous indigestion. These attacks persist from six to twelve hours, then disappear abruptly and entirely as if cured; but the depression and broken-down condition as well as cessation of rumination, diarrhœa, or the expulsion of small quantities of dried fæcal matter, indicate the persistence of the trouble. The constipation becomes obstinate and does not yield to any purgative. Under the action of violent expulsive efforts on the part of the animal thick mucus, often mixed with dark blood, escapes through the anus. The peristaltic movements are completely suspended, and the abdomen becomes greatly distended by the accumulation in the intestines of gases which are formed there in abundance. On palpation we may detect an intense sensitiveness of certain regions. The pulse is small and accelerated, but the temperature is hardly increased; sometimes it is even lower than normal. The body is cold, the patients are apathetic and in a comatose condition. We can recognize the invagination by rectal exploration. The hand perceives a cylindrical enlargement more or less extended along the intestine.

The same author perceives that invagination occurs mostly in the small intestine, although Degivé's experience is that both the small intestine and the floating colon are the seats of the trouble. I must agree with Degivé's experience. I have observed it both in the small intestine and floating colon. The majority of the cases are of the small intestine.

The symptoms that I recognized are, first, colicky pains; the animal stamps with his feet, lies down and gets up, switches with his tail and shakes his head, continuing so for fifteen or

twenty minutes. After that these attacks disappear abruptly and entirely as if cured, but after thirty minutes or one hour they recur and so continue from six to twelve hours; after that the animal lies down quietly, occasionally gets up and lies down again. The pulse is accelerated, temperature normal, the muzzle is moist, ears and horns are slightly cold, and the abdomen is distended with its contents. The peristaltic movements in the bowel are suspended in the early stages. These symptoms are very often recognized by veterinarians as simple colic or impaction, and treatment is given for same without further or closer observation, and for this reason—there are so few reports of cases in literature.

On palpation we detect an intense sensitiveness of this region, and the animal shows signs of pain on percussion. We can also recognize invagination by rectal examination as far as the floating colon, but when it comes to the small intestine it is somewhat difficult.

The animal in the course of the disease becomes comatose and seldom struggles. The appetite is entirely suspended, but during the progress of the disease the animal will drink water frequently. The mucous membrane becomes greatly congested and the eye gives an expression of anxiety, very often a staring look as if the animal was frightened. In the latter stages cold chills are observed, the lower limbs become cold, seemingly the circulation somewhat tardy. Considering all these symptoms veterinarians should not fail in recognizing these conditions, although strangulation and invagination resemble each other very closely and can hardly be separated except by incision through the abdomen.

Siebert's treatment for invagination is by attempting to reduce invagination, either by operation or generating carbonic acid gas in the body. He relies greatly on the latter treatment. After giving aloes with sulphate of soda in linseed tea, he injected twenty-five ounces of bicarbonate of soda suspended in water into the rectum, which had been previously emptied as far as possible with the hand and tobacco clysters. Diluted hy-

drochloric acid was then passed into the anus and closed with the hand. In a short time the right and later the left side became greatly distended, and the animal strained so much that it was difficult to keep the anus closed. After a time the hand was removed and large quantities of carbonic acid gas and fæces escaped—and the animal recovered, having thus cured a cow of invagination of five days' standing. But this treatment is scarcely recommended by the fact that he afterward found the cast-off portion of the bowel in the dung. If invagination had really existed, recovery was due less to the treatment than to the *medicatrix natura.* The method may, however, be tried when operation is out of the question and other means are effectual.

Dr. Meyer has operated on several cases. His great contention was after cutting through the bowel, or mesentery, to stop the ingesta, and after a section of the parts great difficulty was observed in bringing both ends together. Although, after succeeding in stitching the bowel together, and removing the bowel-clamps, great difficulty was caused by the continued passage of the ingesta through this section, and he was somewhat embarrassed by his results.

Degivé's experience is somewhat singular. He prefers to open the abdomen and replace the invaginated part if possible, and on failing to do so leaves the animal to its fate.

Dr. Taccoen operated on two cases, from one of which he removed ten inches of bowel, but had no bad consequences. Thirty-five days later the external wound was healed, and on slaughter the incision in the bowel was found to be completely cicatrized. In the second case an incurable *anus præternaturalis* formed, but did not impair the animal's health.

Dr. Riedinger treated during 1890 ten cases of invagination of the bowel in oxen. Seven animals had to be slaughtered on account of the operation being done too late. On the other three laparotomy was carried out and the invagination reduced. The portion of bowel was cleansed with one per cent. of sublimate solution, replaced and the bowel closed with button sutures.

After-treatment consists in giving purgatives, five to six hours after the operation; action of the bowels occurred. After that in one of the animals peritonitis occurred five days after the operation, rendering slaughter necessary. The other two recovered in fourteen days. He seems to be the most successful up to that time.

Being unable to find any literature or reports on this disease in American literature, must resort to giving my own experience.

October 18, 1900, I was called to see a graded short-horn cow, nine years old, being fattened for slaughter for the previous six weeks. After verbal examination slight colicky pains were exhibited, pulse somewhat accelerated, temperature normal, ears and horns warm, muzzle moist, although the animal was quite uneasy, stamping with its feet, striking its body with its hind leg, switching its tail, shaking its head, moving back and forward, and lying down. Appetite was suspended, although the animal drank a bucket of water in my presence. I came to the conclusion that it was merely colic caused by an abundance of ice water the day previous. The owner informed me that they had given her some salt and she drank a lot of water. Giving treatment for the same, left the animal in the care of the owner. Was informed the next day by telephone that the animal had several attacks of these colicky pains during the day. After examination found that the ears and horns were cold, muzzle dry, pulse very much accelerated, temperature normal, mucous membrane congested, a staring look, and cold chills. The abdomen was somewhat distended by its contents and gases. On palpation of the left flank found great sensitiveness; rectal exploration revealed an oblong swelling, hard and sensitive. Came to the conclusion that it must be invagination or strangulation, or both. Advising the owner of my opinion and the necessity of an operation, he somewhat hesitated, the animal being quite fat and a large abdominal incision would prevent the animal from going to market for a long time. But after impressing on him that this was the only

means by which the animal's life could be saved, and having faith in me from previous occasions, consented to have the operation performed.

After preparing the animal for the operation as far as I could, although the abdomen was greatly distended by its contents and fæces, stood the animal with her right side against the wall, tied her head firmly and placed a plank under her abdomen so as to prevent her from lying down during the operation and gave her four grains of morphine hypodermically, and locally eight per cent. solution of cocaine over the parts to be operated upon. After clipping the hair and washing the parts with soap and water, and bathing it with a sublimate solution, one to a thousand, made a longitudinal incision eight inches long, and cutting through the bowel placed an aseptic towel on the lower portion of the wound; inserted my hand and found the invagination in the anterior portion of the floating colon. Bringing the parts on the outside of the abdomen, placing bowel-clamps back of the diseased portion, leaving room for dissection. Resected the diseased portion carefully and antiseptically, laying special stress that no escape of the ingesta should take place, by placing several aseptic towels in the abdomen, from previous occasions being convinced that something would be necessary to hold the bowel in its normal shape during the stitching or bringing of the parts together, to prevent the escape of the ingesta afterwards through the wound.

No doubt you have observed or heard about Murphy's Button, the great surgeon of Chicago. This button is made of glass or aluminum, and nurses have told me that it could be used numbers of times as long as it was made aseptic.

Having seen one of these buttons last fall in Chicago, it struck me forcibly that something of this nature would be of great help in our profession. Realizing that it would be a hard matter to get the exact size required in our profession, and the great expense to get them made, came to the conclusion to make one myself, out of celluloid sheets about four inches long, the shape of an hour-glass. You can see readily what a great improvement this hour-glass shaped button would be in these complicated operations.

After sterilizing this button thoroughly, inserted both ends in the bowel, and brought ends together in the centre of this button, placing underneath boracic acid and iodoform, one to twelve, inside and between the bowel and the button; sewed the bowel together with Lembert's bowel sutures. After sponging and dressing it with boracic acid and iodoform externally, replaced the bowel.

The ingesta began to move through the button, and fifteen minutes after the operation the animal passed large quantities of mucus, blood, and ingesta. Removing the aseptic towels, stitching up the abdominal wound and dressing the outer surface, gave the animal internal stimulants. The animal rallied very quickly, and in two hours drank a bucket of warm water. Diet was regulated according to the necessity of the operation, and the animal fully recovered in six weeks.

I never heard from the button, in fact I doubt whether it was digested or absorbed, or whether the owner failed to find it, but nevertheless the animal fully recovered, and is alive to-day, and will go to market in a short time.

Here is a sample of this button. This is made out of tin, but it should be made out of glass, celluloid, or gutta-percha. This case may be exceptional, but I can see no reason why it is not practical. I would be pleased if any of you have some new ideas to bring out on this question. American literature is very scarce and we must bring it out ourselves. I leave the subject for your consideration; would be pleased to answer any question that may be asked, if it is possible.

BENIGN TUMORS AND CYSTS.

By H. F. Palmer, B. S., D. V. S., Veterinarian to Parke, Davis & Co., Detroit, Mich.

Read at the Michigan Veterinary Medical Association at its annual meeting at Lansing, Feb. 5th, 1901.

A tumor is any circumscribed enlargement or swelling or any disease in which portions of the body depart from their normal form by an unnatural increase in size. It is also more restricted and is applied only to those new formations of obscure origin which, after appearance, remain either as permanent or progressive productions.

Tumors are of two kinds—benign and malignant. A benign or non-malignant tumor is one which, if allowed to remain, is capable of doing injury only by its bulk and pressure, or which, if removed, exhibits no tendency to return.

A malignant tumor is one which proves destructive to the tissue in which it is located, which tends to contaminate adjoining glands or to be disseminated through the blood vessels, including changes unfavorable to the proper nutrition of the body.

After removal they manifest a tendency to recur either at the original seat of the disease or in another part of the body, and are capable eventually of destroying life. The number of malignant as compared to the number of benign tumors is fortunately small.

The benign tumors do not materially differ from the nature of the tissue in which they fix their habitation. A lipoma, which is a neoplasm of fat, is in most respects identical with the surrounding adipose tissue, and a fibroma is only a localized hypertrophy of the connective tissue in the midst of which it is lodged. Malignant tumors, on the contrary, embody in their structure histological conditions altogether unlike the perfected tissue in which they grow.

The following considerations will help us to differentiate the two kinds of tumors. Malignant tumors are solitary and recur after extirpation. Benign tumors have not the glandular infection and do not infiltrate into other tissues. Benign tumors

develop slowly and do not adhere to the skin and adjoining tissues. Both kinds of tumors usually pursue a painless growth for a time, and the benign seldom causes pain unless from its bulk interfering with natural functions. Benign tumors have a feeble blood supply and they seldom contain any juice.

Several theories have been advanced accounting for the origin of tumors. The congenital, the nervous influence, spontaneous and inflammatory theories all have their advocates. Whatever the growth may be, there are three conditions necessary for the development of a morbid growth—structural peculiarity, a specific irritant, and inflammation.

Benign tumors are classified as follows :

Fibroma or fibrous material.
Epithelioma of skin.
Osteoma of bone.
Enchondroma of cartilage.
Neuroma of nerves.
Lipoma of adipose tissue.
Adenoma of secreting glands.
Myxoma of mucous tissue.
Angioma of blood vessels.
Myoma of muscle.
Lymphoma of lymphatic tissue.

Fibroma or fibrous tumor is usually found in parts containing much fibrous tissue. It is a hard, rounded, painless tumor. Surface of tumor smooth or divided into lobes, generally movable, and contained in a wall of areolar tissue. They vary in size from that of a grain of shot to a goose egg or even larger. They are made up of fibres of yellow elastic and white fibrous tissue which run in various and apparently confused directions. The compactness of these layers of fibre give the tumor a hard or soft nature. They have few blood vessels and are usually lodged in a sac and receive their nourishment from its walls. The favorite seat of these tumors is on the inferior surface of the abdomen, and also in the uterus, especially of the bitch.

Diagnosis :

Slowness of growth, hardness of structure, and regularity of surface, absence of pain except when the tumor presses on the adjacent nerves, no tendency to become adherent to the integument, no enlarged veins over the surface.

Treatment:

When they mature, remove with a knife or ecraseur. They can often be removed by making an incision in the skin and pressing them out by hand and dressing the sac with some astringent, as copper sulphate.

Nasal polypi are a species of fibrous tumors attached by narrow pedicle. They are of soft nature, bleeding when injured, growing downwards and fill nasal cavity. The diagnostic symptoms of this are: discharge from the nostril often tinged with blood, sniffling sound in breathing, and frequently sneezing. They may grow backward and fall into isthmus fauces. Tumor may not be seen.

Treatment:

Remove by some means and wash with astringent lotion. Fibrous tumors may be due to imprisonment of pus in the deep seated inter-muscular structures. These can be removed by the knife or by caustics, the former method being preferable in large tumors.

Epithelioma includes all warts, corns, horns and papilloma. Warts consist of a thickening of the epidermis produced by accumulation of its scales with hypertrophy of the papillæ of the true skin. They are found mostly on young animals, their favorite place being the under surface of the abdomen, the genitals, lips and eyelids.

They may be removed either by excision, torsion or by caustics. Warts of large nature can be easily removed by putting a tight rubber band around the base, thus shutting off the blood supply and sloughing off the wart. To remove a wart by caustics first wash it thoroughly, and then apply any of the strong mineral acids, taking care not to let any of the acid come in contact with the surrounding skin. Usually one application suffices.

A soft papillomata or myxoma consists of products of the mucous membrane, and is located on any of the mucous membranes, but especially on those of the mouth and vagina. These can be extirpated in the same manner as the soft papillomata, provided they are situated in an accessible place.

Adenoma is an epithelioma and is a new formation or development of gland tissue. These tumors vary as the structure of the glands vary. Some are racemose and some tubular, depending on the epithelium which lines the gland. These tumors are benign in their nature and exhibit no tendency to return when thoroughly removed. Although often mistaken for carcinoma, they can be differentiated by noting that in adenoma the cells, lining the cavities of the glands, rest on a well-defined basement membrane, which is not the case in carcinoma. As the cause of adenoma is some local irritant, the remedy that suggests itself is an operation to remove that irritant.

Lipoma, or fatty tumor, consists of a quantity of normal fat cells closely packed together. They are not very well supplied with blood vessels or nerves, and hence this makes their removal easier.

They can be removed by excision, and the sac must be broken down and destroyed by the actual cautery or a caustic wash.

Neuromatous tumors are not as frequent in our patients as in the human family. Only one set of nerves give us much trouble from such attacks—this is the plantar after its division in foot lameness. These tumors are of a solid, firm consistency, composed of a fibrous stroma with numerous groups of cells scattered throughout them. They are found as rounded or oval bodies with their long diameter along the course of the nerves, movable in transverse but not in long direction. Being a part of the nerve, they cause great pain and should be excised at once.

Enchondroma, or cartilaginous tumors, consist of any or all of the three kinds of cartilage, hyaline, fibrous, and mucoid, the favorite seat of these tumors being in the region of the sternum

or upon the ribs. Their peculiar location is due perhaps to their cause, which is often from an external injury. There are two forms, one being round or oval with well-defined limits, the other having no well-defined border but resembles an infiltration into the surrounding tissue. These latter may arise from the development and growth of cartilage in an inflammatory exudate.

The diagnosis of enchondromatous tumors is not generally a matter of difficulty. Their hard, slightly compressible feeling, their knobbed or irregular surface, their painless progress and usually their connection to cartilage or bone. The treatment consists in their removal as early as possible by excision, as their location especially on the sternum may cause great inconvenience to the animal's movements.

Osteoma.—These tumors, commonly described as exostoses, are masses of bone or outgrowth from different portions of the skeleton. In structure and chemical composition they agree with either the compact or spongy tissue of normal bone. In form, they are not uniform, being sometimes lobulated, sometimes spherical, and at other times spinous or spiculated. They are of slow growth, and vary much in size. Except when the tumor attains considerable magnitude, little inconvenience is experienced by the animal, and when pain accompanies them it is due to their pressure on adjacent nerves, or its interference with the movement of tendons. Their extreme hardness and firm connection with bone are their chief characteristics. Being of slow growth, benign in their character, rarely attaining to any great magnitude, and having a tendency to become fixed, it seldom becomes necessary to remove them. If they do attain to such a size that their removal is necessary, they can be uncovered and detached with a saw. Even when they are pedunculated and a portion of their stump is left, the base shows no disposition to grow.

A *myoma* is a tumor consisting exclusively of muscular tissue. They are exceedingly rare, but may occur in two forms. One is allied in its histological structure to striated muscle, but hav-

ing very much smaller fibre cells, the other is simply a hypertrophy of muscular tissue. The former are usually found in some portion of the genito-urinary tract. The latter are associated with a preponderance of connective tissue resembling a fibroma, and hence often called fibro-myoma. These occur in the uterus, vagina, bladder, testicle, prostate, scrotum, œsophagus, stomach and intestines. The tumor is firm in consistence, being spherical or pyriform, and has a white or flesh-colored appearance when laid open. The growth of these tumors is often arrested and in some cases diminished by the use of ergot. This acts by inducing muscular contraction, and hence lessens blood supply. If the growth is of such a size that it hinders the animal or jeopardizes its life, they may be extirpated either through natural channels or through an abdominal incision.

Lymphoma may be divided into two classes—the soft and hard. In the soft, all the cells of the lymph gland are greatly increased in size and number, while in the hard kind there is a preponderance of connective tissue and a diminished number of lymphoid cells.

The diagnostic symptoms of lymphoma are that they usually occur in thriving young animals, and affect a whole chain of glands of a limited area of one side of the body. They have no tendency to suppuration or caseous change, and do not excite inflammation in surrounding tissue. A lymphoma, under any circumstances, gives just cause for apprehension, and, if constitutional contamination occurs, the case is as hopeless as carcinoma.

Treatment.—Iodine and arsenic both internally and externally and iodoform dressing. Their removal with the knife is usually unsatisfactory.

Angioma is a tumor composed of blood vessels supported by connective tissue, and is known under various names, as erectile tissue, aneurism by anastomosis, etc. These are helped and often removed by application of actual cautery or by enucleation.

CYSTS.

All cysts may be divided into two general classes—retention

cysts and neoplasmic cysts. The former consist in a distention and hypertrophy of a duct or secreting gland, the contents of which is the normal secretion more or less altered by retention. The latter are new formations which are the result of enlargement of the primitive cell or areolar interspace.

Retention cysts occur on the skin and subcutaneous cellular tissue. They are round and smooth in outline and free from pain. They are composed of sebaceous secretion, epithelial scales, oil globules, granular matter and crystals of cholesterin.

To this class belong mucous cysts, sebaceous cysts, salivary cysts, distention of bursa, effusions into sheaths of tendons and muscles.

Mucous cysts may appear anywhere on a mucous surface. They are tense globular swellings, occasioning ltttle or no pain, and are filled with viscid ropy mucous and epithelial débris.

Sebaceous cysts are quite common in the human family, especially among the females. Nearly all have recently seen specimens of these and the manner of their removal, so they need no further description here.

Salivary cysts are met with in connection with the ducts of the salivary glands. When these appear under the tongue on either side of frænum lingui, they are then called ranula.

Distention of bursa is quite common about the posterior part of the fetlock joint, and is known as wind-galls. They are soft symmetrical cysts of varying dimensions, painless and, except for their unsightly appearance, cannot be called an unsoundness.

Distention of bursa may be seen better developed and causing more inconvenience in the region of the hock. These cause lameness by their mechanical obstruction to the free movement of the joint. Among these may be noted thoroughpin, which in many cases is simply a distention of the bursa.

All retention cysts are treated by producing absorption by means of stimulating applications. If this fails, tap the cyst, remove its contents, and scrape the internal membrane or inject a stimulating fluid into the sac after the contents is removed.

Or, if in a favorable location, they may be dissected out. The latter method is probably the preferable one.

A neoplasmic cyst is filled with a fluid secreted by its lining membrane. The fluid may be thin or serous, thick or viscid. These cysts may be simple or compound. The compound often enclose teeth, hair, etc. When enclosing teeth they are called dentigerous cysts.

The simple cysts may include capped hock, knee, elbow and fetlock, which may all be considered under one head. They all are usually the result of some external injury. At first there is a mere fusion of serum underneath the skin. This terminates in a serous abscess named from its location.

Treatment may consist in the application of the following :

Hydrarg. biniodide	ʒ ij
Water	℥ xij
Pot. iodide	q. s. to dissolve the mercury.

Use until soreness occurs, then withhold and apply later. If this fails, may aspirate, use seton, or else perform a radical operation.

Bronchocele, Derbyshire neck or goitre. These are cystic enlargements of the thyroid gland, the origin of which is unknown. They are said to originate from the drinking water taken into the system. It is a soft fluctuating swelling of the thyroid gland, occupying one or both sides of the larynx. Although unsightly, they never interfere with the general usefulness of the animal.

Treatment :—

℞	Iodine	ʒ j
	Pot. iodide	ʒ j
	Lard	ʒ viij

Apply once a day until soreness is produced. If very obstinate give ʒ i of pot. iodide three times a day for eight days.

Parasitic cysts are a class of the compound neoplasmic cysts. These are cysts containing larvæ of some parasite.

Cysts containing teeth are found in the testicles and other parts of the body, but the favorite locality of these is within the

antrum, even as high up as the base of the ear. The development of these dental tumors is due to some malformation during fœtal life. The teeth continue to grow in their unnatural location, and so form immense tumors.

Simple neoplasmic cysts can be treated the same as retention cysts by applying stimulating applications or drawing off the contents and injecting stimulating medicines. The compound neoplasmic cysts have but one method of treatment and that is excision. They must be thoroughly and effectually dissected away.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

PARTURIENT PARESIS—SCHMIDT'S TREATMENT.

By W. R FRENCH, D.V.S., Great Barrington, Mass.

Case No. I.—Grade Jersey cow, 8 years old, in high condition. Calved at 5 o'clock A. M., March 13, 1900. Called to see her at 11 o'clock, March 14. She was then down and unable to rise. I emptied bladder and rectum; disinfected udder and apparatus with bichloride of hg. solution, 1-1000. Injected into udder with Schmidt's apparatus 2½ drams potass. iodide, dissolved in hot water and cooled to a temperature of 104°F. Left ex. nucis vom. fl. and ex. bellad. fl., to be given in dram doses every two hours. Directed hourly massage of udder. Saw her again at 5 o'clock P. M. She appeared worse; ocular insensibility complete; no perceptible action of stomach or intestines; head curled to side; stertorous breathing. Repeated potassium treatment as before. Emptied bladder and rectum; turned her over; continued nux and belladonna. March 15, 8 o'clock A. M., cow better; attempting to rise and paying some attention to surroundings. Gave orally 2 drams of potass. iodide. Left spts. ammo. aromat. and spts. vini rect. to be given every four hours. Cow made rapid recovery.

Case No. II.—Grade Jersey cow, nine years old, in fair condition. Called to see her 48 hours after calving. She was up, but staggered fearfully and went down before treatment could be given. Gave substantially same treatment as in case No. I, but gave only one injection of potass. iodide. Owner came to office next day saying cow seemed doing well, and thought I

might send her some treatment, which I did. She made a nice recovery in a short time.

Case No. III.—Thoroughbred Jersey cow, seven years old, large milker and in good flesh. Called to see her 36 hours after calving. Had been turned out and was taken sick on the road while being led home. Gave Schmidt's treatment at 3 o'clock P. M., the cow being down and unable to rise. Ordered hourly massage of udder and gave stimulants in small doses every two hours. At 9 o'clock P. M., while on my way to see her I met the caretaker, who told me cow was breathing her last. Found her prone on side, breathing heavily and looking far from encouraging. Gave Schmidt's treatment again, emptied bladder and rectum, and placed her in natural position. Saw her at seven o'clock A. M., she was up and eating. Man said she got up at 1 o'clock A. M., and stayed about 15 minutes. This cow was all right in 15 hours.

Case No IV.—High grade Jersey, six years old. Called to see her at 7 o'clock P. M. She calved early in the morning of the day before. This cow was up when I arrived, but went down while giving the treatment. Saw her at 2 o'clock A. M. She seemed better. Gave stimulants, but did not repeat the potass. injection. This cow was all right in a few hours. Perhaps this was not a typical case, still I have seen cows which appeared as well as she die within 24 hours under the old methods of treatment.

Case No. V.—Thoroughbred Jersey cow, eight years old, large milker and in good flesh. Called to see her 24 hours after calving. She was then up and took the treatment standing. She remained up but a short time. Gave her 2 lbs. sulph. magnesia. Left stimulants to be given every two hours. Saw her again in six hours. She was down broadside, breathing heavily. Auscultation revealed no action of stomach or intestines. Was in comatose condition; insensibility complete. Injected into udder 2½ drams of potassium iodide; emptied rectum and bladder; ordered soap and water clysters; placed her in a natural position. This cow died fourteen hours after being taken sick. The treatment had absolutely no effect upon her.

Case No. VI.—Extra large Guernsey cow, seven years old. Called to see her 48 hours after she calved. She was down and making vain attempts to rise. Eyes were staring, head very unsteady. Gave two lbs. sulph. magnesia, also Schmidt's treatment. Left ex. nucis vom. fl. and ex. calabar bean fl., each to be given in dram doses every two hours. She grew rapidly

worse, and owner had plans well matured for a funeral. When I saw her six hours after first injection, she was prone on side; could hear her breathe forty rods away; emptied bladder and rectum; injected into udder two drams potassium iodide, and rolled her up in natural position, where she breathed easier. Owner said she breathed easier than she did two hours before. Left nux and calabar bean to be given every three hours. She got up in five hours after the second injection, and made a nice recovery. In all these cases antiseptic rules were observed. Hourly massage of udder was rigidly enforced.

FRACTURES OF THE OS SUFFRAGINIS FROM SLIGHT ACCIDENTS.

By HENRY TWEEDLEY, M.R.C.V.S., Buffalo, N. Y.

The following cases may be of some interest, showing how serious an accident may happen from very slight apparent causes.

(1) A carriage horse while being slowly driven down a slight incline suddenly dropped to one side and immediately went very lame; was taken home and a few days after I visited him. After examining, I gave my opinion that fracture of the os suffraginis had occurred. As I did not care to destroy him on my own opinion, I called in the assistance of another veterinary surgeon, who confirmed my diagnosis, and as by this time he was in very bad condition, I destroyed him. Found a very severe fracture of the os suffraginis, split into three parts.

(2) A heavy draught horse going up a hill with a load, slipped and went down on his knees; recovered himself, but a second time stumbled. On recovering himself, he was very lame on off front leg. Remained lame for a long time. Kept him in the slings for several months, as the owner thought he had injured the shoulder, although I was convinced that the os suffraginis was the seat of the injury. After five months was destroyed, and a fracture of the os suffraginis was revealed.

(3) A buggy horse driven daily by his owner to and from his place of business, was brought home all right at night. Placed in his loose box as usual. Next morning was very lame on the off hind leg. We were at a loss to account for the injury, but after a few days had no difficulty in diagnosing a bad fracture of os suffraginis. As he was a great favorite, I was asked to try and make him serviceable. In about six weeks was able to go very well, but still pretty lame, and with a very

large enlargement of the pastern. Was able to work fairly well, but always a little lame. I forget what ultimately became of him.

(4) This horse, one of a team which was run into by another horse, immediately was so lame that he could not put the near fore foot to the ground. I had him sent home in the ambulance. On reaching home, thinking he might have received an injury to the shoulder, I manipulated, but was unable to find the least evidence of injury. I examined the limb carefully, and the only part where I could detect the least pain was on the os suffraginis, on pressing the front of this bone with my thumb pain was clearly evident. After three weeks treatment was in exactly the same condition with considerable enlargement of the pastern.

At the present time of writing, five weeks after the accident, he can walk very well and gives promise of doing well. There is considerable enlargement of the pastern. I may say that the pain on pressure remained clearly in evidence for three weeks after the injury.

With regard to the frequency of this fracture Stockfleth in "Thierarz-liche Chirurge," German translation, says that fracture of the os suffraginis comes second in the list of frequency. Against 65 fractures of the pelvis, came 16 of the os suffraginis and 12 of the os corona. Stockfleth in his interesting work relates quite a number of fractures of the region of the pastern, almost all of which have happened in a manner closely resembling those I have endeavored to describe. In one of his cases the pastern bone of both fore legs being fractured, and in another case the bone was fractured with no less than twenty-six larger and smaller pieces. He further states that from Hertnig's observations a special brittle quality of the bony tissue may induce fractures of this region, as Hertnig has seen the os corona fractured in all four feet of a horse.

TRAUMATIC PERICARDITIS.

By W. L. West, V. S., Belfast, Me.

January 23d, 1901, I was called to see a three-year-old cow which had always been healthy and hearty.

Symptoms.—Temperature 102°F., pulse 90, respiration 24, and not labored, anorexia complete, bowels somewhat constipated, head hangs low, lungs normal, but with the phonendoscope can hear a thrilling sound over the heart area.

Diagnosis was provisional; told owner the cow had indigestion, but had more heart disturbance than was customary.

Treatment.—Gave magnesium sulphate 500.; aqua, litre, and left fluid extracts of nux vomica and gentian to be given every three hours, and told owner I would call next day.

January 24. Owner sent me word not to call as cow was all right.

Jan. 28. Was called to see same cow and found her refusing both food and water; temperature 105° F., pulse 132, heart pounding and thrilling, eyes unnaturally bright, jugulars tense with blood but no jugular pulse; left lung tympanitic on percussion, submaxillary space œdematous, anterior limbs projected alternately.

Revised Diagnosis.—Traumatic pericarditis. Prognosis unfavorable and advised destruction and use of meat, but the owner was skeptical as to correctness of diagnosis and wished to continue treatment, hence gave fluid extract of digitalis 4., *ter in die*, more expectant than with any hope of ultimate benefit.

Jan. 29. No apparent change; treatment continued.

Jan. 30. Owner decided to destroy the cow, and post-mortem was performed immediately.

Post-mortem.—Œdema of the subcutaneous tissue on both sides of the thorax with a yellow gelatinous semi-fluid substance in abundance. Reticulum adherent to the tendinous portion of the diaphragm and pierced with four pieces of hay wire about eight centimeters long, one of which had completely pierced the wall of the heart and protruded into the left ventricle.

On the end of the wire which protruded into the heart was a small ante-mortem clot. Pericardium was adherent over nearly the whole heart and when pulled apart seemed dovetailed or something like a fœtal and maternal cotyledon.

The other organs were normal.

HYPO-SULPH. SODA POISONING. *

By Dr. J. G. Parstow, Shenandoah, Iowa.

On March 19th I was called to Red Oak, Iowa, to investigate a trouble existing in a large barn of feeding horses. On my arrival I learned two had already died and was shown four or five that were quite sick. The symptoms, as the owner and caretaker had noticed, were loss of appetite, whisking of tail, followed by light colicky pains and profuse diarrhœa, the colicky pains gradually increasing in severity until extreme agony was evinced in those two that had died.

* Read before the Iowa and Nebraska Veterinary Medical Association, at Omaha, Neb , Nov. 29, 1900.

I examined those in the barn and found the hearts' action and respiration very little interfered with. Temp. from 101 to 102. Recognizing it as a dietetic trouble, I proceeded to examine the diet; the grains, hay and water to all appearance were number one; I was then shown a keg of soda hypo-sulphite and was told that each horse was receiving about a dessert spoonful each day. This did not strike me at first as of any importance, but I was inquisitive enough to ask if those horses would eat that soda in the coarse crystal form in their feed; then the facts were shown that the soda for the entire stable was placed in a tank and water drawn on to it, when dissolved the horses were let out one at a time to water; some would refuse to drink while others drank heartily.

My suspicions were aroused and I set about weighing the soda, and measuring the water. This done, the result was that each gallon of water was found to contain approximately 18½ dr. of soda. This was offered after each morning's feed. Now, figuring on from 4 to 6 gallons of water to those horses that did drink heartily, they were receiving from 4½ to 7 ounces of the soda. I could not say that that was sufficient to kill a good healthy horse, so I resorted to post-mortem on one that had died on the night previous. The deviations from normal as I noticed were as follows:

Large intestines, totally devoid of blood, dark drab or slate color, the wall rather thicker than normal, caused from submucous effusion. This effusion was like a jelly in consistency, yellowish in color, tinged with a dark drab.

Stomach.—Tissues normal, but contents heavily coated with black tarry substance where it came in contact with the walls of the organ.

Spleen.—Totally devoid of blood and on section it presented a beautiful dark cherry red, stroma tough with withered feeling.

Kidneys.—Mottled with dark blue spots. Over each spot the capsule was markedly indentated. Underneath each spot a congested streak passed down through the cortex.

Bladder.—Empty, and heavily coated on lining with a milky like secretion.

Left Lung.—Congested, but as animal was lying on that side some time before dying I believe it was caused from some of a drench.

Blood.—Was a beautiful dark cherry color, and feebly coaguable.

This completed the post-mortem, and I announced my findings to be that of a hypo-sulphite soda poisoning.

Treatment.—Remove the cause. To the worst cases oleo lini 1 pt. to each was given, followed by light stimulants, with orders for a light laxative diet. No further loss was experienced. One or two of the worst cases convalesced slowly.

CÆSAREAN SECTION IN COW.*

By Dr. J. G. Parstow, Shenandoah, Iowa.

On June the 11th last, I received a call from Mr. Peck, a near-by farmer to our town, who said he had a two-year-old heifer that had been trying for some time to calve, and that he was now satisfied she needed my assistance. I prepared for the occasion, and drove over. There I found a medium sized grade heifer, in fairly good flesh and presenting a healthy appearance. She was lying in a shed unable to rise, and very poor sanitary conditions surrounding her, none better indoors to be had. I learned she had been laboring some fifteen hours, he offering such assistance as he was able to by placing ropes on the two feet then presented.

I made an examination and found those to be the hind feet. The pelvic cavity was small, the calf large, plump, and an extra well-developed one. To make a normal presentation was beyond my power. To remove it through the natural channel was impossible without section, and section did not appear practicable in this case. So I suggested removing by the side, though giving little hopes of favorable results. Consent was freely given, so I prepared to operate.

The patient was secured by stretching. The right side sterilized. Chloroform was administered with instructions to assistant how to follow the same.

I then made opening into abdominal cavity, commencing a little below and about midway between the external angle of ilium and border of last rib, running downward and slightly forward for sixteen inches. The uterus was then punctured and the wall divided by force or torn across the superior surface. The fœtus and membranes were then removed, and the peritoneal coat of the uterus brought together by means of an uninterrupted silk suture. The peritoneum closing the abdominal cavity received a like stitch. The outside was closed by means

* Read before Iowa and Nebraska Veterinary Medical Association, at Omaha, Neb., Nov. 29, 1900.

of a heavy silk cord. Creolin dressings were used throughout.

The after treatment consisted in sponging out the uterus on fourth and sixth days. Removing outside stitching on sixth day, cleansing out, and replacing same.

Internally sodium chloride in drinking water was all the treatment this patient received. She remained down six days, was then assisted to her feet each day for three days, since which time she has been taking care of herself and lives to tell the tale.

DEPARTMENT OF SURGERY.

By L. A. and E. Merillat,

Chicago Veterinary College, 2537–39 State Street, Chicago, Ill,

SURGERY OF THE EYE, EAR AND UPPER AIR PASSAGES.

(*Concluded from page 287.*)

Trachoma, Granular Ophthalmia, or Granular Conjunctivitis.—This disease involves the palpebral conjunctiva, and sometimes extends to that of the eyeballs; although it is a disease which generally originates on the inner surface of the eyelid, we will consider it among those of the eyeball because it frequently extends to the ocular conjunctiva, especially when not promptly treated surgically. In some instances granular ophthalmia will assume the nature of a carcinoma, which eventually involves the entire eyeball; this condition is not common in horses, but often found in the ox and dog. The disease in the early stage presents either numerous oval granulations that appear as prominent translucent papillæ which resemble frog-spawns (Van Mater's "Ophthalmology"), or by movable folds, each being distinct structures, separated from one another by furrows. In describing this disease we will consider the clinical features by dividing the course of the disease into four distinct stages:

1. Inflammatory stage.
2. Hypertrophic stage.
3. Cicatricial stage.
4. Atrophic stage.

1. *Inflammatory Stage* or *First Stage.*—In this stage the granulation or folds are separate and it manifests itself in a number of different phases, which we will describe separately:—

(*a*) In some cases the first stage begins with an acute inflammation, characterized by redness of the margin of the eyelid, and a congestion of the palpebral conjunctiva; lachrymation is increased, little or no mucoid secretion and generally an itching sensation. In the course of a week the mucoid secretion increases and after sleep the eyelids stick together but are usually easily separated. The granulation or folds increase in size and in the pain and irritation becomes more intense, which is aggravated by the use of the eye. During this stage the patient must be kept away from bright light. In the course of ten days or two weeks this phase terminates in the hypertrophic stage (2), excepting when it assumes a virulent form, which will be mentioned elsewhere.

(*b*) Another phase of the first stage of the disease which is very common among animals is ushered by a very severe acute conjunctivitis. The eyelid is extensively swollen, lachrymation is increased and accompanied by a mucoid or mucopurulent secretion; and the palpebral conjunctiva becomes thickened, forming folds, which are highly congested. The ocular conjunctiva is also thickened and in some instances injected. When the eye is closed for any length of time the margin of the lids adhere to one another, and at the end of two or three weeks the first stage ends in the second.

(*c*) A more benign phase of this stage is sometimes encountered, which is introduced without any acute inflammation perceptible. No hypersecretion or swelling is noticed with the exception of a slight thickening of the margin of the eyelids. These cases are usually sporadic and are generally detected if noticed at all during this stage (1) by the frequent winking. When the attendant or veterinarian inverts the eyelid the palpebral conjunctiva is found completely covered with granulations. The lachrymal discharges are normal and not accompanied by mucoid secretions as in the other phases of the first stage of trachoma. This phase will end in the (2) hypertrophic stage and run the same course as the other more painful phases already mentioned. This form is not contagious, which is probably due the scanty secretions during its course.

2. *Hypertrophical Stage.*—The three phases of the inflammatory stage, respectively, gradually merge into the hypertrophic stage. In this stage the conjunctiva which has been thickened by the inflammation common to the first stage becomes organized, firm and non-inflammatory. The duration of this stage is from five to seven days. The inflammation which accompanies

the closing of the first stage gradually subsides and no evidence of it remains at the termination of the second stage. No form of treatment has ever proven very effective for this stage of the disease excepting surgical treatment, and this should be done before corneal complications are noticed. Such complications as pannus are likely to occur before the end of this stage.

3. *Cicatricial Stage.*—As the hypertrophy of the conjunctiva passes away, small strands of cicatricial tissue begin to form; the granulations or folds lose their character and unite to form irregular masses. During this stage the conjunctiva contracts and in doing so it leaves hard masses or bands which greatly change the shape of the tarsal cartilage. As a result of this cicatricial contraction we frequently observe that there is a narrowing of the fissure which produces a partial ptosis.

4. *Atrophic Stage.*—This stage is only a continuation of the preceding marked by a diminution of tissue. This atrophy may interfere with the action of the orbicularis palpebrum, forming an *entropion.* It also destroys all the depressions and elasticity of the conjunctiva, and reduces the size of the entire sac, which permits the tears and secretion to flow down the cheek. Now and then there remain patches of conjunctiva that partially moisten the surface of the eyeball, but in time the entire surface becomes dry (*xero-phthalmos*); the cornea becomes opaque and the irritation caused by the dryness and cicatrices of the conjunctiva often produce ulcers of the cornea. Vision is impaired and sometimes totally lost.

All trachomata may not run the course mentioned, some may be more benign, while others may be more virulent. There is a disease of the eye found among cattle that has always appeared to us as a virulent type of trachoma; if it is not, it at least appears trachomatous in the early stage. Dr. O. E. Dyson, Inspector in charge of the Bureau of Animal Industry, Chicago, Ill., is of the opinion that the disease observed among cattle is carcinomatous in its nature, and that it runs the course of a carcinoma. George Jobson, M.D., V.S., Assistant Inspector of the Bureau of Animal Industry, has made some important investigations of the disease common to cattle, and wrote a series of articles which were published in the *Journal of Comparative Medicine.* Upon several occasions he has called our attention to the disease in its different stages, varying from small granulations at the internal canthus or on the membrana nictitans to a complete destruction of the eyeball. We are unable to state

whether Dr. Jobson has any new conclusions from his recent investigation as to the cause and origin of the disease, but with his assistance we shall in the future give a complete report of the disease. Dr. N. G. Houch, traveling inspector for the Bureau of Animal Industry, has expressed his willingness to assist in gathering data from which we may be able to ascertain the cause, course and treatment of the disease.

The reason that we entertain the idea that the disease observed in cattle is of a trachomatous nature, is from our experience with a trachoma in a dog that we had under observation for three years. The disease in the dog, however, never developed to the stage of those advanced cases which Dr. Jobson had under inspection for scientific purposes. When first noticed, the disease was confined to the palpebral conjunctiva above the nasal canthus, and extended from there to the membrana nictitans and ocular conjunctiva. In the course of three years involved all the coats of the eyeball, located on the antero-internal part of it. The dog was never treated for the disease, but a younger dog which was always with the one in question developed granulations on the inner surface of the upper eyelid and on the membrana nictitans. These granulations were treated surgically and never reappeared. The old dog was destroyed and the eye carefully examined (*macroscopically*); the diseased portion of the eyeball included the antero-internal zone of the sphere, extending to the inner third of the cornea, and the diseased portion upon examination resembled the carcinoma of the eye so frequently noticed in cattle. This trachoma presented the same clinical features noticed in the more benign forms; the first stage began with an acute inflammation, and increased lachrymation, which was followed by a hypertrophy of the conjunctiva and formation of cicatricial tissue; the conjunctiva never atrophied, but the cicatrices became granular, appeared inflamed, and extended to other tissues.

Etiology.—The cause of trachoma has been attributed to a diplococcus by some investigators, and to a fungus (*microsporon trachomatosum*) by others; with this fungus Mutermilch claims to have produced trachomata in calves and rabbits (*Annales d'Oculistique*, October, 1891, and May, 1892). So far as known there is no constitutional condition that renders an animal predisposed to the disease, but those of a lymphatic temperament are said to be the most susceptible, although there is no good reason for such a conclusion. In human surgery and medicine, the geographical distribution of the disease has received much

attention, and from investigations made on this line, it is learned that in certain inhabited portions of the earth the disease seldom occurs, while in others it is often epidemic. Domestic animals kept in overcrowded and poorly ventilated quarters, and those fed on poor non-nutritious food are prone to the disease. When granular ophthalmia is epizoötic, it is very probable that a contagium must contribute to its development, but when the disease begins without an inflammatory stage the indications are that it is due to some constitutional debility of the patient, resulting from its environment.

Diagnosis.—The veterinary practitioner will often find it difficult to differentiate trachoma from muco-purulent, and purulent conjunctivitis, folliculitis, lymphomata and fibroid or fungoid growths of the palpebral and ocular conjunctiva. The human practitioner recognizes a difference between each and trachoma, but the veterinarian does not have the same opportunity to make a correct diagnosis. In most cases the history is very indefinite, and often no cause can be found for the disease; the patient is brought to him after the disease has developed to the third or fourth stage, or probably has already terminated in some abnormality, such as pannus, corneal ulcers, trichiasis or entropion. Trachoma of the benign variety occasionally runs its course and terminates favorably without surgical attention, but in most instances it leaves some permanent abnormality of the eye or its appendages. In most cases, it is advisable to remove the granulation by surgical means, even if the disease assumes a benign form and is likely to make a favorable termination. The advantage of such treatment is observed by shortening the duration of the disease.

Treatment.—The treatment of trachomata may be divided into prophylactic, medicinal and surgical. *Prophylactic measures* are necessary in some instances, especially when the patient is kept among a number of animals and the surgeon has no assurance that it is not a contageous form of trachoma. The best method to adopt in every case is to isolate the patient during the first three stages or during the flow of discharges from the diseased eye, and to thoroughly clean the place, stall or kennel occupied by the patient before using it for other animals.

Medicinal Treatment.—Before beginning the treatment the cause of the disease should be determined if possible; if it is due to faulty alimentation, the regimen must be corrected; and if caused by the environment, the surrounding conditions must be improved; the internal medication will depend upon the indica-

tions; anything that will improve the condition of the patient may be administered. The local treatment is cleanliness and the application of mild antiseptics and germicides; for this purpose boric acid may be used. If bichlorid of mercury is used the solution should be weak (1.15000). Formalin has also been recommended in the strength of 1.3000. The eye should be bathed three or four times a day with either of the above mentioned solutions for at least ten or fifteen minutes each time. When the acute inflammation subsides the granulations may be touched slightly with the mitigated stick of nitrate of silver every two or three days. In ocular complication it may be necessary to use mydriatics. When the condition of the palpebral conjunctiva improves the corneal complications will disappear.

Surgical Treatment.—The surgical treatment for trachoma may consist of grattage, expression or curetting. Each of these procedures have their indication; grattage and expression should be used when a large area of the conjunctiva is involved, but when the granulations are localized, they can easily be removed with a curette.

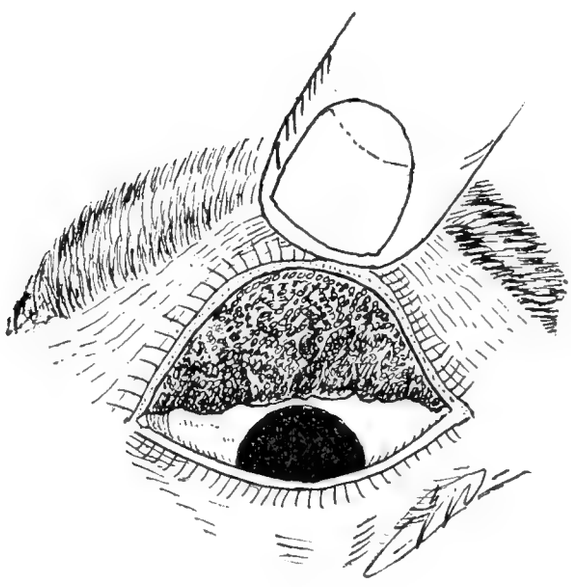


FIG. 54.

TRACHOMA.

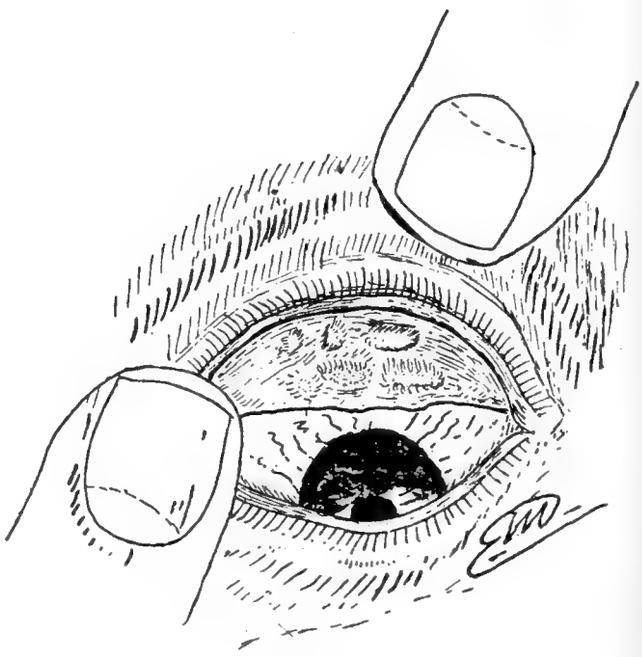


FIG. 55.

CICATRIZATION OF TRACHOMA WITH PANNUS.

Grattage.—The instruments needed for the operation upon trachoma are: roller or trachoma forceps (Fig 56); a large and small pair of artery forceps; a tri-bladed-scarifier; pair of scissors; probe; spatula; nail-brush; sponges and dressings. Grattage is an operation recommended by French surgeons, and is

very simple but painful ; patients treated in this manner should be given a general anæsthetic. The eyelid is inverted and the conjunctiva involved scarified as far back as the fornix, and when the ocular portion of the conjunctiva is involved, it should be subjected to the same treatment, if the granulations do not extend over too much of the anterior surface of the eyeball (when a large area of the ocular conjunctiva is trachomatous, the best method of treating is by expression). The most convenient instrument for scarifying is a three-bladed scarifier, although this can be accomplished with any similar instrument. When the diseased portion is thoroughly scarified, it is scrubbed with a sterilized nail-brush until all the trachomatous tissue is removed ; it is then thoroughly washed with sterilized water or some mild antiseptic solution. After careful cleaning, ice compresses, or cloths wrung out of ice-cold water, must be applied to the eye. The object of these cold applications is to relieve pain and prevent swelling, and should be kept in place and changed, or cold water poured over the compress for at least two hours after the operation, and repeated thereafter at intervals as often as indicated.

If the operation is done aseptically, and care taken not to mutilate the subconjunctival tissue more than necessary, but little reaction follows and the wound improves rapidly.

The after-care consists in preventing undesirable sequelæ, such as secondary infection or adhesions of ocular and palpebral conjunctiva. To prevent these adhesions a sterilized probe or spatula must be introduced once a day into the *cul-de-sac* and all unions of the two membranes carefully broken down. The subsequent treatment will be governed by the condition of the parts involved, mild antiseptics, astringents, mydriatics, etc.

The Operation of Expression.—This is an operation that is performed in various ways and the deviation is generally governed by the extent and severity of the disease. When the folds or granulations are located in small groups they can be expressed with the thumb-nails, artery or dissecting forceps, but when a large area is involved this method is too tedious. Several varieties of forceps have been devised for this purpose, and among the most useful are Knapp's roller forceps (Fig. 56–*B*) and Noyes' trachoma forceps (Fig. 56–*A*).

The procedure in general is as follows : The eyelid is inverted with an artery forceps applied to the ciliary margin, until as much of the conjunctiva as possible is exposed, then the

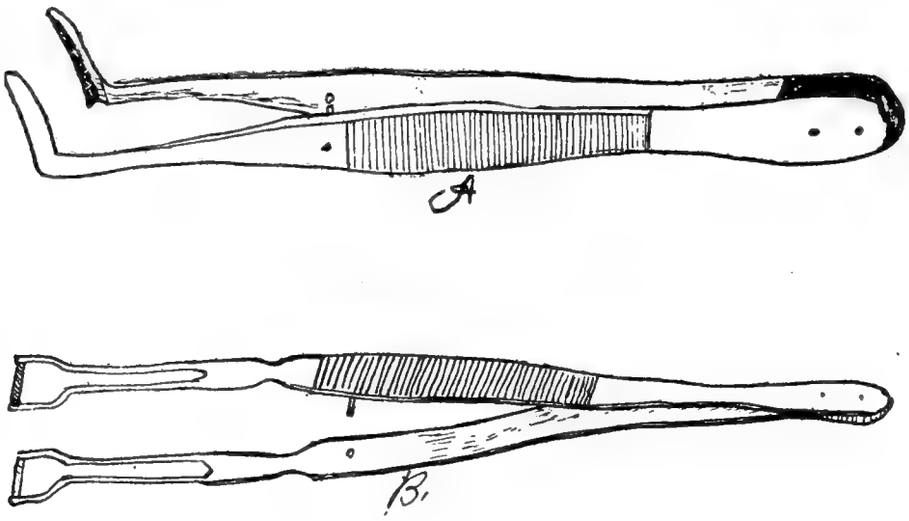


FIG. 56.
A. Noyes' trachoma forceps.
B. Knapp's roller forceps.

roller or trachoma-forceps is used in the following manner: one blade of the forceps is pushed as far back as the fornix, and the other blade is placed on the ciliary border of the eyelid; then, by a milking process the morbid material in the folds or granulations is squeezed out thoroughly; this application of the forceps is continued until the entire surface involved has been subjected to this squeezing process. The granulations on the border of the lid are expressed by placing one blade upon the cutaneous surface of the lid. After the expression is completed, the entire surface thoroughly washed with warm water or mild antiseptic solution, and cold compress applied as recommended after grattage of the surface. The sequelæ and after-care are the same as those already mentioned in the preceding operation. In such instances absolute rest is necessary and such patients should be kept in a quiet stall free from flies, (1) because they (flies) deprive the patient of its rest, and (2) they may spread infection (*Rev. XXV., No.* 4, *p.* 268, "*Dissemination of Infectious Diseases by Insects*," *C. F. Dawson, M.D., D.V.S.*)

Curetting.—If the trachomatous growths are confined to groups and involve only a small part of the conjunctival surface, they can be removed with a curette. The eyelid is inverted in the same manner as for other operations upon the conjunctiva, and the granulations curetted with a small curette. The after-treatment is the same as that following grattage and expression.

SURGICAL ITEMS.

House-to-house Operating means house-to-house isolation and for this the room-to-room risks of infection in the hospital are lessened to a minimum degree. Surgical cleanliness is surgical godliness, and every time we forget this we add to our

death rate. Chemical perfumes of varied kinds will never displace soap and hot water judiciously applied in surgery.—(*Edwin Ricketts, International Journal of Surgery.*)

Dr. A. J. Ochsner, Surgeon-in-chief to the Augustena Hospital and St.,Mary's Hospital; Professor of clinical surgery in the College of Physicians and Surgeons, Chicago Ill.; and chairman of Section on Surgery and Anatomy, American Medical Association, 1900-1901, in a clinical lecture published in the *Clinical Review*, refers with special emphasis to the importance of rest and moist antiseptic dressings in the treatment of infected wounds of the extremities, which we consider equally applicable to wounds on the legs of domestic animals.

Wounds of the extremities, such as wire cuts, nail-pricks, punctures and bruises, often cause severe infection of the portion of the leg between the wound and the body. The septic material conveyed from the seat of infection to the lymphatic glands by the lymphatic vessels is scattered while on its course to the glands and infects the structures that surround vessels. At the lymphatic glands septic organisms are arrested and probably attenuated, and when the glands are overtaxed they suppurate and break open by way of least resistance. The lymphatic glands are organs which are intrusted with a function to protect the animal organism against infection and intoxication. The histological and anatomical structure of lymphatic vessels is much the same as veins, and the lymph that accumulates in the periphery is propelled to and from the lymphatic glands by muscular activity. This fact in itself is an important factor in the treatment of wounds of the extremities. If a patient accidentally receives an injury to the foot or leg which cannot be made aseptic to a certainty, it should be "laid up"; absolute rest is absolutely necessary in the treatment of doubtful wounds of the extremities in order to prevent the extension of inflammation. The next important point in the treatment of these injuries is the application of a large, moist antiseptic dressing, consisting of oakum or absorbent cotton rolled with a good strong bandage and a rubber cloth applied around the entire dressing to confine the moisture to the leg, Fresh antiseptic solution is poured into the dressing every two or three hours in order to keep skin of the inflamed portion constantly in contact with the moisture. The dressing must be renewed on the second day and the extremity carefully examined for abscesses which may form, although most cases get well with the formation of secondary abscesses. After the second day the dressing

must be changed every day and the extremity carefully examined. This treatment is continued until the inflammation subsides. No matter how slight the infection may appear at first it should be treated by the application of a large moist antiseptic dressing.

It is impossible to ascertain by the first appearance of a suspicious wound, to what degree of severity it will develop. Severe inflammation in the extremities is often followed by undesirable results, such as abscesses, hypertrophy of connective tissue, and necrosis of tendons, sheath and ligaments.—(*E. M.*)

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By Adolph Eichhorn, D V.S., Bureau of Animal Industry, Milwaukee, Wis.

Vaginismus in a Bitch—Cure Resulting from Resection of the Nervus Pudendus [*Prof. Dr. Parascandolo*].—The vaginismus, or the hyperæsthesia of the external genitals, may result in the spasmodic contraction of the constrictor vaginæ and the other muscles of the pelvic cavity. A case of this kind was observed by P. in a strong Great Dane. As reported by the owner, the animal could not be covered, in spite of being in heat and seeming to have a great desire to receive the male. But at the moment of the entrance of the penis the bitch made efforts to run away, howling violently, attacking the dog and rushing away as if insane, finally collapsing from violent spasms. The convulsions lasted for about 20 minutes. The examination did not show any visible diseased condition of the genitals. On the other hand, a digital examination of the vagina or rectum was only possible when made under the influence of an anæsthetic, as when the vulva was touched it contracted to such an extent that the introduction of the finger seemed impossible. During the examination the bitch awakened too soon from the effect of the anæsthetic, and she would have attacked all present if she had not been tied to the operating table. The spasmodic contraction of the vulva observed at this time was so violent that the examining finger felt as if it was squeezed in a vice. The animal was placed under medical treat

ment, which was tried for a year, but proved unsuccessful. P. therefore decided to resect the nervi pudendi, of which on each side a piece of 2 cm. was extirpated. The wounds were stitched, and healed very rapidly. Four months after the operation the bitch was covered without difficulty, became pregnant, and enjoys since then the best of health.—(*Wochenshr. f. Thierheilk.*)

Anæsthesia by Injecting Cocaine into the Subarachnoidal Space of the Spinal Cord [*A. E. Mettam*].—Bier in Kiel, Seldowitsch in Russia, and Corning in Chicago, described this anæsthatizing method, but without awakening a great interest for the same. Tuffier was first to call the attention of the profession to this method by his articles, and soon was followed by many imitators. The same treated a young man for an inoperatable osteosarcoma of the ilium. For the relief of the intense pain from which the patient suffered, morphine injections were given, which proved entirely effectless. On the other hand, a subarachnoidal injection of cocaine into the spinal cord produced in a few minutes the desired effect. Unfortunately the relief only lasted for two hours. Two days after the injection was repeated with the same good results. Since this trial Tuffier applied this method in over 250 severe operations on different parts of the body situated below the diaphragm. A fine trocar is inserted into the intervertebral space of the last lumbar vertebra, until it reaches the spinal canal, and then further into the subarachnoidal space, when the injection is made of 1 cm. of a 2 per cent. solution of cocaine. The author experimented with this method in veterinary practice, and is very well satisfied with the results obtained. In horses the length of the trocar is to be 10 cm. and 15 mm. in diameter. The place of puncturing is on a line which connects both internal angles of the ilium. The horse hardly moves during the operation; all that is necessary is to apply a twitch and to hold up one foot. In cattle the operation is performed at the same place and with the same trocar; here the operation is considerably easier, as the intervertebral spaces are wider, but more difficult to puncture, as the skin is thicker. Also in dogs the place of operation is found in the same manner. The best way to puncture is with a hollow needle of 6 cm. long and 1 mm. in diameter. The experiments convinced the author that cocaine solution can be safely injected into the spinal cord of animals, producing a satisfactory analgesia. All operations on the hind extremities and in, or outside the ab-

dominal cavity, can be performed in a painless way by using this method (laparotomy, herniotomy, castration, tenotomy, neurectomy, operations on the rectum, uro-genital apparatus, foot, etc.). Doses to produce the desired anæsthesia can be made as follows: for horses and cattle, from 1 to 3 cm., depending on the size; for dogs, 1 cm. of a 2 per cent. cocaine solution.—(*Veterinarius.*)

THE TREATMENT OF PARTURIENT PARESIS WITH IODIDE OF POTASSIUM [*E. Hauptmann*].—The action of iodide of potassium in parturient paresis is proved without any doubt. The mode of administration of this specific remedy, as first recommended by Schmidt-Kolding, has been modified. By the administration of Lugol's solution (1 gm. iodine, 5 gm. iodide of potassium, and 100 gm. sterilized water, 25 gm. of this to be injected into each teat of the mammæ) as used and recommended by Kunnemann, the author recorded 10 cases of bad results from this treatment, in spite of the fact that it was used in every case during the early stages of the disease. Dr. Peter in a recent article advises the introduction of the iodide of potassium directly into the blood circulation. He injected in the time of 10 minutes 10 gm. of iodide of potassium, in 2000 gm. of sterilized water, at the temperature of 38° C. intravenously. This method was successful in several cases. The injection into the mammæ or jugularis requires great care and strict asepsis, which is often, even for the professional man, not practicable. These difficulties caused Hauptmann to experiment on the internal administration of the iodide of potassium, and, as he states, with the best results. The drug was given in a clear solution. In case some should escape into the trachea, it would cause no harm, on account of the complete solubility of the iodide of potassium. By this procedure Hauptmann obtained as good results as by the Schmidt treatment. The action of the iodine manifests itself at the same time as when injected into the mammæ. In case the action is delayed, in eight hours the dose can be repeated, or reduced to half, depending on the circumstances. The dose was about 10 gm. with a slight variation, depending on the weight of the animal, which was accordingly regulated. As heart stimulants digitalis was given in the form of tincture, coffeinum natriosalicylicum, ammonium carbonicum, and alcohol were also used. The further experiments in introducing the iodide of potassium by the way of the uterus, which, as known, has a great power of resorption, proved also to be successful, having the same curative effects and also the same

secondary manifestations (iodism) as when given internally, intramammary or intravenously. As the result of Hauptmann's investigations, he doubts whether the curative action of the iodide of potassium results from the direct contact with the germs by the intramammeal injection as stated by Schmidt. Following is a statistic regarding the results of treating parturient paresis with iodide of potassium in Austria: From July 1, 1899, to June 30, 1900, by 41 county veterinarians of Austria, in 172 cases of milk fever the iodide of potassium treatment was applied; of these there were 123 severe cases, 18 of a middle, and 31 of a light grade. Of these 129 cows 75 per cent. were cured completely; 32 (18.6 per cent.) were slaughtered; death resulting in 11 (6.4 per cent.) cases. By last year's statistics 75 per cent. recovered and 21 per cent. died. After the injection was made of 10 gm. of iodide of potassium in 1 liter of water, before 10 hours' time elapsed, in 76 cases the cows got up; before the 20th hour, 30 more cases, while the other 23 cases required a still longer time. Bad results from the effect of the iodide of potassium could not be observed.—(*Thierärzt. Centralblatt.*)

CONTRIBUTION TO THE TECHNIQUE OF THE DIAGNOSIS OF GLANDERS.—Up to date the most positive diagnosis of glanders is obtained by the test inoculations. The cat is recommended as the cheapest and most easily obtainable animal for inoculation, in which on the third day after the inoculation a swelling and on the fifth to seventh day the typical glandular nodules are to be present. The Russian N. Godzjacky recommends the following procedure: Inoculation of the cat with nasal discharge. On the third day the cat is destroyed, and the bacteriological examination of the internal organs is made (spleen, liver, kidney testicle, etc). From the spleen eight cultures are made on potatoes and on agar. Should the bacteriological examination have a negative result, then a second or even a third cat is to be inoculated. In case the inoculated culture does not give positive results in three days, the second inoculated cat is destroyed and examined as No. 1. Should the first investigation give positive results the diagnosis of glanders is proved on the fifth to seventh day. On the other hand, if the positive signs are only obtained from the examination of the second, eight to 10 days pass away before the results are known. In case of the absence of a nasal discharge, the inocnlation is made with extirpated parts of the inferior maxillary gland.—(*Thierarzt. Centralblatt.*)

FRENCH REVIEW.

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

Woman's Milk for Raising Puppies [*By W. Ben Danow*].—It is not always enough to bring a puppy into the world, even at the expense of the mother's death; there are other necessities which one may have to provide; such was this case. A small English slut had given birth to a puppy, but was taken with metro-peritonitis, which, notwithstanding all strict treatment, proved fatal in a short time. And while the mother was carefully treated, the little fellow received all possible attention in the shape of comfortable bedding of wadding, nursing with bottles, sterilized milk, etc., but all these did not seem to answer. The puppy was restless and constantly snoring in his bed; he refused the food or threw it up, and his life was in danger. Yet, the owner wanted it saved, if possible. First, an artificial hatching room was bought, with sides padded with wadding and kept at an even temperature; the little occupant could then move about without the risk of a change of temperature. For the second and very important part, the feeding, a woman wet nurse was hired. The dog took at once to the teat and sucked. He was thus fed for 70 days. During the time that he was fed, he had some bowel troubles and weakness of the hind legs, which subsided under treatment. He was weaned by degrees, but for the first 25 days of his life he took woman's milk exclusively. Born on the 13th of August, he showed in September an elevation in his weight of 300 grammes, of 100 grammes in October, of 48 in November and 245 in December. At the last time he was weighed he turned the scale at 1482 grammes.—(*Rev. Veter.*)

Intra-Mediastinal Diaphragmatic Hernia in a Cow [*By Mr. Delmer, Alfort*].—This animal had entered the ward of bovine pathology on February 13th and was kept up to March 4th, when she was destroyed for dissection. Her case was unusual as much by the difficulties presented to make a diagnosis as by the nature and extent of the lesions. During her stay in the barns of the ward she presented nothing typical; the only symptom which was daily observed being a chronic tympanites, insufficient to express a true reason for one special form of disease. The appetite was irregular, there was slight constipation, repeated tympanites after each meal; no tuberculosis, no pain of the abdomen on pressure, respiration perfectly

normal, no change in auscultation or percussion, no pain, no disturbance in the circulation. The animal being killed for dissection the following lesions were discovered, explaining at last the cause of the meteorism, but at the same time showing what lesions can sometimes exist in animals and yet fail to give rise to any disturbance of importance. In the diaphragm, the muscular portion remained normal, but the phrenic part was reduced in size to about only a few centimetres in width. There was a rupture through it, in which the œsophagus passed and which measured 25 cent. in height and 20 in width, and contents of the abdomen had passed into the thoracic cavity. Contained in a hernial sac, formed by the layers of the posterior mediastinum, which were separated, there was found the entire mass of the omasum, the three anterior quarters of the reticulum, the anterior extremity of the abomasum, measuring about 10 centimetres, and the lower portion of the liver. The omasum had retained its normal size and contained cakes of dry food between its lamellæ; the reticulum was small and empty, the displaced portion of the liver was atrophied and reduced to its fibrous envelop. The abomasum was normal. The mass of all these organs formed on front of the diaphragm an ovoid lump, related in front to the heart, above to the lungs, behind to the lower portion of the diaphragm, and below to the sternum. It extended laterally from the posterior border of the fourth rib to the anterior of the seventh without, however, coming in contact with their internal faces. The heart was pushed forward and the lungs pressed toward the upper part of the thorax; they were small and more or less affected with interalveolar and subpleural emphysema. All the other organs were healthy.—(*Bullet. de la Soc. Centrale.*)

Double Inguinal Hernia in a Colt—Radical Operation—Recovery [*Dr. A. Fontaine*].—The subject was a colt, aged three and a half months, which was taken one night with colicky pains and was found affected with hernia of both sides. On the left it is as big as a child's head, on the right as large as the fist. On account of the large size of the hernia it is decided to operate at once, and to resort to the *modus operandi* for radical cure, by a process analogous to that used in human surgery. The only possible difficulty was the presence of the testicle and its *gubernaculum* in the protruding mass, and the question then was whether it would be better to remove it or return it into the abdomen. It was decided to amputate it. With all antiseptic precautions as far as sterilization of the instru-

ments, material for dressing, ligatures, and so on, the animal placed under chloroform was operated on, the manipulations being divided into four steps. In the first the skin being disinfected, a longitudinal incision was made on the skin over the most prominent part of the tumor so as to expose the hernial sac, which was raised with forceps. Then the hernia was reduced by returning the contents into the abdominal cavity. In the second step, the sac was opened, the testicle taken hold of and amputated, after a solid silk ligature had been applied on the peduncle which was formed by the gubernaculum and the spermatic blood vessels. The stump, well dried and disinfected, was returned in the abdomen. The sac was then carefully separated from its external attachment and when the dartos appeared free, another strong ligature was applied over it, as high as possible, the sac below excised and the stump pushed back after disinfection. The inguinal opening was then closed in the third step of the operation with continuous suture of catgut quite thick. In the fourth step the skin was closed with separated stitches near to each other. A triangular bandage kept an antiseptic dressing over the wound. Operated on the 13th of August, the wound of the right side was entirely healed on the 30th, the left required a few days longer. This result was certainly very good and the *modus operandi* applied to animals of larger size and older could certainly do as well as the old method of closing the sac with clams. The author suggests in those cases, after the suture of the inguinal opening, in the sewing of the external ring using a needle slightly curved and involving only the aponeurosis of the great oblique.—(*Rec. de Med. Vet.*)

An Epidemy of Horse-pox [*By Dr. Moreau*].—The author has observed a very interesting epidemy which he reported at the Academie de Medécine. The diagnosis had not been made in the patient who was first affected ; the disease was limited to the dorsal face of the hands and fingers and presented all the characters of variola. It seemed that the sick man had a mare, which had been recently covered, and had on the vulva sores similar to those of the owner. The son having taken charge of the mare, while the father was ill, took the disease and had a similar eruption on the hands. An inquiry made in the town revealed the fact that eight other persons had contracted the same trouble and had similar eruptions in caring for mares which had been covered in the same place where an epizooty of horse-pox had existed and which had also presented on

the vulva, on the croup, on the lower part of the legs, on the face and on the skin, pustules of the affection. Out of 200 mares 170 were affected ; there were no deaths. The treatment consisted in washing with lysol solution of the hobbles, the genital organs of the animals and the hands of the assistants. Twenty two men had the disease, but no complications except epitroclean and axillary adenitis. The eruption appeared ordinarily on the fourth day and reached its maximum of development between the eighth and tenth days. Had previous examination been made in this case, the contagion would have been avoided and many days of labor not lost.—(*Bulletin Medical.*)

BELGIAN REVIEW.

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

CONTRIBUTION TO THE STUDY OF TUBERCULOSIS IN THE HORSE [*By Prof. T. Hendrickx*].—In the presence of the incomplete literature relating to equine tuberculosis, the author contributes to the history of that form of the disease by relating two cases which he had the opportunity to follow until the time of death and where the diagnosis was confirmed by post-mortem. In the first case the animal remained ailing for some time, losing flesh, but still able to do his work. Close examination, minute observation, analysis of his urine, test with malleine, had failed to explain his manifestations. Tuberculin had only given a reaction of 1.6°. This test was repeated five times, four days apart, and the reaction was 1.4°, 1.3°, 1.5°, 1.2°, none for the last. After the third injection a new symptom, which had been missing before, made its appearance—the one upon which Nocard and Leclanche insist in a special way to the point of view of diagnosis. An abundant polyuria showed itself and lasted until the time of death. It was only towards the end of the disease that respiratory troubles were observed on auscultation, viz., harsh vesicular murmur, with here and there mucous râles—no cough, no nasal discharge. The emaciated condition at the time of death was surprising. At the post-mortem, acute tuberculous lesions were found in the lungs and chronic tubercles in the spleen, some of which were caseous or calcareous. The splenic glands were also affected. The second case exhibited very nearly the same symptoms—

loss of flesh, capricious appetite, no cough, no nasal discharge, respirations normal. Examination per rectum revealed in the left flank an enormous tumor, as big as a man's head, which was found to be a tuberculous growth of the spleen. A first injection of tuberculine gave a reaction of 2.8°. This was followed by three others, which gave respectively reactions of 1.9°, 1.6°, 0.8°. After the fourth day polyuria then became manifest and lasted until death, which occurred after three weeks. At the autopsy lesions were found in the lungs, identical to those of the first case. The abdominal organs contained only a few caseous tubercules in the liver and right kidney. The spleen weighed 7 kilos 250 grammes, and showed an enormous mass of chronic tuberculous lesions. In other words, in both cases lesions of acute miliary tuberculosis of the lungs were found, with chronic splenic alterations having certainly existed a long time before those of the lungs.—(*Annales de Bruxelles.*)

INCOMPLETE OBSTRUCTION OF STENO'S DUCT [*By M. Hermans*].—An Irish horse presented on a level with the groove of the left lower maxillary bone a tumor, the size of a hen's egg. Running from it in the direction of the parotid there is a hard cord. The tumor is movable, not painful, very hard in its centre; and when it is displaced the hard cord, which is Steno's duct, moves with it. The growth exists since some time, but has recently assumed larger dimensions; yet the horse does not seem troubled by its presence. To all appearances it is a calculus and its removal is indicated. The horse is placed in stocks, the parts thoroughly disinfected, and a careful dissection made over the course of the duct and over the tumor. The canal was then opened, expecting to see the calculus come out, but, instead of it, by direct probing, it is discovered that a regular bony lining is protruding into the cavity of the canal, forming part of its walls. This bony envelope was then extracted. The wound well cleaned, stitched, and covered with iodoformed collodion. The animal was not disturbed by the operation, continued to chew his food, and after two weeks the wound was entirely closed, leaving only a little thickening, which was relieved by frictions of ointment of iodide of potassium and extract of hemlock. As to the starting cause of the bony formation, the author thinks it was the result of a lesion of traumatic nature, probably a bruise against the manger.—(*Annales de Bruxelles.*)

GENERALIZED SARCOMATOSIS IN A COW [*By Prof. T.*

Hendrickx].—Sarcomatous tumors have been observed as primitive lesions in a great number of organs. In many cases they have remained isolated and again frequently have become generalized. There remains an obscure point in their etiology, but without allusion to the parasitic or microbian nature, the author believes that the nature of the soil (the constitution of the animal) has much to do with its growth. Still, there are cases where the effect of a traumatic action cannot be ignored. The following seems to justify this theory. A seven-year-old cow receives a violent bruise on the external angle of the ischium, which is followed by the formation of an hæmatoma. Its resorption being very slow, the tumor was opened and treated by creolin injections. But, instead of disappearing thus, its bottom began to granulate and the spreading tumor increased gradually until it became as big as a man's head. It then forms a rounded enormous tumor, very wide at its base and spreading with the tissues all round. On its outside there open four irregular fissures or fistulas, from which fœtid pus escapes. The tumor is not painful and, as proved by the microscope, is of sarcomatous nature, belonging to the encephaloid variety. Taking the condition of the animal in consideration, operation is decided upon. A circular incision is made above the base and the skin around it dissected to isolate the tumor as much as possible. It is then observed that the neoplasm is not entirely subcutaneous, but branches off under the ischio-tibial muscles. At any rate by careful dissection it is extracted with comparatively very little hæmorrhage; it weighed 16 pounds. The broad operated field is then covered with a pad dipped in phenicated water and held in place by stitches. During the first days, everything seemed to go on very well, but when after a month of attentive treatment the wound was considerably reduced, abnormal granulations of bad nature began to grow, they resisted all forms of treatment, kept up proliferating and after a certain length of time the general condition of the cow appeared to give way, and, notwithstanding heavy feeding, rapid and comple emaciation followed, the animal died. At the post-mortem a very great number of sarcomatous encephaloid tumors, from the size of a pea to that of a hen's egg, were found in every parenchymatous organ, lung, liver, spleen, kidney. At the seat of the operation a comminuted fracture of the external angle of the ischium existed, with a large, loose splinter. The author believes that in this case, the visceral lesions were developed after the ischial tumor, which had for

cause the traumatism the region had received. Could such condition have occurred, had not the animal been under the influence of a special diathesis? Evidently no.—(*Annales de Bruxelles.*)

BIBLIOGRAPHY.

IL GRAN SIMPATICO NELL' UOMO E NEGLI ANIMALE (The great sympathetic in man and animals.) By Prof. F. Boschetti.

Has the last word been said about this important nerve, the *great sympathetic*, and can scientific medical men remain satisfied with all that has already been written about it—and concerning its history, physiology, pathology and therapeutics, made in a comparative point of view—that is, in human as well as veterinary medicine. Dr. F. Boschetti, Professor at the University of Parma, does not believe it; he has made many researches through all the literature which he has found, and has recently brought out an excellent little work, illustrated with plates, where he reviews the entire subject, and from which he draws the following conclusions:

(1) The great sympathetic has to this day been studied but little by anatomists, physiologists, pathologists and practitioners of human medicine. It has almost been entirely ignored in veterinary medicine.

(2) Taking in consideration the works of Lobstein, Eilenberg, Guttmann, White, Trumet, and specially those of De Giovanni, its pathology and clinical history must be revised from the first to the last, in bearing in mind its treble function (vaso-motor, secretory and sensitive), not only as an independent nervous system, but in its relations with the cerebro-spinal system.

(3) The sympathetic has to be studied to the point of view of comparative anatomy, physiology, and pathology in man and animals.

(4) Neurosis in general, neurasthenia in particular, find often their explanation in the great sympathetic, which may be altered primitively by specific causes (genital, intestinal, infections, etc.) or by intellectual or physical excesses. But the first causes of neurosis and of neurasthenia are passions which act upon the cerebro-spinal system and upon the great sympathetic in giving various primitive or secondary forms.

(5) Pharmaceutical therapeuty is but of small and relative value in the pathology of the sympathetic as in pathology in general.

(6) In the actual therapeuty, the first place belongs to physical agents (electrotherapy, hydrotherapy, climatic therapy, etc.) and more specially to cinesitherapy (vibratory or Swedish therapy) and to tremolotherapy.

(7) Tremolotherapy is the most perfect to the scientific point of view, the most beneficial in practice in cinesitherapy of viscera of the nervous system and specially of the great sympathetic.

(8) Opotherapy, with the juice of the great sympathetic, constitutes a new mode of treatment for the nervous system and specially for diseases of the great sympathetic. A. L.

CLINICAL VETERINARY MEDICINE AND SURGERY. By Prof. P. J. Cadiot. Translated by John W. Dollar, M. R. C. V. S.

This is a work of over 600 pages and is divided into parts or sections, the majority of which consist of a series of lectures and clinical demonstrations given by Prof. Cadiot to the veterinary students of the veterinary school of Alfort. The work as a whole is an excellent example of the exact and scientific manner in which that able and painstaking veterinarian performs all of his work. The balance of the work consists of numerous reports of cases met with by Dollar in his practice or taken by him from the files of English veterinary periodicals. In the past, there has been a woeful lack of reference works in the English language on the subject of clinical veterinary medicine and surgery, and the appearance of such works have always been hailed by veterinarians as a distinct addition to the all too meagre literature of our otherwise rapidly advancing science.

The work under consideration is well illustrated with woodcuts, which serves to make clear to the reader the modus operandi of performing the various operations described in the text. The book describes in a clear and concise manner the methods of performing nearly every known surgical operation performed upon domestic animals, and also gives a very full account of the proper therapeutic measures to be carried out after such operations. Among the more important operations described is that of cryptorchidotomy as performed on the horse by the Belgian method; neurectomy of the median and ulnar nerves; Bos's operation of neurectomy for spavin; amputation of the penis, etc., etc. A complete account is given of the history, etiology and treatment of contagious equine pneumonia; hæmoglobinuria (azoturia) of the horse; together with exophthalmic

goitre of the same animal. Eczema in the dog, horse, and tuberculosis in the feline, canine, equine and avian species is treated at length in the work.

In the chapter on tuberculosis of the cat the author gives an interesting account of the various manners in which that animal contracts the disease. The author states that contrary to the general opinion, three-fourths of the cases of tuberculosis among cats are due to infection received from persons suffering from tuberculosis. This statement coincides with my own observations extending over a period of several years, during which time I have observed that in families in which tuberculosis is prevalent, you will almost invariably find tuberculosis to prevail among the feline members of such a family. There has been heretofore a generally accepted opinion among veterinarians that tuberculosis is a rare disease among horses. Prof. Cadiot gives an interesting account of this disease as it exists in the horse. He says: "Bearing in mind the varying forms which tuberculosis may assume in the horse, it is rare that some of the complex assemblage of symptoms fails to suggest the correct diagnosis. The final conclusion is assisted by auscultation, percussion, rectal exploration, and palpation of accessible lymphatic glands, and is confirmed by bacteriological examination, injection of tuberculin, or inoculation." Prof. Cadiot states that the injection of 30 centigrammes of tuberculin is followed in a tuberculous horse by a reaction, which usually attains its maximum about the fifteenth hour, the temperature rising about 2 or 3 degrees C. M. Cadiot also states that the proportion of pulmonary tuberculosis in the horse is about 70 per cent.; tuberculosis of the mesenteric and sublumbar glands and the spleen, about 40 per cent.; of the liver, pleura, and peritoneum, 20 per cent.; of the intestines, 15 per cent. He also states that tuberculosis of the kidneys is rare in horses.

Part V of the work contains an interesting account of the treatment of tuberculosis in the guinea-pig, with the parotid saliva of horses collected aseptically. Although these experimental injections of parotid saliva failed to produce any beneficial therapeutic effects, it nevertheless serves to show with what tireless energy scientific investigators are seeking an antidote that will stay the ravages of the great white plague, tuberculosis. The work also contains an account of the serum treatment of glanders carried out by the author and other European investigators—also an account of his experiments with vanadine used subcutaneously as a therapeutic agent in

the treatment of pneumonia in the horse and dog, also in the abdominal form of influenza, distemper and other forms of wasting diseases—also an account of the author's experience with iodine used intravenously as a therapeutic agent in various diseases.

This work, containing as it does the ripe experience of the author, who may be considered one of the foremost surgeons and clinicians of the day, contains a vast amount of exact scientific information of the utmost value to the busy workaday practitioner, while for the student of either human or comparative medicine, no better book could be placed in their hands, that will give them a clear insight into the many intricate problems with which they are daily confronted.

The paper, printing and binding of the work are all that the most critical could desire, and reflects credit upon the efforts of the firm of W. R. Jenkins. W. J. M.

INDIANA'S NEW VETERINARY LAW.

The following bill (Engrossed Senate Bill No. 291) has become a law, and, while it is not all that could have been desired, the profession of the State feels that it is better than no law, and is a step in the right direction:

A BILL FOR AN ACT ENTITLED AN ACT TO DEFINE VETERINARY MEDICINE AND SURGERY, AND REGULATING THE PRACTICE OF VETERINARY SURGERY OR ANY BRANCH THEREOF IN THE STATE OF INDIANA.

SECTION 1. *Be it enacted by the General Assembly of the State of Indiana*, That the practice of veterinary medicine or surgery within the meaning of this act, shall be any act or operation, the prescribing or giving of medicine for the relief of diseases, injury or accident, for the correction of habit, defective act, deformity or vice, spaying, castration, obstetrics, and dentistry upon any domestic animal.

SEC. 2. The right to use the degree or title veterinarian, veterinary surgeon, doctor of veterinary medicine or surgery, doctor of comparative medicine, or any derivative thereof, shall be limited to graduates of reputable veterinary colleges.

SEC. 3. Any person practicing veterinary medicine or surgery and having a degree from a reputable veterinary college, shall be exempt from jury duty and shall be entitled to expert

witness fees when summoned or required to testify in any civil action when such testimony relates to matters connected with the veterinary profession.

SEC. 4. It shall be unlawful for any person to use any degree or title pertaining to the practice of veterinary medicine or surgery, other than as provided in section two of this act, and any person so doing be subject to a fine of not less than twenty dollars nor more than fifty dollars.

SEC. 5. It shall be unlawful for any person to practice veterinary medicine or surgery, or any branch thereof, who is not a graduate of a reputable veterinary college: *Provided*, That nothing in this act shall apply to persons who have practiced veterinary medicine or surgery in this State for five consecutive years as a livelihood, immediately preceding the passage of this act, as certified to by five freeholders before the county clerk where he resides, nor for the operations of castration, spaying, dehorning, or assistance rendered in emergencies, nor shall it apply to persons practicing upon their own animals. Any person so doing shall be subject to the same penalties as provided in section four.

SEC. 6. All persons qualified under this act to practice veterinary medicine and surgery, shall have the same recognition in prescription work as now accorded to regular practitioners of medicine, by druggists and pharmacists.

SEC. 7. All persons desiring to practice veterinary medicine and surgery in the State of Indiana, shall, within ninety days after the taking effect of this act, file with the clerk of the court of the county in which the applicant resides the necessary evidence as to the qualifications to entitle them to practice according to the provisions of this act. Upon filing such evidence the clerk shall issue to such applicant a certificate to practice in accordance with the provisions of this act, in any county in the State of Indiana, such blank certificates to be furnished by the State Board of Health. The county clerk shall keep a record of all persons in each county qualified to practice according to the provisions of this act. For such services the clerk shall receive from each applicant the sum of one dollar for such registration.

SEC. 8. All laws and parts of laws in conflict with this act are hereby repealed.

MR. SPEAKER: Your Committee on Medicine, Health and Vital Statistics, to which was referred Engrossed Senate Bill No. 291, entitled a bill for an act entitled an act to define vet-

erinary medicine and surgery and regulating the practice of veterinary surgery or any branch thereof in the State of Indiana, introduced by Mr. Keyes, has had the same under consideration, and begs leave to report the same back to the House with the recommendation that said bill be amended by striking out in section two the words, "graduates of reputable veterinary colleges," and insert in lieu thereof the words, "to those holding a license to practice under this act," and by striking out of section three the words, "and shall be entitled to expert witness fees when summoned or required to testify in any civil action when such testimony relates to matters connected with the veterinary profession," and that when so amended that the bill do pass. VAN FLEET, *Chairman.*

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

ANNUAL MEETING SEPTEMBER 3D, 4TH, 5TH, 1901.
ATLANTIC CITY, N. J.

Headquarters.—The headquarters of the association will be at the Hotel Rudolf, Atlantic City, N. J. There are numerous hotels in the immediate vicinity of "The Rudolf," so that guests may be easily suited in style and price. If members and visitors will communicate with Dr. Wm. Herbert Lowe, Chairman of the Committee of Arrangements, 188–190 Ellison Street, Paterson, New Jersey, stating full particulars as to the accommodations they may wish, all arrangements will be made in advance.

Place of Meeting.—The sessions of the association will be held in the large convention hall of the Hotel Rudolf. This hall is light, well ventilated and quiet, being away from the noise of the ocean.

Banquet.—The annual banquet will be held at "The Rudolf" Thursday evening, September 5th, 1901.

The plans for the Atlantic City meeting of the American Veterinary Medical Association are about completed, and the members of the association will feel gratified to learn that such an excellent programme has been prepared for them. The local committee of arrangement has planned to make the sojourn of all who attend this meeting most enjoyable, and are determined that all shall return to their respective homes sing-

ing the praises of Atlantic City. To those who have been there it is all sufficient to name the place,—Atlantic City ; to those who have only heard of its broad walks, its extensive promenade, its wonderful beach and attractive ocean view, the many diversities for the tired mind and weary body, will be made to realize what it means when Atlantic City is spoken of as a pleasure resort after they attend this meeting.

The New Jersey veterinarians are exceedingly anxious that every veterinarian in America shall come to this meeting and enjoy their hospitality ; they are proud of the fact that Atlantic City is located in the State of New Jersey ; they are further proud of the fact that the American Veterinary Association will be their guest at this famous resort, and they extend a hearty invitation to the veterinarians in all America to be their guests on this occasion. Not only is this invitation extended to the veterinarians, but is intended to include wives, daughters and lady friends, special arrangements being planned for their particular entertainment.

The veterinary societies of New York and Pennsylvania have taken a special interest in this meeting, and have joined with their New Jersey *confrères* in an earnest effort to make the Atlantic City meeting the grandest in the history of our association.

RAILROAD RATES.

The railroad companies operating east of Chicago and St. Louis have granted a convention rate of one and one-third fare for our meeting, which insures a low transportation, one which is still lower than the advertised excursion rates offered by the railroads leading into Atlantic City. Members who live west of Buffalo will find it advantageous to purchase their tickets to that city—for a 10 day limit the fare is a trifle more than the fare one way. Tickets with certificates can be secured from Buffalo to Atlantic City ; the return to Buffalo will be at one-third of the regular rate to those who hold certificates. It is possible that at the time of our meeting a still better excursion rate will be in force from Buffalo to Atlantic City, and inquiry should be made concerning same.

THE LITERARY PROGRAMME.

The following is a complete list of papers announced to be read up to date. It is possible that several others may be presented :

"Lameness," by Dr. W. C. Fair, of Cleveland, O.

"Municipal Meat Inspection, with Special Reference to that

in Vogue in Nashville," by Dr. Geo. R. White, of Nashville, Tenn.

"Distemper in the Dog," by Dr. Wm. McEachran, of Windsor, Ont.

"Treatment of Tuberculosis by Salts of Copper," by Dr. D. P. Yonkerman, of Kalamazoo, Mich.

"Contagious Abortion of Cattle," by Dr. G. W. Dunphy, Quincy, Mich.

"Ethics of Veterinary Education," by Dr. R. S. Huidekoper, Philadelphia, Pa.

"Texas Fever in Native S. C. Cattle," by Dr. G. E. Nesom, Clemson College, S. C.

"Skin Disinfection, and Wound Infection," by Dr. V. A. Moore, Ithaca, N. Y.

"Vaccination as a Preventive in Hog Cholera," by Dr. A. T. Peters, Lincoln, Neb.

"Attitude of the Farmer towards the Tuberculin Test," by Dr. Carl W. Gay, Syracuse, N. Y.

"Anthrax and Preventive Inoculation in Louisiana," by Dr. W. H. Dalrymple, Baton Rouge, La.

"The Value of the more Common Surgical Operations on the Horse," by Dr. L. A. Merillat, Chicago, Ill.

"Some Obstructions in the way of Efficient Meat and Milk Inspection," by Dr. C. A. Cary, Auburn, Ala.

"Radical Operation for Bursal Enlargements," by Dr. C. C. Lyford, Minneapolis, Minn.

"The Texas Fever Problem in the South," by Dr. J. C. Robert, Agricultural College, Miss.

"The Diagnosis of Glanders by the Strauss Method," by Dr. Langdon Frothingham, Boston, Mass.

"The Veterinarian on the State Boards of Health," by Dr. S. B. Nelson, Pullman, Wash.

"The Pathological Anatomy and Microscopic Diagnosis of Rabies," by Dr. Adolph Eichhorn, Milwaukee, Wis.

"Stable Hygiene," by Dr, Jas. B. Paige, Amherst, Mass.

The last named paper will be illustrated by some 60 stereopticon views and should prove of the greatest value to all.

During the course of the meeting Dr. A. W. Bitting and Dr. R. A. Craig of Purdue University, Lafayette, Ind., will exhibit a series of 100 photographs on comparative histology.

It is believed that our meeting in Atlantic City offers many things of great value to every veterinarian, and he who attends will be many times repaid for the expense and trouble. True it

is that clients will feel aggrieved if the veterinarian is not at hand when he calls, but he will certainly be pleased when he learns of the veterinarian's return, refreshed in mind and body, and that through association with his brother practitioners from all parts of the continent he is better able to serve the client's interests.

A letter received from Dr. Ruhl states that the West Virginia Association will hold a meeting at Atlantic City during the time of the A. V. M. A. meeting, and that it is expected that a considerable number of West Virginia veterinarians will attend.

Dr. Chas. Higgins writes that a large delegation of Quebec veterinarians will attend the meeting.

SURGICAL CLINIC.

A surgical clinic will follow the close of the regular meeting, commencing at 9.30 o'clock on Friday, September 6th. The clinic will be held on the grounds of "The Rudolf" under cover of a large tent. A series of seats will be so arranged that all present may be privileged to see the details of the operations and demonstrations.

Each clinician will give a short, concise discussion of his respective operation or demonstration.

Friday, September 6.

1. The Classical Demonstration of Major Operations, Dr. John W. Adams, Philadelphia, Pa.
2. Practical Demonstration of the Neurectomies—the neurectomy for cribbing, median, high and low planter, tarsal and metatarsal, Dr. Simon J. J. Harger, Philadelphia, Pa.
3. Ligating the Carotid Artery, Dr. Wm. J. Coates, New York, N. Y.
4. Ridgling Castration, Dr. William B. E. Miller, Camden, N. J.
5. Ovariotomy of the Bitch, Dr. Thos. G. Sherwood, New York, N. Y.
6. Caudal Myotomy, Dr. R. W. McCully, New York, N. Y.
7. Tenotomy of the Flexor Pedis of the Fore and Hind Leg, Dr. Geo. H. Berns, Brooklyn, N. Y.
8. Median Neurectomy, Dr. C. E. Clayton, New York, N. Y.
9. Any Operation that the Committee may select, Dr. A. E. Parry, New York, N. Y.
10. Radical Operation for Bursal Enlargements, Dr. C. C. Lyford, Minneapolis, Minn.

It is expected that a number of operations will be added to this list.

ENTERTAINMENT.

Atlantic City is famous as a seaside resort—with the board walk and piers and their great variety of amusements; trolley rides to surrounding localities; trips to sea and visits to other seaside resorts.; fishing and crabbing; bathing at pleasure, and the Committee of Arrangements is making generous preparation for the reception and entertainment of members, visiting veterinarians, and their families. Tickets will be provided by the committee for the different forms of entertainment and amusement.

Special plans for each day's entertainment will be announced when the meeting is convened.

A local committee of prominent Atlantic City ladies will assist our Ladies' Reception Committee in receiving and entertaining the wives, daughters and friends of members and visitors to the convention. Special facilities will be afforded the ladies for a visit to the shopping districts of Philadelphia.

Dr. E. M. Ranck, A. V. M. A. Resident Secretary of Pennsylvania, and veterinarian for the H. K. Mulford Co. of Philadelphia, extends for the company an invitation to the association to visit its large laboratories and vaccine farms, and will take pleasure in entertaining members while in Philadelphia.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

ANNUAL MEETING AT ITHACA, SEPT. 10 AND 11, 1901.

The programme for the above meeting was not in thorough readiness for publication when this number of the REVIEW was ready for the press. Enough can be given, however, to justify the prediction of Chairman Williams that we are to have a meeting far superior to any ever held within the State.

RAILROAD AND HOTEL ARRANGEMENTS.

One and one-third fares for round trip in Central Traffic Association. Members from outside State can buy Pan-American tickets to Buffalo and thence one and one-third fare tickets to Ithaca and return. Visitors from the West desiring to attend the meeting at Atlantic City and Ithaca can, on their return trip, abandon their round trip ticket at Ithaca and pay full fare thence to Buffalo or proceed to Buffalo, visit the Exposition for two or three days and return to Ithaca on one and one-third fare ticket.

Headquarters will be at Ithaca Hotel and those attending would do well to secure accommodations in advance.

President J. G. Schurman, of Cornell University, expects to be present and welcome the society.

President Roscoe R. Bell will doubtless respond.

TUESDAY, SEPTEMBER 10.

8.30 A. M.— Clinic of 2½ hours preceding the assembling of the convention.

11 A. M.— Business meeting.

Afternoon.— "Metritis," John A. Bell, V.S, Watertown.
"Spaying as a Remedy for Vice in Mares," A. H. Ide, V.S., Lowville.
"Supernumerary Digits in a Foal," J. L. Wilder, Akron.
"Punctured Nail-Wounds of Horses' Feet," Geo. H. Berns, D.V.S., Brooklyn.

8.00 P. M.— Illustrated Lecture — "Specific Etiology," Prof. V. A. Moore, Ithaca.
Entertainment by Faculty N.Y.S.V.C.

WEDNESDAY, SEPTEMBER 11.

8.30 to 11 A. M.—Clinic.

11 A. M.— Election of officers.
Case Report — W. H. Salisbury, Clifton Springs.
"The Recent Outbreak of Catarrhal Influenza," Prof. H. D. Hanson, New York.
Illustrated Lecture —"The Utility Horse," C. D. Morris, V.S., Binghamton.

Afternoon— Case Report—V. A. Moore and S. H. Burnett.
"Some Azoturia Experiences," C. J. Mulvey, Moores.
Case Report, Parturient Apoplexy," C. J. Mulvey, Moores.
"Retained Placenta," W. L. Williams, V.S., Ithaca.
Paper (title not given), J. A. McCrank, Plattsburgh.
Paper (title not given), Pierre A. Fish, Ithaca.

OPERATIONS AT THE CLINICS.

The following surgical procedures have been arranged for and the operators secured :

Median and Post-Radial Neurectomy.
Sciatic and Anterior Tibial Neurectomy.
Trifacial Neurectomy.
Castration of Horse (anæsthesia and asepsis) (duplicated).
Spaying of Bitches (duplicated)
Spaying of Cows (duplicated).
Spaying of Mares.
Application of Plaster of Paris.
Removal of Inferior Molar by removing external alveolar plate.
Many other operations now being arranged for.

WISCONSIN SOCIETY OF VETERINARY GRADUATES.

The annual meeting was called to order in the Capital Building, Madison, at 2.30 P. M., Feb. 5, by the President, Dr. A. H. Hartwig.

At roll-call there were present: Drs. H. A. Arpke, S. Beattie, W. G. Clark, B. L. Clarke, H. P. Clute, S. J. Collins, R. E. Cochrane, C. M. Crane, C. Evans, H. F. Eckert, A. H. Hartwig, R. S. Heer, G. Ed. Leech, E. A. McCullough, E. H. Newton, A. J. Nelson, J. M. O'Reilley, J. F. Roub, D. Roberts, E. D. Roberts, Chas Schmitt, E. R. Flack, S. S. Snyder, L. A. Wright.

Visitors—Farmer Miles, Charleston, Ill.; J. M. Armstrong, Richland Centre; A. L. Fosse, Deerfield; L. M. Jargo, Jefferson; J. S. Phieffer, Franklin; Geo. E. Allen, Fort Atkinson; Wm. J. Malone, Mt. Horeb.

The minutes of semi-annual meeting were read and approved.

On motion, the society adjourned subject to call to the meeting of the State Agricultural Society to listen to Dr. H. P. Clute's paper on "Tuberculosis."

After this the meeting was called to order. The Secretary's report of accounts was read and accepted. The Treasurer's report was read and accepted.

The Secretary reported that Dr. C. A. Woodford, of Rio, had paid his dues in full and requested to withdraw, as he had retired from active practice and recommended that he be placed on the honorary list.

It was moved and seconded that Dr. Woodford's name be placed on the list of honorary members and that the Secretary so advise Dr. Woodford. Carried.

The following applications for membership were received:

Andrew L. Fosse (Ontario Vet. Coll.), Deerfield; Jos. T. Hernshein (Univ. Penn.), Kenosha; J. M. Armstrong (Ontario Vet. Coll.), Richland Centre; L. M. Jargo (Ontario Vet. Coll.), Jefferson; W. S. Powell (McKillip Vet. Coll.), Marshfield; Jos. T. Phieffer (Chicago Vet. Coll.), Franklin; Wm. J. Malone (Chicago Vet. Coll.), Mt. Horeb. The Censors' reporting favorably and it was moved and seconded that the candidates be elected by acclamation. Carried. The above named gentlemen were declared duly elected to membership.

The Secretary reported that Dr. Chas. Kochne had met with an accident with a corn-husking machine, losing his right hand, except his thumb, and recommended that he be placed on the list of honorary members. On motion, Dr. Chas. Kochne was elected an honorary member of the society.

The Secretary read the report of the committee on collections and several letters received from members in arrears.

Dr. Arpke recommended that those several years in arrears be dropped from the list of members.

Dr. Leech thought that back dues could not be collected under present by-laws, and recommended an amendment to Sec. 12, and that discussion be postponed until the evening session. On motion, carried.

Dr. H. P. Clute, chairman of the Committee on Legislation, reported that the committee had held a meeting in Milwaukee with a committee from the State Board of Agriculture and the Experimental Station in regard to the establishment of a Live Stock Sanitary Board and in regard to proposed changes in present State veterinary laws. Discussed by Drs. E. D. Roberts and Leech. On motion the report was accepted.

Dr. Beattie, Secretary of the Committee on Prosecution of Illegal Practitioners, stated that several had retired from business as a result of the work of the committee and Dr. Hartwig. Discussed by Drs. Leech, Clute, Collins and O'Reilley.

Dr. Leech requested the privilege to revert to new business. There being no objection the request was granted and Dr. Leech requested the Secretary to read an extract from the Chicago *Horseman* of Jan. 29, 1901, in regard to the question of giving rank to veterinary surgeons in the U. S. Army and asked that the communication be officially answered. After discussion Dr. D. Roberts moved that a press committee be appointed to answer this communication and any other matter that might be necessary to be placed before the public. Seconded by Dr. Leech. Carried.

Moved to adjourn to 7:30 P. M. Carried.

Evening Session.—The meeting was called to order at 7:30 P. M. by the President.

The subject of collections from those in arrears was taken up and the Secretary was instructed to correspond with those more than four years in arrears and report at the semi-annual meeting. Moved and seconded that those who refuse to pay be suspended at the semi-annual meeting for non-payment of dues. Carried.

Moved by Dr. Leech, and seconded by Dr. Crane, that section 12 be amended to read that no member can withdraw from this society unless his dues be paid in full. Carried.

The President appointed as a Press Committee Drs. G. Ed. Leech, Milwaukee; R. E. Cochrane, Milwaukee; C. Evans, Racine.

Readings of Essays and Communications.—The venerable Farmer Miles, of Charleston, Ill., was introduced by the President and proceeded to tell in his inimitable manner how he came to commence the practice of the specialty which has made his name familiar throughout the world as a castrator of cryptorchids. In describing the operation he divides them into six classes, as follows: No. 1, "flankers"; No. 2, testicle outside abdominal cavity, but so near the inguinal ring that it cannot be felt; No. 3, the testicle and appendices inside the abdomen. This class comprises three out of five of straight cryptorchids; No. 4, tunic and globus minor down, but testicle within the abdominal cavity; No. 5, once straight No. 3, but from some cause an internal hydrocele formed which sometimes contains two or three pints of fluid with the testicle attached to some part of the sack; No. 6, once No. 5, but nature makes an effort to reduce the hydrocele and a hard chury mass is formed having the consistency of a soft orick. The most important part to learn is to study to go slow. In a straight colt six to eight inches of the spermatic cord should be removed with the ecraseur and there will be no trouble with scirrhus cords. A large external opening should be made to provide free drainage. Open this twice daily by inserting the fingers for five days, then allow it to heal. He then proceeded to describe in detail the several operations on the different classes of ridglings. After this he related numerous anecdotes regarding his personal experiences. He has a vast fund of quaint humor and is as interesting as a romance, and it was his aim to make plain all the little secrets of his art that he has prized so highly, and now he is retiring at the age of seventy-

five years and is anxious to benefit the members of the veterinary profession as far as may lie in his power.

On motion a vote of thanks was tendered Farmer Miles for his communications.

It was moved and seconded that Farmer Miles be elected an honorary member of the society. Carried. Farmer Miles was declared elected an honorary member.

Dr. H. F. Eckert read a paper on "Tænia Expansa in the Sheep." Discussed by Drs. Schmitt, Crane, Hartwig, Wright, D. Roberts, Heer, and Leech. On motion the essayist was excused.

Dr. Chas. Schmitt read a paper on "Intussusception and Surgical Treatment," * describing a case occurring in his practice and the operation by means of an appliance resembling the Murphy button. Discussed by Drs. Hartwig, Heer, Leech, E. D. Roberts, Roub, Wright, Arpke and D. Roberts. On motion the essayist was excused.

Dr. E. D. Roberts moved that the society endorse Dr. H. P. Clute for a position in the veterinary corps of the U. S. Army under the Army Reorganization Bill, and the Secretary be instructed to draft a resolution to that effect. This seconded and carried unanimously.

Election of Officers.—The following officers were elected for the ensuing year:

President—C. Evans, Racine;

Vice-President—J. F. Roub, Monroe;

Secretary—W. G. Clark, Marinette;

Treasurer—S. S. Snyder, Cedarburg.

Censors—H. P. Clute, Marinette; B. L. Clarke, Monticello, and R. S. Heer, Platteville.

On motion a vote of thanks was tendered Drs. Hartwig and W. G. Clark for their labors for the society during the past year. Carried.

On motion a vote of thanks was tendered Dr. Beattie for his services in providing for the accommodation of the members at the hotels and arrangements made for the meeting.

After discussion it was decided to meet in Milwaukee during the week of the State Fair, in September.

On motion Drs. D. Roberts, Leech, Ormond, and Cochrane were appointed a committee on arrangements. On motion the society adjourned. W. G. CLARK, *Secretary.*

* Published elsewhere in this number.

CLINICS.

The members met in the stock judging room at the Agricultural Experiment Station, Feb. 6th, at 8:50 A. M.

Farmer Miles, assisted by Drs. Schmitt, Wright, and Collins, spayed two heifers and castrated two cryptorchids.

Dr. H. P. Clute, assisted by Drs. Beattie and Hartwig, performed arytenoideraphy on a driver belonging to Dr. Beattie, afflicted with roaring.

Dr. Beattie reports after a month that the result was successful.

MAINE VETERINARY MEDICAL ASSOCIATION.

A meeting of this association was called to order at 9.10 P. M., at Bar Harbor, July 10, 1901, at Dr. Cleaves' office, with Dr. Joly in the chair. Dr. Pope was chosen Secretary *pro tem.* in the absence of Dr. Freeman. Drs. Joly, L. S. Cleaves, A. W. Cleaves, Blakley, Caldwell, Salley and Pope responded to roll-call.

The committee on clinics reported on cases of last clinic.

Dr. Pope read a paper on "Azoturia," which was discussed at some length.

Dr. Caldwell apologized for being unable to furnish a paper at this meeting.

Some interesting cases were spoken of and discussed.

Voted to hold next meeting in October at Lewiston. Adjourned at 11 P. M. L. POPE, Jr., *Secretary pro tem.*

NEWS AND ITEMS.

DR. J. A. BOVETT, of Chicago, is taking his summer vacation and has left his practice in charge of Dr. C. E. Sayre.

DR. R. C. MOORE, of Kansas City, reports large number of cases of pleurisy during the heated term.

DR. D. E. LUCKEY, State Veterinarian of Missouri, made an official visit to Kansas City, Mo., to investigate an outbreak of glanders, discovered the last week in June.

"I COULD NOT possibly get along without the REVIEW for I use it for a 'handy reference' about as often as I do any text-books."—*N. I. Stringer, D.V.S., Watseka, Ill.*

DR. J. O. LANIGAN, of the Bureau of Animal Industry, Chicago, Ill., spent his vacation on the Lakes, stopping off at Sandusky, Put-in-bay, Cleveland and Buffalo.

DR. CHAS. STEELE, of Kansas City, Mo., has shipped as a

veterinarian in the British transport service from New Orleans to South Africa.

MANY horses are being prostrated with heat in Kansas City, which has endured a heated term for over six weeks, and veterinarians are all busily employed.

MICHIGAN VETERINARIANS COMING TO ATLANTIC CITY.—"Detroit veterinarians are preparing for the September meeting at Atlantic City. I think you will see a fair representation from Michigan."—(*H. F. Palmer, Detroit.*)

A FRIGHTFUL MORTALITY.—The police returns indicate that during the very heated term the latter part of June upwards of 2000 horses were killed or disabled in New York City in six days, most of them succumbing to the awful heat.

A GREAT RECORD.—"Up to the present time over 1500 animals have passed through this treatment [inoculation against Texas fever] under charge of Dr. Francis or his assistants and less than seven per cent. have died."—(*Breeder's Gazette*).

DR. J. L. BURGETT, of Indianola, Iowa, has accepted an appointment in the Bureau of Animal Industry, and is stationed at Chicago, Ill. Dr. Geo. D. Painter of Raymo, Mo., and Dr. Fred. R. Eagle of Kansas City, Kans., have been appointed meat inspectors and assigned to duty in East St. Louis.

Dr. J. E. ELLIS, of Rock Port, Ills., a graduate of the Ontario Veterinary College, class of '98, having been employed by the English Government to take a transport of horses to Port Elizabeth, South Africa, has just returned to his home, when he received a telegram to come at once and take charge of another transport. He will sail at once for South Africa.

DR. A. D. GALBRAITH, Greensburg, Ind., reports that in a case of œdema of the glottis a horse had fallen and was dying from asphyxia, that his breathing had ceased, but that the introduction of a tracheotomy tube and the energetic practice of artificial respiration brought the animal again to his feet, finally making an uneventful recovery.

DR. REPP, of the Veterinary Department of the Iowa State College; Dr. Johnson, of the Iowa State Board of Veterinary Examiners; Dr. Gibson, State Veterinarian of Iowa, and Dr. L. A. Merillat, of the Chicago Veterinary College, were recently called in consultation on an outbreak of glanders among two hundred mules at the Fair View Farm, near Odebott, Iowa.

THE State of Pennsylvania is to be congratulated upon the wisdom of its chief executive in reappointing Prof. Leonard Pearson to the position of State Veterinarian. He is an earnest

worker in behalf of her interests and is at the same time an honor and an example of the veterinary profession, who cannot fail to reflect distinction upon it, and to elevate our position in the minds of stockmen and the public at large.

WE acknowledge receipt of a bulletin of the Louisiana Agricultural Experiment Station, containing report of Dr. W. H. Dalrymple, veterinarian to the Station, on Texas fever, glanders, poisoning of cattle by damaged sweet potatoes, anthrax, black leg, a nervous disease of cattle, a nodular disease of intestines of sheep, etc.

WORSE THAN A RUNAWAY HORSE. — A gasmobile, after traversing the hot streets of Cleveland, Ohio, for two hours, was placed in the storage room where it was usually kept. Without any molestation it exploded, throwing the burning fluid in all directions, and covering an attendant so badly that his life was despaired of at the hospital a few hours later. The building was a total wreck from the flames.

ANTHRAX IN THE MISSISSIPPI DELTA.—Still uglier reports of the havoc wrought by anthrax or charbon continue to come from the Mississippi Delta. It is now said that if its ravages are not checked hardly a mule will be left serviceable by fall, so widespread has it become. Dealers are already looking for supplies to fill the demand that must ensue when colder weather comes.—(*Breeder's Gazette.*)

DR. JOHNSON, an assistant inspector at the Union Stock Yards, Chicago, Ill., was transferred from the Bureau of Animal Industry of the Agricultural Department, to the War Department to act in the capacity of a meat inspector. His duties will consist of inspecting and supervising the preparation of meat products furnished to the War Department by contract. This is a new departure on the line of meat inspection, and the efficiency of Dr. Johnson's work will probably open up a new field for veterinarians.

DR. D. E. SALMON, chief of the Bureau of Animal Industry, contributed an article to the Chicago *Tribune*, for June 30, entitled "Rabies: Its Symptoms and Treatment." He concludes: "The measures necessary for the eradication of rabies are two in number: (1) Destruction of worthless, ownerless, and vagrant dogs; (2) efficient muzzling of all dogs which appear upon the streets or in public places." As a scientific problem, he considers its eradication easy, but as a practical question it is one of the most difficult which confront the sanitarian, the trouble arising not from anything inherent in the work to be

accomplished, but in the opposition of those who own and keep dogs.

VETERINARY AFFAIRS IN MINNESOTA.—The last Minnesota State Legislature treated her veterinarians very handsomely. An appropriation of $25,000 was made for a veterinary building at the Experiment Station; a special bill was passed making an annual appropriation of $19,000 for furthering the veterinary sanitary work of the State Board of Health. Minnesota has now adopted the theory of reimbursement to owners for stock ordered killed on account of infectious disease. This plan is already in operation in case of cattle ordered killed on account of tuberculosis, and will doubtless be extended so as to include other kinds of stock, particularly horses.

"PHYSICIANS AND VETERINARY PRACTICE.—According to a recent decision by an Illinois court, a physician cannot recover for services in the treatment of domestic animals, for the reason that he is not authorized to practice as a veterinarian. The case was one in which a physician who had treated an injured race-horse rendered a bill for $258, was paid $100, and sued for the balance. Veterinarians are not everywhere readily accessible, and as a result of this decision owners of valuable animals may find difficulty in obtaining the services of a physician, which they would doubtless regard as better than none."—(*New York Medical Journal.*) If we cannot endorse the practice of an M.D. treating our patients, we can at least admire the example he sets in the matter of charges.

SLAUGHTERING CATTLE IN HAVANA.—The following extract from *The Lucha*, of Havana, Cuba, relates to Dr. Daniel Le May, Veterinarian to the 7th U. S. Cavalry: "The Mayor then visited the part of the matadero where the cattle are slaughtered, and as it was the hour of the day when cattle are killed, was able to see the act of slaughtering carried out. Mr. D. Le May, chief veterinary surgeon of the island, was in the slaughter-house at the time investigating a complaint received in the sanitary department against those in charge of the slaughter-house. This complaint proved to be false. Mr. Le May told the Mayor that he wished to work in harmony with the municipal authorities, assuring him that whatever recommendation that he would care to make he would previously submit to the consideration of the Ayuntamiento."

DOG FOOD FOR THE ARCTIC EXPEDITION.—Spratt's Patent (America), Limited, whose animal foods are known the world over, were especially gratified in having their product selected

over all competitors for the Baldwin-Zeigler expedition. The following extract from a letter will be of value to those interested in the feeding of dogs: "Referring to the selection of your dog cakes by Mr. Evelyn B. Baldwin, I beg to advise you that my understanding is that these cakes will be used in making his trip over the ice in keeping his dogs in good condition for their final effort to land him at the North Pole. I take pleasure in advising you that while samples were submitted to Mr. Baldwin by every manufacturer in this and other countries, including all known kinds of dog foods, yours were selected on account of their superiority and on account of the success Mr. Baldwin and other Arctic explorers experienced in the former use of your goods. Mr. Baldwin is now about to leave Tromsoe, Norway. I can only add that it would be impossible for me to put Mr. Baldwin's appreciation of your foods in too emphatic a manner. Yours truly, HARRY BALFE, with Austin, Nichols & Co., N. Y. C."

THE LONDON TUBERCULOSIS CONGRESS.—THE AMERICAN VETERINARY PROFESSION WELL REPRESENTED.—A special cablegram to the New York *Herald* of Sunday, July 21, says: "LONDON, Saturday—London is the medical Mecca of the universe to-night. The city is entertaining what is pronounced to be the most distinguished assemblage of the world's physicians and surgeons of modern times brought together to attend the international Tuberculosis Congress, which opens in Queen's Hall on Monday, under royal patronage. America is well to the front. Next to the British representatives accredited to the congress her delegation is the largest here. Among the American representatives are Professor William Osler, of Johns Hopkins University; Dr. Herman Biggs, of New York; Professor George Dock, of the University of Michigan; Professor Liautard, delegate of the American Veterinary Medical Association; Mr. Austin Peters, of the Massachusetts Board of Cattle Commissioners, and seven representatives of the American Climatological Association; Dr. Ravenal, of the Pennsylvania Society for the Prevention of Tuberculosis, and five representatives of the American Tuberculosis Congress. The American Medical Association is officially represented by Dr. Allen T. Haight, of Chicago, and Dr. Judson Doland, of Philadelphia. The Americans read papers, and led discussions in almost every special phase of their congresses' deliberations, and they are expected to monopolize the scientific aspect of cattle tuberculosis, which fills a prominent place in the congress' programme. After the Duke of

Cambridge, in behalf of the King, has formally welcomed the delegates on Tuesday afternoon, Professor Koch, of Berlin, the recognized dean of tuberculosis experts, will open the pathological section of the congress. Many of his professional brethren expect the great discoverer of the phthisis bacilli to announce a sensational consumptive theory rivalling in importance his previous achievements. Professor Brouardel, of Paris, it is also anticipated, will make an important contribution to medical science. Dr. Haight says: "None is able to forecast what tremendous possibilities exist in this unprecedented gathering of medical wise men. So far as I am able to judge the sensational developments will be along the line of prevention rather than the cure of tuberculosis, particularly the prevention of the disease in cows and other cattle the source of food supplies. The programme reflects marked credit on the promoters of the congress. Not only have they secured the presence of delegates from fifteen countries outside the United Kingdom, but they have provided for the expression of ideas equally diversified. One hesitates to predict in these days of daily discovery what such a conclave may evolve. As the great caterer of the world America looms large in the scientific investigation of the causes and effects of tuberculosis. My fellow delegates represent the brainiest thought of the country on the particular subject which the congress is called upon to consider. I am certain that they will give a good account of themselves when the roll of ideas is called."

AMERICAN VETERINARY REVIEW.

SEPTEMBER, 1901.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

ELECTROCUTION.—In the May issue of the REVIEW I gave the information that a series of experiments had been started under the auspices of the *Société de Médecine Veterinaire Pratique* to observe the general manifestations exhibited by horses which had received a stroke from a continuous current of electricity, to establish the essential conditions to kill the animal and to find out the nature and the extent of the lesions which would be found at post-mortem.

Those experiments have been carried out, and the report has been made by Mr. L. Rossignol, secretary of the committee which regulated the whole work.

From this report, I send extracts, which are published in this issue, and which I hope will prove interesting to our readers.

The experiments have shown that some special conditions are required for a horse to be killed by even a very strong current—and that is that *contact should remain established* for some time with the poles giving the electric current. If on the contrary the contact is arrested immediately after the stroke has been received death will not only not take place, but the animal will rapidly recuperate from the effect ; and from this an important indication presents itself, viz. : *when a horse falls down and remains down, in contact with the pole, he must be*

dragged away from it at once, with all care, to avoid danger from the electric current.

I was personally very much interested in witnessing the first effect of the electric stroke. I have had an opportunity to see two horses who had been struck with lightning. One had recuperated from it, although he remained ailing for some time with paralytic effects, but in the other I saw death; he was in the position in which he had fallen at the time he was struck, viz., *with his fore legs flexed under him, his hind ones stretched backward and apart, and with the neck stiffened, the head was powerfully flexed upon it and the teeth were dug into the ground as if gnawing it with rage.* This very condition I observed again in the three animals that were knocked down by the electric current.

The result of the post-mortem has not been as satisfactory as had been expected. Nothing very positive, nothing pathognomonic could be found, but, as remarked by several of those present, this absence of characteristic lesions can be of great assistance in establishing an almost positive diagnosis as to the cause of death. Let us, for instance, have an animal who will present typical lesions of some form of other disease, and let it be exposed to an electric current insufficient to kill him on the spot; if his death occurs but a few hours or even a few days after, the electricity could not be considered as the direct cause of death. It is doubtful if it would be, even if he had died on the spot. But, again, let an animal receive an electric stroke, fall on the pole, remain in contact with it and die; the fact that there are no characteristic lesions of any kind, all other organs being sound, will be a strong, yes, a positive evidence, that electricity has been the cause of the fatality.

These results thus obtained by those experiments are of great value, specially in the cases where legal disputes are likely to occur in relation to the responsibility for the death of the animal, and I think they will prove of great advantage to veterinarians who as experts may be called to give their scientific testimony in such cases.

AZOTURIA—NEW TREATMENT.—Of all the diseases which practitioners hate to be called to treat, there is probably none which is more distasteful than azoturia. The forms of treatment which are resorted to are generally so unsatisfactory and the sequelæ or convalescence sometimes so severe and tedious that anything new which is likely to give better results must always be of interest. It is for that reason that I record the new treatment which I heard discussed at a recent meeting of one of the veterinary societies in Paris, after the reading of a paper on the subject presented by MM. Guillemard and Chigot.

This treatment, besides the general bleeding and revulsive frictions on the back, usually resorted to in French practice, consists principally in the administration subcutaneously of bromhydrate of arecoline, given in subcutaneous injections at the dose of 8 centigrammes, renewed twice a day. By this treatment the authors claimed four recoveries out of four cases occurring in a space of time varying between four and nine days.

If one takes in consideration that hæmoglobinuria is one of the diseases which occasion proportionately the greatest mortality, and against which in most cases the veterinarian remains powerless, such results, small as they may be in number, justify a fair trial. By its properties as a diaphoretic and by its action upon the intestinal tract, bromhydrate of arecoline is certainly indicated, and may prove very satisfactory. I do not know if bleeding and counter-irritation can be considered as good adjuncts, and I believe that in the States these are rather ignored, but if the arecoline salt has the power claimed for it by the French authors, there is no doubt that it can be combined to advantage with the milder forms which we use in America instead of venesection and counter-irritation, which give rise to so much struggling on the part of a poor paralytic animal, which by them is soon unnerved, exhausted, and too often covered with enormous bed sores.

* * *

RABIES.—In their excellent work, "Maladies Contagieuses,"

Nocard and Leclainche write: "Contagion of rabies occurring always by inoculation of the saliva, it was of the greatest importance to establish at what moment of the evolution of the disease the saliva taken from the mouth is virulent. The inquiries of Nocard and Roux have shown that saliva is always virulent, 24 hours and sometimes 48 before the apparition of any change in the aspect of the dog. An animal may thus have all the external signs of health, eat, be lively, and yet carry in its mouth the virus of rabies."

Those facts are now well admitted. But a rather complicated question has just been asked in the *Progrès Vétérinaire* in relation to a peculiar case which is concisely related as follows: A young man was bitten by a dog which thirty-six hours before had himself been bitten by another, undoubtedly mad. The wound was a simple ecchymosis without cutaneous wound; the bite had been made through his pants, and there was no inoculation of saliva.

Was it necessary for the man to place himself under Pasteur antirabid treatment?

Not in his case—however, supposing that the tooth had penetrated the skin, what was the decision to take?

Two specialists who were consulted answered in the negative, on the ground that at the time the dog which did the biting was not in a rabid state, as long as that does not occur before the 12th day. But, yet, what had taken place during the 36 hours passed between the time he had been bitten and the moment he attacked the young man?

And then the question is put: Can it be said that 10 days after having been bitten, a dog cannot transmit the disease by biting? It would be risky. And, then, what after eight, after four, after two days, after *36 hours*, as it was in this case?

The question has been answered in the negative by Pasteur Institute. "And thus," say the writers of the article in the *Progrès*, "we do not object to be of the same opinion, and still we cannot avoid thinking that 10 minutes after inoculation the virus has penetrated the economy, and that accordingly in

the case where there would be a deep wound, positive inoculation of the saliva of a dog which is not in a rabid state but certainly carries in him the germs of the disease, it would be prudent to resort to the Pasteur treatment."

At any rate, the precaution could not be otherwise than wise. A. L.

THE CONGRESS ON TUBERCULOSIS.

The Congress on Tuberculosis was opened July 22 with great *éclat* before a very large number of members, adherents and delegates from all over the world. Out of some hundred and fifty foreign delegates the United States had sent thirty-eight, who represented the whole country, coming from the general government, Illinois, Michigan, Wisconsin, Massachusetts, Pennsylvania, Mississippi and New York. The American Veterinary Medical Association was the only registered veterinary organization represented from any country. The programme laid out by the Committee had been well prepared, and the work of the various sections was readily entered into by each, and reports presented and thoroughly discussed. The paper of Professor Dewar on "The Diagnosis of Tuberculosis in Animals During Life," was ably presented, and followed by an animated discussion, which occupied the morning of the second day of the Congress; and in the afternoon of the same day the great event of the meeting took place. It was the learned lecture of Professor Koch, which not only created a great sensation in Congress, but will no doubt give rise to important researches, and may for the present occasion some trouble to those who are engaged in the execution of the sanitary measures against tuberculosis.

No doubt our readers know already what has been the theme of the lecture of the eminent professor: "Human tuberculosis cannot be transmitted to cattle." Such is his conclusion. To make an analysis of this beautiful lecture and of the argument used by the professor would take more space than the REVIEW has at its present command. It will be better for our readers

to read the whole of it, as we reprint it from one of the advanced sheets obtained at the Congress.

Let me say, however, that the declaration of Professor Koch has failed to have the approval of many, presented as it was, and that it was not received with the conviction that the name of the great German savant would seem to have warranted.

Professor Nocard, of Alfort, replied to him, and before accepting the conclusions, which were upset by the simple exception of the abdominal tuberculosis of children, or *tabes mesenterica*, which is due to infection from tuberculous milk, he would recommend further inquiry. His remarks were loudly applauded.

Professor Bang, of Copenhagen, and Professor S. Wadhead, of Cambridge, spoke also in the same sense, and the excellent paper that Professor McFadyean read at a subsequent meeting was a powerful argument, which, with the accuracy and carefully made statements that are advanced by the author, will no doubt upset the apparent value of Professor Koch's new departure, if the many positive facts already existing were insufficient. We all know that Chauveau has proved by contradictory experiments that bovines can develop tuberculosis when lesions of the acute disease of man are fed to them. As Mr. Wm. Hunting remarks in the *Veterinary Record*, the present position relating to tuberculosis will remind one of the long controversy as to the identity of variola and vaccinia.

Notwithstanding, it is evident that the practical work and the execution of the sanitary measures which are taken all over the world cannot and will not be modified for the present, that it will require some time before the conclusions of the further inquiries demanded by such men as Nocard, Bang, McFadyean, and others, will be known. Our readers will no doubt enjoy the papers relating to this subject, and which I have sent first of all as the most interesting to veterinarians. A. L.

THE trotting record of the world was lowered the first part of August to 2.02¼ by the stallion Cresceus.

A GREETING FOR SEPTEMBER AND A PROMISE FOR OCTOBER.

The present month has by common consent and general adaptability been set aside in the veterinary calendar as the season for those delightful gatherings of the veterinary profession known as "association meetings." For the year 1901 they promise to be more than ever fraught with pleasure and profit to their adherents, and we predict greater numbers in attendance than ever before. The exactions of general practice during the past year have exceeded any other period within our memory, and the abundant prosperity of the members throughout the country is a sure indication that they deserve a respite from its routine, while the autumnal gatherings offer so much of profit and pleasure that it has become a custom to unite the delights of the annual outing and the benefits of the association meetings into one grand occasion.

We, therefore, extend our greetings to the veterinary hosts everywhere, and trust that September, 1901, may be a red-letter month for the good that shall be accomplished, not only to professional advancement, but to personal happiness and health.

The REVIEW promises to all its readers who for one cause or another cannot avail themselves of these great opportunities, that they shall have the next best thing—a faithful record of all that transpires at the various meetings.

PASSING OF THE AUTOMOBILE.—As has been foreshadowed in the REVIEW for some time, the final crash has come. The General Carriage Company, of New York, which is the parent automobile organization of this country, and which came into existence some years ago with threats that their advent would soon result in an ordinance prohibiting the use of horses in the cities, has gone the way of its many offshoots in other cities, and has had a receiver appointed to wind up its business. It is not necessary to comment on the state of its finances, when the court required only a $5000 bond of this adjuster, while millions were

the figures paid in by the stockholders. This, we believe, is the last of the companies organized for public transportation, and its demise is without any other direct cause than inefficiency of the machine—which includes the features of expense, unreliability, and a failure of the public to patronize them. As a fad among the American "nobility," and as an advertisement for enterprising merchants, etc., they are still being used; but as a formidable rival of the horse as a means of transportation for business or pleasure, the probability grows less as familiarity with them increases.

THEY do things handsomely in Philadelphia, and surely the hard-working veterinarian has something to live for in the Keystone State. Our esteemed contemporary, the *Journal of Comparative Medicine*, appreciating the generous support of the profession of the State, tendered its constituency a delightful banquet at the late annual meeting of the State Association. In turn, the members, as a slight token of the esteem in which the editor of that journal is held by them, presented him with a handsome and costly dinner set of silver, and Dr. Pearson, as spokesman for his fellow-members, said all sorts of nice things about the recipient. The best of it is that Brother Hoskins deserves it all.

WE very much regret to note a backward step in the Connecticut Agricultural College, whereby it appears that the special purpose which brought the college into existence in 1881 through the philanthropy of Augustus Storrs—the advancement of the science of agriculture—is to be relegated to make room for pet theories of its President. In consequence four professors have resigned, among them that earnest and capable veterinarian, Nelson S. Mayo, M. S., D. V. M., professor of anatomy, physiology and veterinary science.

THE REVIEW will print another series of papers read at the Tuberculosis Congress in the October number.

ORIGINAL ARTICLES.

ELECTROCUTION IN HORSES.

EXTRACTED FROM THE REPORT OF L. ROSSIGNOL,* BY PROF. A. LIAUTARD.

These experiments were divided into two series and carried out at one of the plants of electricity in the suburbs of Paris, before a large body of veterinarians.

The director of the plant had arranged a system of short cast-iron poles united two by two by wires going to the powerful current furnished by the dynamos of the plant. These poles were encased at equal distances into wood beams about 1 metre 20 apart. The wires were connected with a commutator and a voltmeter, allowing perfect measurement of the distributed current. The poles of one wood beam represented the negative, those of the other the positive electric pole.

FIRST EXPERIMENT.

Two horses had been provided to be experimented upon. The first was an aged roan gelding, which had chronic laminitis and carried leather soles on his front feet. He was placed in such a manner that one hind foot rested well on one of the poles. 550 volts were made to pass through the arranged receivers. But the horse received only a weak shock, jumped forwards and ran away from the action of the current.

Two new attempts made in the same conditions were followed by the same result; at the third, however, a spark of electricity was seen at the iron pole where the contact had taken place. The animal suddenly flexed his fore legs, turned two or three times over and then resumed its standing position. For a few minutes he was much excited, had violent muscular tremblings, strong beatings of the heart, 51 pulsations to a minute. Then quite rapidly everything passed off.

*(*Presse Vétérinaire*, March and April, 1901.)

A fourth discharge was also negative.

At the fifth the current was raised to 600 volts; the horse flexed his fore parts, made a jump and stopped after walking a few steps as if nothing had taken place.

A sixth trial with 700 volts gave no result.

The second horse was then brought forward for experiment: it was a little stallion, in fair condition.

One of the fore feet was placed on the cast-iron pole and 550 volts sent through the current. The animal received a powerful shock, flexed down on his fore quarters, but his foot having left the electrified pole, he rose immediately. Examined a few moments after, he presented nothing abnormal; his pulsations were slow, 42 to the minute, his heart beat quietly. His nervous system did not seem excited.

With all those failures, the first arrangement of the cast-iron poles was modified and each pair of poles was covered with a piece of sheet iron to widen the surface of contact, and the animals were placed in such a manner that both fore feet were resting on one piece and the hind feet on the other.

The little stallion being in place, a continuous current of 550 volts was sent; all of a sudden, the horse fell on his side, remaining a few seconds on the plates of sheet iron, sparks jumping quite numerously. The shock was considered as fatal. The horse, however, succeeded in rising, made several wild jumps, then stopped and recovered quite rapidly. Yet the mucous membranes remained pale, the beatings of the heart, at first bounding, soon became quiet—the pulse was 80 a minute.

Then the feet (front and hind), the belly and the inside of the thighs were washed and kept moist. The animal was then placed in the same position, the fore feet on one plate, the hind feet on the other and a 550 volts current established. This time the shock was frightful, the animal fell down in a mass, the four legs apart, all the muscles contracted, he remaining in sternal decubitus, resting on the abdomen, sternum and inferior extremity of the head. The muscular contractions became more and more powerful; the neck was stiff, the teeth were

gnawing in the ground, and at last after a few minutes he fell on the right side, the arm and point of the shoulder resting upon one of the plates of the sheet iron. Death occurred rapidly after a bulbar life of a few minutes. Respiration, which had completely stopped at the moment of the electric shock, seemed to return. A few deep inspirations occurred which gradually disappeared.

At that moment it was noticed that the plates of sheet iron, which were still receiving electricity, were burning the wooden beams over which they had been thrown.

On examining the cadaver it was found that the conjunctivæ were a little injected, pale yellow in color, while the buccal mucous membrane was pale and entirely bloodless; the tongue, which was slightly blackish, was hanging from the right commissure; there were marks of burning at the point of the right shoulder, near the arm, over the place of the surcingle, and towards the abdomen; the hairs were singed, easily pulled away and exposed a slightly congested dermis under them.

The experiment was then tried again on the first horse. Same position and same electric current. Here again the shock seemed deadly, the horse fell with his legs apart, remained on his sternum and abdomen for a few moments, then dropped on his right side and struggled violently; his legs struck several times the plates of iron; at one moment sparks were noticed; the horse received another violent shock and suddenly got up, walked a few steps as if nothing had happened and stopped. He was much excited, had convulsive tremblings of the muscles, violent beatings of the heart; but all of which subsided shortly.

He was then placed over the plates for another shock. As soon as the same current passed, he fell down on his knees and on his hocks, remained in that position a few seconds, his legs stiff, but yet less tetanic than at the first time; finally he dropped on the right side, struggled violently with his feet, displacing the sheets of iron which came in contact, a short current took

place, a spark jumped towards the commutator, the current was stopped, but too late for the poor horse to be brought back to life. Respiration, which at first had stopped, returned deep, abdominal, at intervals more and more apart, the mucous membranes became pale, the pulse passed away; he was dead.

The two cadavers were removed to Alfort to have the autopsies made as minutely as possible. When they arrived at the school the cadavers presented a rigidity rather remarkable for its rapid appearance; the external mucous membranes were slightly cyanotic.

The first horse showed marks of beginning of burnings, but without subcutaneous ecchymosis. The peritoneal cavity and the peritoneum were normal; nothing peculiar in the stomach; the small intestines showed remarkable lesions; most of its circumvolutions were sound, yellowish in coloration, with numerous folds of the mucous membrane, but in many, on the contrary, the coats of the organ were soft, thin, without folds, and with a rosy coloration due to the dilatation of the capillaries. The paralysis seemed to have involved not only the blood vessels, but also the unstriated muscles of the coats of the organ. The large colon, the cæcum, the floating colon, the mesenteric glands were normal, as well as the liver. Pancreas, superenal capsules; the spleen only was perhaps a little bigger than usual.

The left kidney was gorged with blood, while the right was normal—probably this was due to the position the horse laid in when transported to Alfort.

In the thoracic cavity the costal pleura was normal; the visceral was reddened by alteration of the blood. Nothing peculiar in the pulmonary parenchyma.

The heart had stopped in diastole, and was gorged with blood. There were few petechiæ under the pericardium.

The blood was asphyxic; bluish, dark, viscous, coagulates no more, does not redden to the air. That explains the red tint of almost all the parenchymas.

Towards the nervous system, there was nothing to notice, notwithstanding a most careful dissection of the marrow and of

the brain. The medullary and cerebral substances were absolutely normal, the cephalo-rachidian fluid had its normal coloration; the choroid plexuses were red, as they are in all horses which have not been bled.

The second horse presented nothing on the peritoneum, liver, spleen and superenal capsules. On the superior face of the right kidney there exists a wide ecchymosis, but its parenchyma was healthy; also the left kidney.

The stomach was normal. The small intestines presented, like the first, lesions quite extensive; circumvolutions, 50 centimeters in length, were found between sound parts of the organ; they had their walls thinned out, rosy in color, with soft unfolded mucous membranes. All the other organs were healthy.

In the thorax the parietal pleura was healthy, the visceral presented a few ecchymoses; there were some also on the external face of the pericardium, while the visceral showed some petechiæ. Very slight lesions existed on the endocardium; on the mitral valve were ecchymoses.

The blood had all the characters of asphyxic blood. In the nervous system nothing, nor on the meninges, the medullary or encephalic structures; the choroid plexuses were slightly congested.

Altogether, very limited lesions, truly visible only on the small intestines and the blood.

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SECOND EXPERIMENT.

In this experiment it was decided by the Committee to (1) kill one horse with a current of 550 to 600 volts, and make the post-mortem 36 or 48 hours after, and (2) expose another to a current more and more severe until life was in danger, and then keep him for several weeks.

Somewhat similar preparations to those used in the first experiment being made, the first animal, an aged bay mare, was first exposed to a current of 100 volts. She flexed the knees suddenly when the shock struck her, made a jump sideways and walked off. With 200 volts she again trembled on her knees,

stretched up and walked away. At that moment the pulse was thready, the beating of the heart accelerated, the respiration quite fast, 34 to a minute.

At 300 volts the same fall and quick getting up occurred.

At 400 the shock was more severe; the mare dropped on her fore quarters, on her knees, then on the left side, and again got up with one jump. The respiration was very accelerated (42 a minute), pulse almost imperceptible, and the beatings of the heart very tumultuous.

After waiting some time for the mare to recover she was again placed on the plates and received a shock of 550 volts. Suddenly she flexed on her four legs, dropping on her knees and her hocks extended; after a few seconds she got up. The respiration was then very fast (46 a minute); it was deep and abdominal; the pulse was imperceptible, the beatings of the heart very irregular; the temperature was 40°3.

The animal was allowed a lapse of rest, and the second animal brought to the plates.

It was a bay mare, which was first exposed to a current of 550 volts. The shock was rather severe; the animal pitched forward, but recuperated her equilibrium quickly.

A second shock was much more violent, so much so that it was thought it would be fatal; the animal dropped suddenly on her knees, rolled on her right side, struggled violently, trying to get rid of the contact of the plates, but in vain. Suddenly the respiration stopped, the extremities became stiff, the muscles appeared tetanic; but soon the respiration returned quick and accelerated, the legs struggled again, and the contact from the plates being broken up, the mare after a few efforts got up.

The pulse was then quick (68), full, beating of the heart very strong, respiration accelerated. For some time muscular tremblings of the trunk and legs were manifested, and then everything went back to normal condition. There were marks of burns on the right fore fetlock.

The very severe electrization saved the life of the animal

or the present. It was decided to keep her up. She was sent to the ward of physiology for observation.

The first subject was then taken up again. Her abdomen and legs were wet with water, and after being placed on the plates she was exposed to a current of 550 volts. She fell suddenly, pitching head forward, but her feet having left the plate she was able to get up at once. Two other attempts had the same result.

At the fourth trial, she received 650 volts. Again this time the fall was very sudden, and took place in such a manner that the animal escaped a long contact with the plates, and was able to get up by one jump.

At a fifth trial, the animal was placed somewhat differently, the hind feet resting on the plates. With a current of 550 volts, the hocks flexed, the animal dropped on the left side, with the croup on the positive plate and the chest on the negative. The struggles became very rapid and violent, the muscles became tetanic, a general spasm took place, the legs were stiff and stretched, respiration stopped for a few moments, then returned rapid and costal. A strong odor of burning was followed by the apparition of smoke. There was micturation, the labial mucous membrane and the conjunctivæ became pale, the pituitary still remaining rosy. Death seemed near at hand and the current was stopped. The mare still showed her vitality. She seemed to be able to overcome the terrible trial she had just passed through. The pulse became stronger, very rapid (120), respiration quieter (80), but the hind quarters remained paralyzed. Vainly did she struggle to get up. After a few moments she was dragged over the positive plate again, and the current reëstablished; death occurred rapidly. Her cadaver was taken to Alfort and the post-mortem made 48 hours after.

The cadaver was very tympanitic. Serosity was escaping from the nostrils, mouth and anus. The visible mucous membranes were pale. There were marks of burns on the left side, at the elbow and stifle.

On opening the animal, there was a violent odor of putre-

faction; the change being very rapid and many of the lesions found must be attributed to it.

The blood was black, partly coagulated, the clots being brown, soft and diffluent. The serum was colored by the hæmoglobin. The various serosities were also colored red by it. The muscles were pale, discolored. In the abdomen only lesions of putrefaction were observed.

The intestinal mucous membrane was greyish and without folds. All the organs presented lesions of putrefactive conditions.

In the chest, the lungs, the bronchial lymphatic glands, the myocardium and the endocardium present also indications of putrefying structures.

The nervous system is softened. In other words, all the lesions found in the first post-mortems are no longer visible; hence, the indications of making the post-mortems as early as possible.

The other animal of that experiment which went to the ward of physiology at Alfort, recovered entirely, and was destroyed several weeks after for dissecting classes.

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CONCLUSIONS.

By these experiments, it is demonstrated that the lesions produced by electricity are very mild, almost insignificant. Death taking place by asphyxia, alterations of the blood and mild bloody effusions under the serous membranes and few intestinal lesions are all which may be found. All the other organs, and especially the nervous system, remain sound.

But this absence of lesions cannot embarrass the expert called to decide as to the cause of death. On the contrary, the *absence* of *all* specific lesions is a proof which will be corroborated by the reports of those who may have witnessed the accident of electrocution.

They have also proved that to kill a horse with electric current, the sudden shock of even 650 volts is not sufficient; what is necessary is that the fall of the horse must take place over

the electric pole of the track in such a manner that the continuity of the electric current through the body of the animal exists; and, again, if, as it has been proved, horses placed in different conditions have been killed suddenly by the traumatism of the shock only, the death can only be attributed to a special physiological condition due to excess of work (very accelerated respiration and circulation, abundant perspiration, etc., etc.).

Finally, when such accidents occur in the street, if the animal can be dragged off from the contact with the electric pole, there is great chances that his life can be saved, as the sequelæ of even a very severe electrization are generally harmless. Of course, the dragging of the animal must be done with care to avoid danger.

BOVINE TUBERCULOSIS.

PERIOD OF INCUBATION—AGE OF LESIONS—EXPERIMENTAL RESEARCHES.

By MM. Nocard and Rossignol.

Translated for the Review by J. F. Winchester, D. V. S., Lawrence, Mass.

(*Concluded from page 326.*)

FOURTH LOT, COW 9—INTRAVEINAL INOCULATION.

The evening of the inoculation at 7 o'clock this cow was affected, short breathing, dejection, loss of appetite and elevation of temperature. Until May 22 hyperthermy had been intermittent, but from that date the temperature remained high with slight variation.

The infection was very marked the 14th day, when she manifested very plain symptoms. The head is turned on the neck, the physiognomy anxious, the nostrils are dilated, the respiration is short, 60 a minute; the respiratory sounds remain, a capricious appetite, a frequent short failing cough. The following days the same symptoms became more pronounced, the prostration is very great and the animal is almost constantly lying down.

May 30 the animal No. 9 fell in a veritable marasmus and physiological helplessness; she has lost considerable flesh, her

abdomen is tucked up; respirations 70 and pulsation 100 per minute, trembling of muscles of the thighs and shoulders, the respirations now are plaintive and interrupted.

She has not eaten since June 3, and June 6 during the night she died.

Autopsy.

All the viscera, lung, liver, spleen, kidney, udder, lymphatics, bony marrow, are infiltrated with an incredible quantity of extremely fine nodules, which when cut through give to the finger a gritty sensation. It is a typical case of acute miliary tuberculosis. The histological examination of the pulmonary tissue shows it to be formed almost exclusively of embryonic nodules, being hardly one half millimeter in diameter; so numerous are they and so close together that the permeable tissue between them is hardly equal to the space which they themselves occupy. The central cells of the nodules are in process of caseification. They are infiltrated with Koch's bacilli, less numerous than one would expect.

FIFTH LOT, COWS 10 AND 11—INTRA-MAMMARY INJECTION OF TUBERCULAR EMULSION.

The 10th of May, the second day after the injection, the teats of cow No. 10 are tumefied, hot, sensitive to touch, the milking becomes difficult and painful and gives a clotty curdled milk, and in the evening a slight hyperthermy, 39°.1; the other teats are normal.

May 11, 12, 13, and 14 the mammæ increase in volume and sensitiveness; the corresponding teats are hard and turgescent. It is with difficulty that a few drops of curdled milk are drawn from the diseased teats. The temperature remains between 40° and 40°.5 until the 14th, when the animals were subjected to the first tuberculin test, but it was without effect, the temperature not increasing during the 15th of May. On that day, however, this cow is dejected, has an arched back, and is at the end of her chain when standing; but she prefers to lie down, eats but very little, and her teats have increased in volume.

Until May 20 her condition is stationary, her appetite always

capricious, has improved some. She was tested this day, using 3 cc. of tuberculin, but it is not followed by a reaction.

The evening of May 22 the temperature is 39°.8, respirations 36 a minute, and the milk in the diseased quarters is not only curdled, but purulent. There is no appreciable change to May 26 other than loss of flesh, and that day she was again submitted to the tuberculin test, but no reaction is shown. Contrarily, the next day, 27th, the temperature goes down; 5.30 A. M., 38°.5; 8.30, 38°.5; 11.30, 38°.9; at 2.30 P. M., 38°.7. The temperature the 28th had gone up and remained steady until slaughtered.

On the 29th there was an œdema in front of the udder, which increased very fast. In the meantime the respirations had increased to 42 to the minute, and a cough is heard now and then.

This cow was again subjected to the tuberculin test June 1st, when she had hyperthermy, and she maintained her high temperature the 2d. On that day her general condition has become still more serious, wasted, staggering walk, accelerated respiration, 30 a minute, veinal pulse very plain on the jugular, 100 per minute, the œdema extending to the sternum.

The symptoms kept increasing in severity until the 6th and death seemed to be near.

The œdema has decreased on the 8th, mastitis is found only in the infected quarters.

On the 9th this animal was sent to Alfort, but had fallen on the way, and it being impossible to get her up she was bled and autopsied the 10th.

Autopsy.

The mammary region forms an enormous mass weighing 5250 kilo. It consists almost entirely of the two inoculated glands. The two normal glands (right anterior and left posterior) are normal in appearance, their tissue is white, supple, soft and unctuous to the touch; the milk contained in the galactophorous sinuses has a very good appearance; it does not contain any Koch's bacilli; they (the sound glands) together weigh

0.770 kilo. Considerable œdema extends around the diseased mammæ and spreads under the abdomen beyond the umbilicus. The two inoculated glands are invaded throughout by the tubercular infiltration. When cut they present a rosy color somewhat yellowish ; their lobes are coarser, due to the increase of connective tissues, giving to the touch the sensation of a rasp. The galactophorous sinuses are distended by a yellow serosity containing fibrino-purulent clots. The mucous membrane is thickened, infiltrated, hyperæmic, pimply and ulcerated in places. Here and there on the red substratum of mucous membrane are seen yellowish points due to the presence of specific miliary nodules.

The mammary lymphatics are five times their normal size, being distended with serosity ; their cortical layer is filled with tuberculous granulations already casefied. The precrural lymphatics present the same lesions though less pronounced. The sub-lumbar ganglions are also affected, but the changes diminish in intensity from the rear to the front. The most posterior are almost the size of a kidney, while near the mesenteric artery they have hardly increased in volume, beyond that they are normal.

It is plainly seen that, from the mamma the infection has spread slowly toward the centre through the lymphatics. Death was caused by tubercular intoxication, before the infection had reached the viscera. In fact, the visceræ of the thorax and abdomen are absolutely free from all tubercular lesions.

The bacteriological examination of the mammary tissue shows an enormous numher of Koch's bacilli, mostly free.

Until May 21, that is thirteen days after the virulent inoculation, Cow No. 11 has maintained a normal temperature. It went to 39.5 and 39.8 as a result of an injection of tuberculin May 20. The first symptoms of mammitis is shown around the left anterior and right posterior teats ; the quarters became hypertrophied, hot, sensitive, and the milk is clotted and curdled.

There is hyperthermy and hypothermy until May 25. On the 26th, the day of testing, the temperature is 40°. The next

day, the 27th, hyperthermy well marked. The infected glands are very large and the posterior one is very prominent; they are hot and extremely sensitive, and the curdled milk is mixed with muco-pus. The 29th of May her condition is very serious and there is some coughing. On May 31 there is very little milk in the infected quarters, and œdema appears under the belly in front of the udder.

June 1, extreme emaciation with very great prostration.

June 2, hurried respiration, 28 a minute, frequent cough, veinal pulse, 70 a minute, frequent eructations; the infected quarters have become very large, hot and extremely sensitive to touch; appetite about gone.

June 3, 4, 5 and 6, the symptoms increase in intensity, prostration very great, death is soon expected.

She is sent to Alfort the 9th and post-mortem made the 10th.

Autopsy.

The udder is an enormous mass weighing 6 kil. 50; the weight of the normal quarters is only 0.950.

The diseased glands present exactly the same condition as was seen in Cow No. 10.

The mammary lymphatics are equally hypertrophied and they are infiltrated in their cortical layer with agglomerated miliary granulations.

The sub-lumbar lymphatics have increased in volume and are distended with a serosity, but they seem to be free from tubercular lesions.

All the viscera of the thorax and the abdomen and their lymphatics are sound.

SIXTH LOT, COW NO. 12—TRACHEAL INJECTION OF TUBERCULAR EMULSION.

This cow calved May 11th, and did not present anything abnormal until June 15th. Her temperature has remained normal, good spirits and appetite, the approach of calving and its consequences has not produced any hyperthermy with her.

The tuberculin inoculations practised on her May 14, 20, 26, and June 1 and 8 have not caused the slightest hyperthermy.

There was a temporary hyperthermy of 39°.5 June 15, due to the inoculation of tuberculin June 14. At 9 A. M. the 15th, the temperature had become normal aud it remained so until June 28, when it rose to 39°.3 at 6.30 A. M., but at 9 A. M. it was 37°.8.

The indications are that the commencement of the infection goes back to June 15, that is, the 38th day.

Autopsy.

Under the skin and on the internal wall of the trachea, where the needle of the syringe penetrated, there is found tumors, those under the skin larger than on the trachea. They have the appearance of pimples, infiltrated with yellowish and caseic clots. The mucous membrane of the trachea presents a patch of fine granulations. Some are half transpaient, others opaque and yellowish in the centre; nearly all are surrounded by a bright red halo. These granulations are disposed in linear series; more numerous above the point of inoculation and seen to stop short at the lower end of the larynx, the mucous membrane of which is normal. The mucous membrane of the large and small bronchii is sound. A thorough examination of the lung does not show any tubercular lesion to the eye or touch. The retro-pharyngeal glands are filled with a multitude of fine tubercular granulations, yellowish and caseic. The bronchial and œsophageal glands are involved, but the lesions are slight and apparently recent.

It is a remarkable fact to see the bronchi and the lungs healthy after having so much infecting material injected into the trachea.

Phagocytosis is so intense at the surface of the bronchial mucous membrane that the bacilli must have been eliminated with the expectorated mucus. The slight infection revealed by the autopsy, is manifestly caused by some traumatism by the inoculating needle. Without this traumatism it is probable that the cow would have escaped the infection.

SEVENTH LOT—SUCKLING CALF FED ON CONTAMINATED MILK.

This calf was born May 11, and has been exclusively fed

from a bucket. It drank A. M. and P. M. its mother's milk constantly mixed with other milk, very rich in bacilli, which was supplied by cows No. 10 and No. 11. This young animal has always been in good spirits and a vigorous appetite.

Its temperature remained normal until June 26, when it was 39°.1. June 27, the day of the last tuberculin test, it was 39°.3; then the next day, the 28th, there was a thermic and organic reaction, with the following temperatures: 6 A. M., 40°.3; 9 A. M., 40°.5; 12 M., 40°.8; 3 P. M., 40°.8; 6 P. M., 40°.6. June 29, in the morning it was 39°.8, evening 39°.6. July 1st it had gone down to normal, 38°.7.

The organic reaction was manifested by dejection, great prostration, complete inappetency, general trembling, continuous moans and an intense lameness of the left fore leg, back of which shoulder the injection of tuberculin (2 cc.) had been practiced. June 29th all traces of organic reaction had disappeared.

From the 26th of May this calf was submitted, together with all the other animals, to the tuberculin test, and the quantity used was 2 cc. It did not cause a reaction until June 27. The last contaminated meal was taken June 9. The minimum duration of the incubation was 18 days.

It is important to notice that this calf showed some hyperthermy on June 26, 39°, 39°.1, and on June 27, 43°.3, *before* it received the injection of tuberculin.

Autopsy.

The mouth, the velum of the palate, the pharynx, the larynx, and the trachea are sound, so are the sub-glossal glands; only one retropharyngeal gland on the right side shows in its anterior lobe a small yellowish focus of a tubercular nature.

The pulmonary visceræ are sound. All the ganglions of the concave side of the intestines seem to be hypertrophied. The first ganglion of the chain show quite recent tubercular infiltration. Toward the middle of the small intestine there is found another, which is filled with very fine miliary granulations half transparent. A Peyers gland is thickened, hardened, but not

ulcerated. Nowhere on the intestinal mucous membrane are to be found any tubercles or ulcerations.

CONCLUSIONS.

From these experiments we infer, 1st, That ingestion constitutes a mode of contamination much less efficacious than inhalation.

One cow resisted infection although she ingested large quantities of tuberculous material.

Three others were infected, but in one of them it was impossible to locate the lesion, which had been determined by the use of tuberculin, while in the remaining two the tubercular lesions were so small that in a less critical autopsy they would certainly have been overlooked.

The calf itself, which since its birth was fed on milk from cows 10 and 11, a milk extremely rich in Koch's bacilli, was infected only to a slight degree.

The period of incubation has varied from 32 to 48 days.

2d. The respiratory organs constitute the most common and most efficacious means of tubercular infection.

The results are about the same when the tuberculous material is inhaled in a state of dry impalpable dust, or in a state of fine liquid particles containing bacilli, as is the case when a tuberculous animal coughs or snorts in the vicinity of sound animals.

The period of incubation has varied from 19 to 32 days.

The direct injection into the trachea did not give the results that some had expected.

The lungs completely escaped the infection. It was because the liquid injections did not reach the pulmonary cells; they did not get beyond the small bronchi, on account of the phagocytal resistance of the bronchial mucosa.

The bacilli injected were absorbed by the phagocytes and thrown out in the mucus of expectoration. In the animals infected through the inhalation of dry or liquid dusts, the bronchi, the small bronchi and the pulmonary alveoli have escaped the infection; the tuberculous nodules had their seat under the

pleura, or on the periphery of the lobules in the interstitial cellular tissue.

It is likely that each tubercular focus was formed around a phagocyte of the bronchial mucosa absorbed into the lymphatic circulation after having absorbed one or several Koch's bacilli.

3d. The mucous membrane of the mamma is very susceptible to microbic infection and offers a very slight resistance to Koch's bacilli, especially during lactation.

These experiments and similar ones practiced on milking goats have demonstrated that of all the tissues of the living organism, the mamma in a state of lactation makes a field best adapted to the growth of the tubercular bacillus. They show, also, but this is denied by some authors, the possibility of primitive tuberculosis in the mammary gland.

They show finally how real is the tubercular intoxication.

Cows 10 and 11, killed just before going to die, did not show any such organic lesion as could explain that deep cachexia which was causing death. With them the period of incubation was very short; 3 days for cow No. 10; 13 days for cow No. 11.

4th. The intravenal injection asserted itself, as it always does when a virulent bacillus is used, as the most severe and rapid method of infection, but no practical conclusion can be drawn from it, as tubercular infection never develops in that manner.

5th. This observation is the last, and has a very practical import.

On none of the animals experimented upon, no matter how short the period of incubation, or how rapid the evolution, the lesions had not undergone the mollification or the calcification, which is the rule, one may say, with all the tubercular bovines.

To sum up our conclusions in reference to the *two* points aimed at by our society:

1st. Whatever may be the means of contamination, there always elapses some time between the moment when the contagion has penetrated the organism and that where it manifests

its effect through tuberculin reaction. The duration of this period is variable; in our experiments, where the chances of infection were brought to a maximum, the period was from 19 to 32 days for contamination by inhalation, and from 32 to 48 days for contamination by ingestion. With the condition of natural contagion it is certain that the period of incubation will be considerably longer.

If a recently purchased cow shows a reaction to tuberculin within 30 days following the sale, the veterinarian is justified in concluding, that, according to *all probabilities*, this cow was infected before the sale.

2d. One is often embarrassed in ascertaining the age of the tubercular lesions found at the autopsy; our experiments do not offer a complete solution of this problem; however, should the lesions be mollified or calcified, no matter what their extent is, so slight and so limited as they may be, the veterinarian will be hereafter enabled to state, in all certainty, that those lesions have been in existence for more than fifty (50) days.

PLANTS POISONOUS TO STOCK.*

The year-book of the Department of Agriculture for 1900 contains an interesting account by Mr. V. K. Chesnut, of the Division of Botany, on some of the losses sustained by stock-raisers on our Western and Northwestern stock ranges by stock eating certain poisonous plants indigenous to those regions. A synopsis of Mr. Chesnut's account is here reproduced for the benefit of the readers of the REVIEW.

The principal causes assigned by Mr. Chesnut for plant-poisoning of stock is the scarcity of food which at times prevails over large areas of our Western ranges. Stock that in times of a plentiful supply of forage would not partake of the poisonous plants are, in periods of scarcity, compelled by hunger to eat them. It is a fact well known to every toxicologist that plants which are most poisonous usually present the most succu-

* Prepared for the REVIEW by Dr. W. J. Martin, Kankakee, Ill.

lent and inviting appearance to the unwary. Adult horses and cattle, according to Mr. Chesnut, do not so commonly fall victims to poisonous plants as do the smaller and weaker herbivora, these latter being more circumscribed in their pasture-range than the older and stronger animals. Sheep, it appears from the report, are more often poisoned by noxious plants than any other animal. The plants treated of most fully in the report as being poisonous to stock are the water hemlock, various species of larkspur, and the poison camas. Mr. Chesnut's description of these is as follows:

WATER HEMLOCKS.

General Characters.—The local species of water hemlock are the plants best known throughout the whole of the Northern stock regions as poisonous to stock. These are members of the genus Cicuta, belonging to the carrot family. There are at least three distinct species of this genus in the Northwest, the fleshy roots of which, under the erroneous name of "wild parsnip," are rapidly fatal to man or beast if eaten even in small quantity. All are alike in being smooth, generally erect, perennial herbs, 3 to 8 feet high, with one or more upright hollow stems, numerous branches, mostly bipinnate leaves with lance-like and serrated leaflets 1½ to 4 inches long, and terminal umbels of small white or greenish-white flowers. The seeds, and especially the fleshy roots, together with the geographic distribution of the plants, serve to distinguish the species.

Species and their Distribution.—The most widely known members of the group in the United States, the American water hemlock (*Cicuta maculata*), is probably the most deadly plant native to this country. An account of its poisonous character may be found in the year-book of the Department for 1896. A very similar species (*C. virosa*), which is equally poisonous, is well known throughout Europe. Both of the latter species, although fatal if eaten by animals, are best known as being dangerous to man. Children especially are killed by eating the fleshy rootstocks in the early spring, when they are most apt to be exposed by being washed or frozen out of the soil. The

American water hemlock is abundant in the more humid eastern part of the United States, but apparently it does not extend very far into the drier portions of it which are considered in this paper.

Several Western species are best known as stock-poisoning plants. In Wyoming, and probably throughout all the adjoining States, the Eastern plant is very largely, if not entirely, replaced by the Wyoming water hemlock (*C. occidentalis*), a not very different plant. The purple stemmed water hemlock (*C. douglasii*), as well as the Oregon species (*C. vagans*), is native in springy and boggy places and along streams ou the humid Western coast. It is not so widely distributed as *C. vagans*, but is well known as a poisonous plant in Washington and in British Columbia. The Oregon water hemlock is widely distributed from Northern California and Nevada to Washington and Idaho, but is most abundant in Oregon. The purple-stemmed species differs from the Wyoming plant in having a purple instead of a green stem, smaller and more numerous roots, and various minor characters, which are of interest from a scientific point of view only. The Eastern species has short, spindle-shaped or oblong tuber-like roots, which are about an inch or two in length. All grow in damp ground, either along creeks and ditches, or in low marshy places, especially along the banks of coast rivers, almost down to the salt water, and frequently in meadows which are cut for hay.

Odor.—Like most of the members of the carrot family, to which the water hemlock belong, they have a peculiar penetrating odor and taste, due to the aromatic oily fluid which is found throughout the plants, especially in the roots and seeds. It is probably on account of this odor that the plants are usually compared with the parsnip, which is the only commonly known fleshy-rooted member of the carrot family possessing a similar odor. In the case of the water hemlocks, however, the odor is more decidedly musky and much more disagreeable. The parsnip has one large fleshy taproot, and never becomes poisonous when growing without cultivation. The water hemlocks have a clus-

ter of fleshy roots which are highly poisonous, the oily fluid in them containing a highly virulent substance, which is probably the same in all the species.

Roots.—The roots are said to have a benumbing effect upon the tongue after long chewing. Unfortunately, however, the first taste is somewhat sweet and not sufficiently disagreeable to deter children and even men who are in search of wild aromatic roots from quickly eating a sufficient quantity to produce fatal results. They are generally eaten by mistake for other wild-growing roots of the carrot family which have a somewhat similar taste. Cases of human poisoning have been recorded against all of the species of the Northwest with the exception of the purple-stemmed one. In the spring of 1900 as many as four people were killed in Montana by eating the roots of the Wyoming species. The poisonous properties are well known to the Indians, who occasionally use them for suicidal purposes.

In the case of each of these plants the root is the part best known to be poisonous to stock, but the tops are also poisonous under some conditions. After long continued rain the roots are so loosened that they can be pulled out of the ground without difficulty by stock while grazing. In some places the oil has been swallowed with water found in marshy places where the roots have been trampled upon. Horses that are used in plowing virgin soil in wet land are not infrequently killed by eating the exposed roots. Poisoning from the roots takes place during winter and early spring, and observations seem to indicate that the roots are poisonous only at that time of year. A piece of the Oregon root about the size of a walnut is, according to Prof. Hedrick, sufficient to kill a cow. Animals may be killed in the pasture by eating the young leaves or stalks of plants less than a foot or two high. The basal portions of such plants are, at least in the case of the Wyoming species, much more poisonous than the tops.

Leaves, Seeds, and Stem.—The green leaves from the taller plants are not nearly so dangerous as the lower portions. Seeds on plants cut with wild meadow hay, and perhaps to a lesser

extent the leaves and stems of such plants, have caused a very considerable loss of stock in the Dakotas and Montana. Such hay is very much more apt to be fatal if fed in boxes, for the seeds, which are easily detachable, are not then lost when the plants are tossed about by the animals in eating, but accumulate in the bottom of the box, and are, therefore, more apt to be eaten.

Damage Caused.—No systematic attempt has ever been made to obtain statistics showing the extent of the damage caused by the water hemlock in the Northwest. That it is considerable may be judged from the fact that so much attention has been paid to the plants by various experiment stations. One man on the Sprague River, in Oregon, has recently spent much time and money in an attempt to eradicate the plants from his range, and Prof. Hedrick has stated that an estimated death rate of one hundred cattle per annum was low for that State. During an investigation of the poisonous plants of Montana in the months of May and June, 1900, Dr. E. V. Wilcox and the writer noted thirty-six cases of water hemlock poisoning among cattle, thirty of which were fatal, and one hundred and five cases among sheep, fifty of which were fatal. It will thus be seen that the death rate was very high. The above deaths represent a loss of over $4000, but this is only a fraction of the entire loss in Oregon and Montana for that year.

Symptoms of Poisoning.—The symptoms of poisoning resulting from the accidental eating of any of the poisonous parts of any of the water hemlocks agree well with each other, and also with those obtained in experimental ways. The effects of the Oregon plant has been noted by Prof. H. T. French and U. P. Hedrick in the case of a yearling calf that ate two of the roots one morning at about 9.15 o'clock. At 10.25 o'clock the muscles of the flanks began to twitch, the eyes watered, and the animal became excitable. Its temperature had risen to 104 deg. F. There was also a marked increase in the amount of urine voided, a symptom which was prominent until death. The first spasm took place at 10.45. There was then a marked

activity of the sweat glands and the rate of breathing was doubled. At 11.30 the calf had another spasm, and this was followed by others in rapid succession until death ensued at 11.45. Other observers have noted other symptoms, the most prominent of which are an increased flow of saliva, bloating, severe pain in the stomach, and widely dilated pupils. Death takes place within a few, sometimes within one and a half hours after the plant has been eaten.

Effect of the Poison as Shown by Post-mortem.—Post-mortem examination nearly always reveals the characteristic musky odor and often pieces of the plant, especially the root, in the stomach. These furnish the most conclusive evidence of the nature of the poison, for there seems to be no very characteristic lesions. The lungs and brain are often highly congested, and one authority, Prof. L. H. Pammel, cites a correspondent who states that in the case of a cow killed by eating some roots the mucous membrane of the stomach was black and as easily scraped off with a stick as if it had been scalded.

Nature of the Poison.—The American water hemlocks have not been carefully analyzed, but probably all of them contain the peculiar compound known as cicutoxin, which was first isolated by R. Boehm from the European plant. Two-tenths of 1 per cent. of the pure substance was obtained from the fresh root and 1 and a half per cent. from the roots which had been dried. As described by Boehm, it is an uncrystallizable, resinous body with an acid reaction and a disagreeable bitter taste. It is very soluble in boiling water, and in dilute alcohol. This substance is not an alkaloid nor a member of any extensive class of poisons, but belongs to a small group of very poisonous compounds known as toxins. Andremedotoxin is a similar substance, which is found in many well-known plants belonging to the heath family (*Ericacea*), some of the members of which, such as sheep laurel (*Kalmia angustifolia*) and the calf kill (*Leucothœ catesbœi*), are well known along the Atlantic coast as poisonous to young stock. The fatal dose of cicutoxin for cats is 50 millegrams for each kilogram of

body weight when administered through the mouth, and 7 millegrams per kilogram when injected hypodermically. 100 millegrams (about 1.4 grains) will kill a cat weighing about 2 kilograms (4.4 pounds) if fed to it. The prominent symptoms are very similar to those produced when the plant itself has been eaten, and consists of salivation and constant trembling of the limbs, with cramps and convulsions, finally ending in death.

Remedies Sometimes Used.—Cases of poisoning of stock by the water hemlocks are very difficult to handle, both because the animals generally become wild and unmanageable, and because the action of the poison is so rapid that the animal is usually dead when found. Tannin is mentioned by Fröhner as a chemical antidote, but it must be used together with chloral or with hypodermic injections of morphine to offset the physiological action of the poison already absorbed into the system. Animals generally die after eating fatal doses, but they are able in some instances to vomit the excess and recover. Stockmen occasionally save their animals by administering two or three daily doses of melted lard.

POISON CAMAS.

Species and Distribution.—The species of poison camas (*Zygadenus* species) are but few in number and in great part confined to the northwestern and western parts of North America. One species occurs in Siberia and another in Mexico. Their published reputation as poisonous plants is, however, mainly confined to America and to the last century. They are all poisonous and sometimes fatal to both man and beast. They are all smooth, single stemmed, onion-like, but unscented plants, one-half to 3 feet high, with coated bulbs, long, grasslike leaves, and single cylindrical clusters of yellow, white, or greenish flowers, which finally develop into dry, three-horned seed capsules. The plants have much the appearance of grass in the early stages of their growth.

Some botanists recognize at least six different species as native to the Northwest, but as only three of these have been extensively mentioned in any way, attention will be confined

to them. The plant widely known throughout nearly the whole Pacific slope area as death camas (*Z. venenosus*) is very similar to two other species found in the Northwest, and to another, commonly known as wild sego (*Z. paniculatus*), which occurs in the great interior basin. As the two former have long been considered identical with death camas, and as they are all alike in the symptoms of poisoning which they produce, may well serve to illustrate all of them. Death camas differs from poison sego in its slender, instead of stout habit, its unbranched inflorescence, and its long-clawed and obtuse pointed petals, those of poison sego being acute pointed and almost clawless.

Habitat and Characteristics.—Death camas grows sparingly along creeks near the coast, and abundantly in the interior up to an altitude of nearly 9000 feet, its favorite habitat being shallow depressions in mountain pastures into which there is a slow seepage of ground water. Poison sego grows in low, damp, alkaline depressions throughout nearly the same area, but it is most abundant in the Great Salt Lake Basin, where it ascends to an altitude of about 4500 feet. The third species of poison camas (*Z. elegans*) is a much taller plant than either of the others. It is best known in the stock regions as alkali grass. It is most easily distinguished by its taller habit and the larger size of its various parts, especially of its flowers. It is a slender plant, which grows in moist alkaline places from northern California to Colorado, and northward to Alaska. It is never so abundant as either of the two preceding species. The leaves, and especially the bulbs, of these three species produce a foam when rubbed up with water, and they are generally more or less bitter, especially after long chewing. This taste is not, however, always present.

Poisonous Character of the Plant.—The earlier reports naturally refer almost exclusively to human cases of poison. It has been but a few years since any of the plants have attracted much attention as being fatal to stock. It has been stated, as noted above, that the bulbs are not poisonous to hogs, but they are very commonly considered fatal to other stock. Prof. F. H.

Hillman has published two brief accounts illustrating the wild sego (*Zygadenus paniculatus*) and suggesting that this plant is probably responsible for the death of a considerable number of cattle in certain alkaline districts of that State. So far as the writer is aware, however, no toxicological experiments were made prior to 1900 with any of the species which proved their poisonous qualities. The experiments made by Dr. S. B. Nelson at Pullman, Wash., were wholly negative in result. A pound of the plant, in blossom and fruit, was fed to a sheep during the course of about twelve hours without causing any marked ill effect. In the spring of 1900, Dr. Wilcox and writer, independently of each other, made several tests on rabbits and sheep, both with extracts and fresh plants, and none of these failed to give some positive evidence of the physiological activity of the plants. In every case, even in the feeding experiments, however, the animals received nearly all the material given them within a few minutes, and, moreover, most of the plants used were not yet in flower. This may account for the difference of our results from those of Dr. Nelson, or it may possibly have been due to a difference in the species used. The latter can hardly be the case, however, for the same species has proved poisonous in a number of cases which occurred in Oregon and Washington under the usual conditions. The difference is mostly attributable, therefore, to the difference in the rate of feeding and to a possible stage of growth at which they were used. It may, however, be possible that the Washington animal was older than ours and had previously accustomed itself to the plant.

When Dangerous to Stock.—Stock are poisoned by eating the bulbs along with the leaves, or by the leaves alone while at pasture, or by the seeds when present in hay, as they sometimes are. As a rule, the bulbs cannot be pulled up by stock in the act of grazing, but after the ground has been thoroughly soaked with rain they may be, and sometimes are, so extracted. Stock, especially sheep, are usually killed by eating the plant before it has blossomed in the spring. The leaves appear early, and are then very tempting to stock on account of their succulent

condition and also on account of the lack of other herbage. After the plants have blossomed, which with the species growing on the feeding ranges occurs about the 1st of June, the leaves dry up, and as they are not very inviting in appearance are probably never eaten by stock. Whether or not all or any of the species are non-poisonous at that stage of growth is a matter which has not been determined. It is very doubtful if such is the case. There is a popular belief to this effect, but it appears to be certain that the seeds of at least one species—the great Basin plant—kill stock when eaten with hay. It is very doubtful if the plants are eaten on the range in a nearly mature stage of growth. The absence of heavy rains on the ranges in summer precludes the possibility of stock being poisoned by eating the bulbs during that period. There are some general grounds for belief that the bulb is the most poisonous part of death camas, but no experiments have been made to show that such is the case.

Reports of the poisoning of stock from one or another species of poison camas while grazing have been sent in to the Department of Agriculture from nearly all parts of the Northwest. The only cases of poisoning from hay have been reported from Nevada. These were due to the seeds of poison sego. Most cases were, however, caused by death camas, which is far the most widely known species.

Damage Caused.—Poisoning from this plant is so common in Oregon and Nevada that the term "lobeliaed" has been invented to indicate the resulting death or symptoms of poisoning. In Montana as many as 3030 one-year old and two-year old sheep were reported to have been poisoned by death camas during the spring of 1900. Two thousand of these were poisoned in a single band. Over 21 per cent. of the total number died. The money value of the total loss from poison camas in the Northwest has not been estimated, but must be considerable. The losses noted by Dr. Wilcox and writer in Montana during the spring of 1900 were due to but one species and amounted to nearly $2000.

Symptoms of Poisoning.—The symptoms of poisoning, as reported by stock owners, are practically the same for all of the species. As observed by Dr. Wilcox and the writer in the case of sheep, the most prominent symptoms in the early stages were uneasiness, staggering, frothing. The difficulty in the breathing was prominent until death, but the rate became fast and the inhalation exceedingly shallow. The later stage was sharply distinguished, both from the symptoms of the water hemlock and larkspur poisoning, by the almost complete collapse of nervous energy, the animals often lying on the side, apparently dead, for many hours. The pulse remains nearly normal throughout, the functions of the brain are not much impaired, and there is little disturbance in the digestive system except in the cases of very young animals poisoned by the milk of their mothers. These lambs frequently die from an acute dysentery within a few hours after sucking. Adult sheep also die inside of two or three hours when a considerable quantity of the plant is eaten, but they often live from two to three or four days when a small quantity is consumed.

The symptoms in horses and cattle have not been well described. Both animals are killed by eating the plants, but horses, it is said, are more apt to recover. According to the account of a few stockmen, the action seems to be more violent in the case of horses and cattle than in that of sheep, spasms being mentioned as a prominent characteristic for both. This is also the case with rabbits.

Effects of poison shown by post-mortem examination of sheep which have died from eating death camas reveals, as in cases of larkspur poisoning, no important changes in any of the internal organs excepting the heart and lungs. These are filled with dark, unaerated blood, as is also the case in larkspur poisoning. Cases may be easily diagnosed by the character of the contents of the stomach, which nearly always contains undigested fragments of the plants eaten.

Nature of the Poison Contained in the Plant.—The identity of the toxic substance in the various species of poison camas has

not been determined. It seems probable that it may be a sapotoxin-like substance, as its frothing action suggests, but it may be an alkaloid similar to that of veratrine in the various species of veratrum, which are closely allied plants. The physiological action of veratrum is somewhat similar to that caused by the active principle of poison camas. The latter is very fatal, especially when given hypodermically. Experiments made on rabbits and sheep show that the aqueous extract from seven and one-half grains of the fresh leaf is the fatal dose per pound weight in rabbits when given hypodermically, and that the fatal feeding dose of the fresh plant with roots attached is from a half-pound to 1 pound (about 30 to 60 plants) for a sheep weighing about 70 pounds.

Remedies.—Salt, soda, and lard or fat pork are the remedies usually applied by the stockmen in cases of poisoning from these plants, but the results are not satisfactory, and it has been claimed that there is no known antidote. Hypodermic injections of strychnine and atropine, both alone and together, with morphine, were tried by Dr. Wilcox and the writer without success, but the feeding of a permanganate mixture, similar to the one already recommended in the case of poisoning by larkspur, yielded excellent results, even when administration, as already described, is to be recommended at all stages of the poisoning, but it is advisable also to use stimulants in the more advanced stages.

TRACHEOTOMY—M'KILLIP'S NEW METHOD.

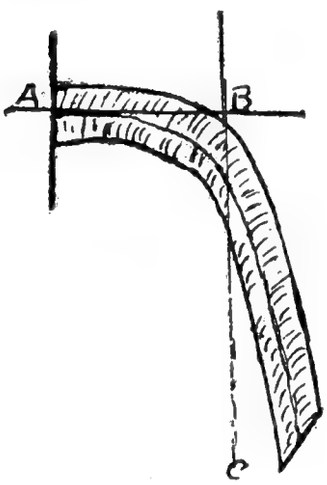
By John J. Millar, V.S., Secretary McKillip Veterinary College, Chicago, Ill.

We have been frequently requested by members of the profession to give our methods adopted in the operation of tracheotomy, and it is thought best to give in detail the *modus operandi* to the profession generally through the valuable pages of the Veterinary Review.

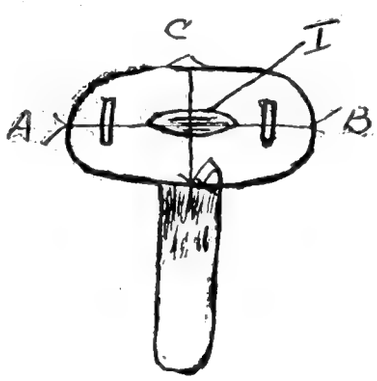
It was with a view of overcoming the many complications

and unsatisfactory results which accompany or follow the operation that a new method seemed inevitable, as it is a well known fact that the operation as it is generally practiced is the means of producing very frequently a much more serious condition than the one for which the operation had originally been performed. This new method has practically overcome the liability to collapse of the tracheal rings and stenosis of the trachea as well as many other complications resulting from the older methods of operating.

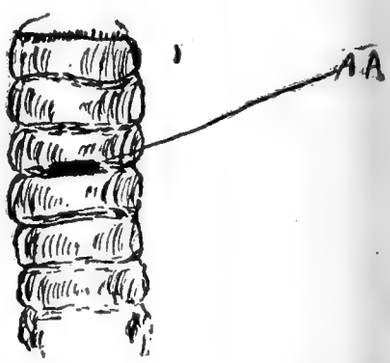
The field for the operation should be prepared with a view to absolute (or as nearly as possible) asepsis, and a free incision made (longitudinally) about one and a half inches long, exposing two tracheal rings. Care must, however, be taken so that the cartilage is not injured. An incision is then made through the inter-tracheal ligament (transversely), and this opening need only be sufficient to accommodate the tube. The opening is now dilated with the finger and thumb and the tube, which is supplied with a projecting lip at its lower end, readily drops into position. In the larger truck horses it will be necessary to use a larger tube than is used for the coach horse or thoroughbred, as the accompanying diagram will show.



TUBE (LATERAL VIEW).



(FRONT VIEW.)



TRACHEA SECTION.

TRUCK HORSE—

A to B, 2 inches. A to B, 4½ inches.
B to C, 4½ inches. C to D, 2¾ inches.

AA Opening between tracheal rings through inter-tracheal ligament.

COACH OR THOROUGHBRED—

A to B, 1½ inches. A to B, 3½ inches.
B to C, 4 inches. C to D, 2½ inches.

I, Elliptical tube, size for Truck horse, 1⅔x½ inches.
" " " Coach or Thoroughbred ⅞x⅜ inches.

BRITISH CONGRESS ON TUBERCULOSIS FOR THE PREVENTION OF CONSUMPTION.

THE COMBATING OF TUBERCULOSIS IN THE LIGHT OF THE EXPERIENCE THAT HAS BEEN GAINED IN THE SUCCESSFUL COMBATING OF OTHER INFECTIOUS DISEASES.

By Geh. Med.-Rath Professor Dr. Robert Koch,

Direktor des Instituts für Infektions Kraukheiten in Berlin.

The task with which this Congress will have to busy itself is one of the most difficult, but it is also one in which labor is most sure of its reward.

I need not point again to the innumerable victims tuberculosis annually claims in all countries, nor to the boundless misery it brings on the families it attacks. You all know that there is no disease which inflicts such deep wounds on mankind as this. All the greater, however, would be the general joy and satisfaction if the efforts that are being made to rid mankind of this enemy, which consumes its inmost marrow, were crowned with success.

There are many, indeed, who doubt the possibility of successfully combating this disease, which has existed for thousands of years, and has spread all over the world. This is by no means my opinion. This is a conflict into which we may enter with a surely founded prospect of success, and I will tell you the reasons on which I base this conviction.

Only a few decades ago the real nature of tuberculosis was unknown to us; it was regarded as a consequence, as the expression, so to speak, of social misery, and, as this supposed cause could not be got rid of by simple means, people relied on the probable gradual improvement of social conditions, and did nothing. All this is altered now. We know that social misery does indeed go far to foster tuberculosis, but the real cause of the disease is a parasite—that is, a visible and palpable enemy, which we can pursue and annihilate, just as we can pursue and annihilate other parasitic enemies of mankind.

Strictly speaking, the fact that tuberculosis is a preventible disease ought to have become clear as soon as the tubercle-bacillus was discovered, and the properties of this parasite and the manner of its transmission became known. I may add that I, for my part, was aware of the full significance of this discovery

from the first, and so will everybody have been who had convinced himself of the causal relation between tuberculosis and the tubercle-bacillus. But the strength of a small number of medical men was inadequate to the conflict with a disease so deeply rooted in our habits and customs. Such a conflict requires the coöperation of many, if possible of all, medical men, shoulder to shoulder with the state and the whole population; but now the moment when such coöperation is possible seems to have come. I suppose there is hardly any medical man now who denies the parasitic nature of tuberculosis, and among the non-medical public too the knowledge of the nature of the disease has been widely propagated.

Another favorable circumstance is that success has recently been achieved in the combating of several parasitic diseases, and that we have learned from these examples how the conflict with pestilences is to be carried on.

The most important lesson we have learned from the sad experience is that it is a great blunder to treat pestilences uniformly. This was done in former times; no matter whether the pestilence in question was cholera, plague, or leprosy: isolation, quarantine, useless disinfection were always resorted to. But now we know that every disease must be treated according to its own special individuality, and that the measures to be taken against it must be most accurately adapted to its special nature, to its etiology. We are entitled to hope for success in combating tuberculosis only if we keep this lesson constantly in view. As so extremely much depends just on this point, I shall take the liberty to illustrate it by several examples.

The pestilence which is at this moment in the foreground of interest, the bubonic plague, may be instructive to us in several respects.

People used to act upon the conviction that a plague patient was in the highest degree a centre of infection, and that the disease was transmitted only by plague patients and their belongings. Even the most recent international agreements are based on this conviction. Although, as compared with formerly, we now have the great advantage that we can, with the aid of the microscope and of experiments on animals, recognize every case of plague with absolute certainty, and although the prescribed inspection of ships, quarantine, the isolation of patients, the disinfection of infected dwellings and ships, are carried out with the utmost care, the plague has, nevertheless, been transmitted everywhere, and has in not a few places assumed grave dimen-

sions. Why this has happened we know very well, owing to the experience quite recently gained as to the manner in which the plague is transmitted. It has been discovered that only those plague patients that suffer from plague-pneumonia—a condition which is fortunately infrequent—are centres of infection, and that the real transmitters of the plague are the rats. There is no longer any doubt that, in by far the majority of the cases in which the plague has been transmitted by ocean traffic, the transmission took place by means of plague among the ship rats. It has also been found that, wherever the rats were intentionally or unintentionally exterminated, the plague rapidly disappeared; whereas at other places, where too little attention had been paid to the rat plague, the pestilence continued. This connection between the human plague and the rat plague was totally unknown before, so that no blame attaches to those who devised the measures now in force against the plague if the said measures have proved unavailing. It is high time, however, that this enlarged knowledge of the etiology of the plague be utilized in international as well as in other traffic. As the human plague is so dependent on the rat plague, it is intelligible that protective inoculation and the application of antitoxic serum have had so little effect. A certain number of human beings may have been saved from the disease by that, but the general spread of the pestilence has not been hindered in the least.

With cholera the case is essentially different; it may, under certain circumstances, be transmitted directiy from human beings to other human beings, but its main and most dangerous propagator is water, and therefore, in the combating of cholera, water is the first thing to be considered. In Germany, where this principle has been acted on, we have succeeded for four years in regularly exterminating the pestilence (which was introduced again and again from the infected neighboring countries) without any obstruction of traffic.

Hydrophobïa, too, is not void of instruction for us. Against this disease the so-called protective inoculation proper has proved eminently effective as a means of preventing the outbreak of the disease in persons already infected, but, of course, such a measure can do nothing to prevent infection itself. The only real way of combating this pestilence is by compulsory muzzling. In this matter also we have had the most satisfactory experience in Germany, but have at the same time seen that the total extermination of the pestilence can be achieved only by

international measures, because hydrophobia, which can be very easily and rapidly suppressed, is always introduced again year after year from the neighboring countries.

Permit me to mention only one other disease, because it is etiologically very closely akin to tuberculosis, and we can learn not a little for the furtherance of our aims from its successful combating. I mean leprosy. It is caused by a parasite which greatly resembles the tubercle-bacillus. Just like tuberculosis, it does not break out till long after infection, and its course is almost slower. It is transmitted only from person to person, but only when they come into close contact, as in small dwellings and bedrooms. In this disease, accordingly, immediate transmission plays the main part; transmission by animals, water, or the like is out of the question. The combative measures, accordingly, must be directed against this close intercourse between the sick and the healthy. The only way to prevent this intercourse is to isolate the patients. This was most rigorously done in the Middle Ages by means of numerous leper-houses, and the consequence was that leprosy, which had spread to an alarming extent, was completely stamped out in Central Europe. The same method has been adopted quite recently in Norway, where the segregation of lepers has been ordered by a special law. But it is extremely interesting to see how this law is carried out. It has been found that it is not at all necessary to execute it strictly, for the segregation of only the worst cases, and even of only a part of these, sufficed to produce a diminution of leprosy. Only so many infectious cases had to be sent to the leper-houses that the number of fresh cases kept regularly diminishing from year to year. Consequently the stamping-out of the disease has lasted much longer than it would have lasted if every leper had been inexorably consigned to a leper-house, as in the Middle Ages; but in this way, too, the same purpose is gained, slowly indeed, but without any harshness.

These examples may suffice to show what I am driving at, which is to point out that, in combating pestilences, we must strike at the root of the evil, and must not squander force in subordinate ineffective measures. Now the question is whether what has hitherto been done, and what is about to be done against tuberculosis really strikes at the root of tuberculosis, so that it must sooner or later die.

In order to answer this question it is necessary first and foremost to inquire how infection takes place in tuberculosis.

Of course, I presuppose that we understand by tuberculosis only those morbid conditions which are caused by the tubercle-bacillus.

In by far the majority of cases of tuberculosis the disease has its seat in the lungs, and has also begun there. From this fact it is justly concluded that the germs of the disease, *i. e.*, the tubercle-bacilli, must have got into the lungs by inhalation. As to the question where the inhaled tubercle-bacilli have come from, there is also no doubt. On the contrary, we know with certainty that they get into the air with the sputum of consumptive patients. This sputum, especially in advanced stages of the disease, almost always contains tubercle-bacilli, sometimes in incredible quantities. By coughing, and even speaking, it is flung into the air in little drops, *i. e.*, iu a moist condition, and can at once infect persons who happen to be near the coughers. But then it may also be pulverized when dried, in the linen or on the floor, for instance, and get into the air in the form of dust.

In this manner a complete circle, a so-called *circulus vitiosus*, has been formed for the process of Infection, from the diseased lung, which produces phlegm and pus containing tubercle-bacilli, to the formation of moist and dry particles (which, in virtue of their smallness, can keep floating a good while in the air), and finally to new Infection, if particles penetrate with the air into a healthy lung and originate the disease anew. But the tubercle-bacilli may get to other organs of the body in the same way, and thus originate other forms of tuberculosis. This, however, is a considerably rarer case. The sputum of consumptive people, then, is to be regarded as the main source of the Infection of tuberculosis. On this point, I suppose, all are agreed. The question now arises whether there are not other sources, too, copious enough to demand consideration in the combating of tnberculosis.

Great importance used to be attached to the hereditary transmission of tuberculosis. Now, however, it has been demonstrated by thorough investigation that, though hereditary tuberculosis is not absolutely non-existent, it is nevertheless extremely rare, and we are at liberty, in considering our practical measures, to leave this form of origination entirely out of account.

But another possibility of tubercular infection exists, as is generally assumed, in the transmission of the germs of the disease from tubercular animals to man. This manner of in-

fection is generally regarded nowadays as proved, and as so frequent that it is even looked upon by not a few as the most important, and the most rigorous measures are demanded against it. In this Congress also the discussion of the danger with which the tuberculosis of animals threatens man will play an important part. Now, as my investigations have led me to form an opinion .deviating from that which is generally accepted, I beg your permission, in consideration of the great importance of this question, to discuss it a little more thoroughly.

Genuine tuberculosis has hitherto been observed in almost all domestic animals, and most frequently in poultry and cattle. The tuberculosis of poultry, however, differs so much from human tuberculosis that we may leave it out of account as a possible source of infection for man. So, strictly speaking, the only kind of animal tuberculosis remaining to be considered is the tuberculosis of cattle, which, if really transferable to man, would indeed have frequent opportunities of infecting human beings through the drinking of the milk and the eating of the flesh of diseased animals.

Even in my first circumstantial publication on the etiology of tuberculosis I expressed myself regarding the identity of human tuberculosis and bovine tuberculosis with reserve. Proved facts which would have enabled me sharply to distinguish these two forms of the disease were not then at my disposal, but sure proofs of their absolute identity were equally undiscoverable, and I therefore had to leave this question undecided In order to decide it, I have repeatedly resumed the investigations relating to it, but so long as I experimented on small animals, such as rabbits and guinea-pigs, I failed to arrive at any satisfactory result, though indications which rendered the difference of the two forms of tuberculosis probable were not wanting. Not till the complaisance of the Ministry of Agriculture enabled me to experiment on cattle, the only animals really suitable for these investigations, did I arrive at absolutely conclusive results. Of the experiments which I have carried out during the last two years along with Professor Schütz, of the Veterinary College in Berlin, I will tell you briefly some of the most important.

A number of young cattle which had stood the tuberculin test, and might therefore be regarded as free from tuberculosis, were infected in various ways with pure cultures of tuberclebacilli taken from cases of human tuberculosis; some of them got the tubercular sputum of consumptive patients direct. In

some cases the tubercle-bacilli or the sputum were injected under the skin, in others into the peritoneal cavity, in others into the jugular vein. Six animals were fed with tubercular sputum almost daily for seven or eight months; four repeatedly inhaled great quantities of bacilli, which were distributed in water, and scattered with it in the form of spray. None of these cattle (there were nineteen of them) showed any symptoms of disease, and they gained considerably in weight. From six to eight months after the beginning of the experiments they were killed. In their internal organs not a trace of tuberculosis was found. Only at the places where the injections had been made small suppurative foci had formed, in which few tubercle-bacilli could be found. This is exactly what one finds when one injects dead tubercle-bacilli under the skin of animals liable to contagion. So the animals we experimented on were affected by the living bacilli of human tuberculosis exactly as they would have been by dead ones; they were absolutely insusceptible to them.

The result was utterly different, however, when the same experiment was made on cattle free from tuberculosis with tubercle-bacilli that came from the lungs of an animal suffering from bovine tuberculosis. After an incubation-period of about a week the severest tubercular disorders of the internal organs broke out in all the infected animals. It was all one whether the infecting matter had been injected only under the skin or into the peritoneal cavity or the vascular system. High fever set in, and the animals became weak and lean; some of them died after a month and a half to two months, others were killed in a miserably sick condition after three months. After death extensive tubercular infiltrations were found at the place where the injections had been made, and in the neighboring lymphatic glands, and also far advanced alterations of the internal organs, especially the lungs and the spleen. In the cases in which the injection had been made into the peritoneal cavity the tubercular growths which are so characteristic of bovine tuberculosis were found on the omentum and peritoneum. In short, the cattle proved just as susceptible to Infection by the bacillus of bovine tuberculosis as they had proved insusceptible to Infection by the bacillus of human tuberculosis. I wish only to add that preparations of the organs of the cattle which were artificially infected with bovine tuberculosis in these experiments are exhibited in the Museum of Pathology and Bacteriology.

An almost equally striking distinction between human and bovine tuberculosis was brought to light by a feeding experi-

ment with swine. Six young swine were fed daily for three months with the tubercular sputum of consumptive patients. Six other swine received bacilli of bovine tuberculosis with their food daily for the same period. The animals that were fed with sputum remained healthy and grew lustily, whereas those that were fed with the bacilli of bovine tuberculosis soon became sickly, were stunted in their growth, and half of them died. After three months and a half the surviving swine were all killed and examined. Among the animals that had been fed with sputum no trace of tuberculosis was found, except here and there little nodules in the lymphatic glands of the neck, and in one case a few grey nodules in the lungs. The animals, on the other hand, which had eaten bacilli of bovine tuberculosis had, without exception (just as in the cattle experiment), severe tubercular diseases, especially tubercular infiltration of the greatly enlarged lymphatic glands of the neck and of the mesentric glands, and also extensive tuberculosis of the lungs and the spleen.

The difference between human and bovine tuberculosis appeared not less strikingly in a similar experiment with asses, sheep, and goats, into whose vascular systems the two kinds of tubercle-bacilli were injected.

Our experiments, I must add, are not the only ones that have led to this result. If one studies the older literature of the subject, and collates the reports of the numerous experiments that were made in former times by Chauveau, Günther and Harms, Bollinger, and others, who fed calves, swine, and goats with tubercular material, one finds that the animals that were fed with the milk and pieces of the lungs of tubercular cattle always fell ill of tuberculosis, whereas those that received human material with their food did not. Comparative investigations regarding human and bovine tuberculosis have been made very recently in North America by Smith, Dinwiddie and Frothingham, and their result agreed with that of ours. The unambiguous and absolutely conclusive result of our experiments is due to the fact that we chose methods of Infection which exclude all sources of error, and carefully avoided everything connected with the stalling, feeding, and tending of the animals that might have a disturbing effect on the experiments.

Considering all these facts, I feel justified in maintaining that human tuberculosis differs from bovine, and cannot be transmitted to cattle. It seems to me very desirable, however,

that these experiments should be repeated elsewhere, in order that all doubt as to the correctness of my assertion may be removed.

I wish only to add that, owing to the great importance of this matter, the German Government has appointed a commission to make further inquiries on the subject.

But, now, how is it with the susceptibility of man to bovine tuberculosis? This question is far more important to us than that of the susceptibility of cattle to human tuberculosis, highly important as that is too. It is impossible to give this question a direct answer, because, of course, the experimental investigation of it with human beings is out of the question. Indirectly, however, we can try to approach it. It is well known that the milk and butter consumed in great cities very often contain large quantities of the bacilli of bovine tuberculosis in a living condition, as the numerous infection experiments with such dairy products on animals have proved. Most of the inhabitants of such cities daily consume such living and perfectly virulent bacilli of bovine tuberculosis, and unintentionally carry out the experiment which we are not at liberty to make. If the bacilli of bovine tuberculosis were able to infect human beings, many cases of tuberculosis caused by the consumption of alimenta containing tubercle-bacilli could not but occur among the inhabitants of great cities, especially the children. And most medical men believe that this is actually the case.

In reality, however, it is not so. That a case of tuberculosis has been caused by alimenta can be assumed with certainty only when the intestine suffers first—*i. e.*, when a so-called primary tuberculosis of the intestine is found. But such cases are extremely rare. Among many cases of tuberculosis examined after death, I myself remember having seen primary tuberculosis of the intestine only twice. Among the great post-mortem material of the Charité Hospital in Berlin ten cases of primary tuberculosis of the intestine occurred in five years. Among 933 cases of tuberculosis in children at the Emperor and Empress Frederick's Hospital for Children, Baginsky never found tuberculosis of the intestine without simultaneous disease of the lungs and the bronchial glands. Among 3104 post mortems of tubercular children, Biedert observed only sixteen cases of primary tuberculosis of the intestine. I could cite from the literature of this subject many more statistics of the same kind, all indubitably showing that primary tuberculosis of the intestine, especially among children, is a comparatively rare disease,

and of these few cases that have been enumerated, it is by no means certain that they were due to Infection by bovine tuberculosis. It is just as likely that they were caused by the widely propagated bacilli of human tuberculosis, which may have got into the digestive canal in some way or other—for instance, by swallowing saliva of the mouth. Hitherto nobody could decide with certainty in such a case whether the tuberculosis of the intestine was of human or of animal origin. Now we can diagnose them. All that is necessary is to cultivate in pure culture the tubercle-bacilli found in the tubercular material, and to ascertain whether they belong to bovine tuberculosis by inoculating cattle with them. For this purpose I recommend subcutaneous injection, which yields quite specially characteristic and convincing results. For half a year past I have occupied myself with such investigations, but, owing to the rareness of the disease in question, the number of the cases I have been able to investigate is but small. What has hitherto resulted from this investigation does not speak for the assumption that bovine tuberculosis occurs in man.

Though the important question whether man is susceptible to bovine tuberculosis at all is not yet absolutely decided, and will not admit of absolute decision to-day or to-morrow, one is nevertheless already at liberty to say that, if such a susceptibility really exists, the infection of human beings is but a very rare occurrence. I should estimate the extent of infection by the milk and flesh of tubercular cattle, and the butter made of their milk, as hardly greater than that of hereditary transmission, and I therefore do not deem it advisable to take any measures against it.

So the only main source of the Infection of tuberculosis is the sputum of consumptive patients, and the measures for the combating of tuberculosis must aim at the prevention of the dangers arising from its diffusion. Well, what is to be done in this direction? Several ways are open. One's first thought might be to consign all persons suffering from tuberculosis of the lungs, whose sputum contains tubercle-bacilli to suitable establishments. This, however, is not only absolutely impracticable, but also unnecessary. For a consumptive who coughs out tubercle-bacilli is not necessarily a source of Infection on that account, so long as he takes care that his sputum is properly removed and rendered innocuous. This is certainly true of very many patieuts, especially in the first stages, and also of those who belong to the well-to-do classes, and are able to procure the necessary nursing. But how is it with people of very

small means? Every medical man who has often entered the dwellings of the poor, and I can speak on this point from my own experience, knows how sad is the lot of consumptives and their families there. The whole family have to live in one or two small, ill ventilated rooms. The patient is left without the nursing he needs, because the able-bodied members of the family must go to their work. How can the necessary cleanliness be secured under such circumstances? How is such a helpless patient to remove his sputum, so that it may do no harm? But let us go a step further and picture the condition of a poor consumptive patient's dwelling at night. The whole family sleep crowded together in one small room. However cautious he may be, the sufferer scatters the morbid matter secreted by his diseased lungs every time he coughs, and his relatives close beside him must inhale this poison. Thus whole families are infected. They die out, and awaken in the minds of those who do not know the infectiousness of tuberculosis the opinion that it is hereditary, whereas its transmission in the cases in question was due solely to the simplest processes of Infection, which do not strike people so much, because the consequences do not appear at once, but generally only after the lapse of years.

Often, under such circumstances, the Infection is not restricted to a single family, but spread in densely inhabited tenement houses to the neighbors, and then, as the admirable investigations of Biggs have shown in the case of the densely peopled parts of New York, regular nests or foci of disease are formed. But, if one investigates these matters more thoroughly, one finds that it is not poverty *per se* that favors tuberculosis, but the bad domestic conditions under which the poor everywhere, but especially in great cities, have to live. For, as the German statistics show, tuberculosis is less frequent even among the poor, when the population is not densely packed together, and may attain very great dimensions among a well-to-do population when the domestic conditions, especially as regards the bedrooms, are bad, as is the case, for instance, among the inhabitants of the North Sea coast. So it is the overcrowded dwellings of the poor that we have to regard as the real breeding places of tuberculosis; it is out of them that the disease always crops up anew, and it is to the abolition of these conditions that we must first and foremost direct our attention if we wish to attack the evil at its root, and to wage war against it with effective weapons.

This being so, it is very gratifying to see how efforts are being made in almost all countries to improve the domestic con-

ditions of the poor. I am also convinced that these efforts, which must be promoted in every way, will lead to a considerable diminution of tuberculosis. But a long time must elapse ere essential changes can be effected in this direction, and much may be doue meanwhile in order to reach the goal much more rapidly.

If we are not able at present to get rid of the danger which small and overcrowded dwellings involve, all we can do is to remove the patients from them, and, in their own interests and that of the people about them, to lodge them better; and this can be done only in suitable hospitals. But the thought of attaining this end by compulsion of any kind is very far from me, what I want is that the consumptives may be enabled to obtain the nursing they need better than they can obtain it now. At present a consumptive in an advanced stage of the disease is regarded as incurable and as an unsuitable inmate for a hospital. The consequence is that he is reluctantly admitted and dismissed as soon as possible. The patient too, when the treatment seems to him to produce no improvement, and the expenses, owing to the long duration of his illness, weigh heavily upon him, is himself animated by the wish to leave the hospital soon. That would be altogether altered if we had special hospitals for consumptives, and if the patients were taken care of there for nothing, or at least at a very moderate rate. To such hospitals they would willingly go; they could be better treated and cared for there than is now the case. I know very well that the execution of the project will have great difficulties to contend with, owing to the considerable outlay it entails. But very much would be gained if, at least in the existing hospitals, which have to admit a great number of consumptives at any rate, special wards were established for them, in which pecuniary facilities would be offered them. If only a considerable fraction of the whole number of consumptives were suitably lodged in this way, a diminution of infection and consequently of the sum-total of tuberculosis could not fail to be the result. Permit me to remind you in this connection of what I said about leprosy. In the combating of that disease also great progress has already been made by lodging only a fair number of the patients in hospitals. The only country that possesses a considerable number of special hospitals for tubercular patients is England, and there can be no doubt that the diminution of tuberculosis in England, which is much greater than in any other country, is greatly due to this circumstance. I should point to the found-

ing of special hospitals for consumptives and the better utilization of the already existing hospitals for the lodging of consumptives as the most important measure in the combating of tuberculosis, and its execution opens a wide field of activity to the state, to municipalities, and to private benevolence. There are many people who possess great wealth, and would willingly give of their superfluity for the benefit of their poor and heavily afflicted fellow creatures, but do not know how to do this in a judicious manner. Here is an opportunity for them to render a real and lasting service by founding consumption hospitals, or purchasing the right to have a certain number of consumptive patients maintained in special wards of other hospitals free of expense.

As, however, unfortunately, the aid of the state, the municipalities, and rich benefactors will probably not be forthcoming for a long time yet, we must for the present resort to other measures that may pave the way for the main measure just referred to, and serve as a supplement and temporary substitute for it.

Among such measures I regard obligatory notification as specially valuable. In the combating of all infectious diseases it has proved indispensable as a means of obtaining certain knowledge as to their state, especially their dissemination, their increase and decrease. In the conflict with tuberculosis also we cannot dispense with obligatory notification; we need it not only in order to inform ourselves as to the dissemination of this disease, but mainly in order to learn where help and instruction can be given, and especially where the disinfection which is so urgently necessary when consumptives die or change their residences has to be effected. Fortunately it is not at all necessary to notify all cases of tuberculosis, nor even all cases of consumption, but only those that, owing to the domestic conditions, are sources of danger to the people about them. Such limited notification has already been introduced in various places, in Norway, for instance, by a special law, in Saxony by a ministerial degree, in New York and in several American towns, which have followed its example. In New York, where notification was optional at first and was afterwards made obligatory, it has proved eminently useful. It has thus been proved that the evils which it used to be feared the introduction of notification for tuberculosis would bring about need not occur, and it is devoutly to be wished that the examples I have named may very soon excite emulation everywhere.

There is another measure, closely connected with notification, viz., disinfection, which, as already mentioned, must be effected when consumptives die or change their residence, in order that those who next occupy the infected dwelling may be protected against infection. Moreover, not only the dwellings but also the infected beds and clothes of consumptives ought to be disinfected.

A further measure already recognized on all hands as effective, is the instructing of all classes of the people as to the infectiousness of tuberculosis, and as to the best way of protecting one's self. The fact that tuberculosis has considerabiy diminished in almost all civilized states of late is attributable solely to the circumstance that knowledge of the contagious character of tuberculosis has been more and more widely disseminated, and that caution in intercourse with consumptives has increased more and more in consequence. If better knowledge of the nature of tuberculosis has alone sufficed to prevent a large number of cases, this must serve us as a significant admonition to make the greatest possible use of this means, and to do more and more to bring it about that everybody may know the dangers that threaten them in intercourse with consumptives. It is only to be desired that the instructions may be made shorter and more precise than they generally are, and that special emphasis be laid on the avoidance of the worst danger of infection, which is the use of bedrooms and small ill-ventilated workrooms simultaneously with consumptives. Of course the instructions must include directions as to what consumptives have to do when they cough and how they are to treat their sputum.

Another measure, which has come into the foreground of late, and which at this moment plays to a certain extent a paramount part in all efforts for the combating of tuberculosis, works in quite another direction. I mean the founding of sanatoria for consumptives.

That tuberculosis is curable in its early stages must be regarded as an undisputed fact. The idea of curing as many tubercular patients as possible in order to reduce the number of those that reach the infectious stage of consumption, and thus to reduce the number of fresh cases, was therefore a very natural one. The only question is whether the number of persons cured in this way will be great enough to exercise an appreciable influence on the retrogression of tuberculosis. I will try to answer this question in the light of the figures at my disposal.

According to the business report of the German Central Committee for the Establishment of Sanatoria for the Cure of Consumptives, about 5500 beds will be at the disposal of these institutions by the end of 1901, and then, if we assume that the average stay of each patient will be three months, it will be possible to treat at least 20,000 patients every year. From the reports hitherto issued as to the results that have been achieved in the establishments we learn further that about 20 per cent. of the patients that have tubercle-bacilli in their sputum lose them by the treatment there. This is the only sure test of success, especially as regards prophylaxis. If we make this the basis of our estimates, we find that 4000 consumptives will leave these establishments annually as cured. But, according to the statistics ascertained by the German Imperial Office of Health, there are 226,000 persons in Germany over fifteen years of age who are so far gone in consumption that hospital treatment is necessary for them. Compared with this great number of consumptives the success of the establishments in question seems so small that a material influence on the retrogression of tuberculosis in general is not yet to be expected of them. But pray do not imagine that I wish, by this calculation of mine, to oppose the movement for the establishment of such sanatoria in any way, I only wish to warn against the over-estimating of their importance which has recently been observable in various quarters, based apparently on the opinion that the war against tuberculosis can be waged by means of sanatoria alone, and that other measures are of subordinate value. In reality the contrary is the case. What is to be achieved by the general prophylaxis resulting from recognition of the danger of infection and the consequent greater caution in intercourse with consumptives is shown by a calculation of Cornet's regarding the decrease of mortality from tuberculosis in Prussia in the years 1889 to 1897. Before 1889 the average was 31.4 per 10,000, whereas in the period named it sank to 21.8, which means that, in that short space of time, the number of deaths from tuberculosis was 184,000 less than was to be expected from the average of the preceding years. In New York, under the influence of the general sanitary measures directed in a simply exemplary manner by Beggs, the mortality from tuberculosis has diminished by more than 35 per cent. since 1886. And it must be remembered that both in Prussia and New York the progress indicated by these figures is due to the first beginnings of these measures. Considerably greater success is to be expected of their further

development. Beggs hopes to have got so far in five years that in the city of New York alone the annual number of deaths from tuberculosis will be 3000 less than formerly. I take this opportunity of most urgently recommending Dr. Beggs' organization to the study and imitation of all municipal sanitary authorities.

Now, I do indeed believe that it will be possible to render the sanatoria considerably more efficient. If strict care be taken that only patients be admitted for whom the treatment of those establishments is well adapted, and if the duration of the treatment be prolonged, it will certainly be possible to cure fifty per cent., and perhaps still more. But even then, and even if the number of the sanatoria be greatly increased, the total effect will always remain but moderate. The sanatoria will never render the other measures I have mentioned superfluous. If their number become great, however, and if they perform their functions properly, they may materially aid the strictly sanitary measures in the conflict with tuberculosis.

If now, in conclusion, we glance back once more to what has been done hitherto for the combating of tuberculosis, and forward to what has still to be done, we are at liberty to declare with a certain satisfaction that very promising beginnings have already been made. Among these I reckon the consumption hospitals of England, the legal regulations regarding notification in Norway and Saxony, the organization created by Beggs in New York, the sanatoria, and the instruction of the people. All that is necessary is to go on developing these beginnings, to test, and if possible to increase their influence on the diminution of tuberculosis, and wherever nothing has yet been done, to do likewise.

If we are continually guided in this enterprise by the spirit of genuine preventive medical science, if we utilize the experience gained in conflict with other pestilences, and aim, with clear recognition of the purpose and resolute avoidance of wrong roads, at striking the evil at its root, then the battle against tuberculosis, which has been so energetically begun, cannot fail to have a victorious issue.

TUBERCLE BACILLI IN COWS' MILK AS A POSSIBLE SOURCE OF TUBERCULOUS DISEASE IN MAN.

By Professor John McFadyean, M.B., M.R.C.V.S.

As recently as a few days ago, when I was mentally arranging the material for the paper which I have now the great honor

of submitting to this Congress, I was under the impression that it would not be necessary to formally prove that the term tuberculosis as it is now employed by medical men and veterinary surgeons relates to one and the same disease. I thought that I might ask my audience to accept it as proved, and generally admitted, that tuberculosis in man is caused by a single definite species of organism—the tubercle bacillus—that this organism is also the cause of the disease to which veterinary surgeons apply the term tuberculosis in the case of cattle and other domesticated species, and that there therefore existed a *prima facie* case against the germs formed in the bodies of tuberculous animals as a possible source of tuberculous disease in human beings.

To-day, however, the position of any one who undertakes to discuss the inter-communicability of human and bovine tuberculosis is very different from what it would have been a week ago, for in the interval the greatest living authority on tuberculosis—the world-renowned discoverer of the tubercle bacillus, and the man to whom we are mainly indebted for our knowledge of the cause of tuberculosis—has declared his conviction that human and bovine tuberculosis are practically two distinct diseases. I do not know how far the reasons assigned by Dr. Koch for the opinion which he now holds on this question may have commended themselves to the members of this Congress, and I am overwhelmed at finding myself in a position which compels me to offer some criticism on the pronouncement of one the latchet of whose shoes I am not worthy to unloose.

That bovine and human tuberculosis are identical diseases was generally supposed to have been finally determined by Dr. Koch himself, when he discovered that the human and the bovine lesions contained bacilli that were identical in morphological, tinctorial, and cultural characters, and showed that the artificial cultures from both sources produced indistinguishable effects when they were employed to infect a variety of animals. The labors of hundreds of workers during the succeeding eighteen years produced nothing in serious conflict with the conclusion that human and bovine tuberculosis were identical diseases, but they brought to light what appeared to be additional evidence of this identity, such as the discovery that tuberculin produced a specific reaction in tuberculous cattle, whether human or bovine bacilli had been employed in its preparation. In short, the identity of the bacilli from the two sources appeared to be as firmly established as any other generally ac-

cepted opinion regarding the identity or non-identity of bacteria associated with disease in more than one species of animal. Since it thus appeared to be proved that the only difference between human and bovine tubercle bacilli lay in their accidentally different position—one being parasitic in man and the other in cattle—it was natural to conclude that, when circumstances were favorable for the transference of bacilli from one species to the other, human tuberculosis might have an animal origin, and *vice versa.*

Opinions varied as to the frequency with which this transmission of tuberculosis from one species to the other occurred, but practically never within the last eighteen years regarding the possibility and probability of such reciprocal infection. What are the grounds upon which we are asked to discard convictions that appeared to rest on such a solid basis? I shall endeavor to state them briefly, as I understand Dr. Koch's train of reasoning.

(1) The bacilli found in cases of bovine tuberculosis are much more virulent for cattle and other domestic quadrupeds than the bacilli found in cases of human tuberculosis.

(2) This difference is so marked and so constant that it may be relied upon as a means of distinguishing the bacilli of bovine tuberculosis from those of the human disease, even assuming that the former may occasionally be found as a cause of disease in man.

(3) If bovine bacilli are capable of causing disease in man, there are abundant opportunities for the transference of the bacilli from the one species to the other, and cases of primary intestinal tuberculosis from the consumption of tuberculous milk ought to be of common occurrence. But post-mortem examination of human beings proves that cases of primary intestinal tuberculosis are extremely rare in man, and therefore it must be concluded that the human subject is immune against infection with the bovine bacilli, or is so slightly susceptible that it is not necessary to take any steps to counteract the risk of infection in this way.

Now, with the utmost diffidence I venture to submit that at least one of the premises contained in this argument is not well founded, that the others have little or no bearing on the question, and that there still remain reasonable grounds for regarding tuberculous cows' milk as distinctly dangerous to human beings.

It cannot be denied that what may be called bovine tubercle

bacilli are as a rule distinctly more virulent for cattle and other domesticated animals than human bacilli, or that the results of experiments indicate that in natural circumstances there is little danger of cattle becoming infected from human beings. But it cannot be admitted that the low virulence of human bacilli for cattle proves, or even makes it probable, that bovine bacilli have only a feeble pathogenic power for man. That might have been held to be probable if it had been shown that bovine bacilli were very virulent only for cattle, but since it is well established that these bacilli are highly dangerous for such diverse species as the rabbit, horse, dog, pig, and sheep, and, in short, for almost every quadruped on which they have been tried, it appears to be highly probable that they are also dangerous to man. At any rate it is impossible to cite any ascertained fact relating to other bacterial diseases that makes the contrary conclusion probable. It is well known that the majority of disease-exciting bacteria are harmful to only one or two species, but all those that are common to all the domesticated animals are also pathogenic to man.

With regard to the view that the difference between human and bovine bacilli in respect of virulence for cattle is of such a fixed and constant character that it may be relied upon to distinguish the one from the other, it need only be said that that is very far from proved. It appears to be quite possible that what may be called the normal or average virulence of bovine bacilli for cattle may be reduced by passage through the human subject. Besides, there are very great differences in the virulence of tubercle bacilli found in animals of the same species, and if a low degree of virulence for cattle is to be taken as the distinguishing feature of human bacilli, there will be no difficulty in proving that the human disease is sometimes transmitted to the lower animals.

The third proposition in Dr. Koch's argument is the only one which is really germane to the point at issue, viz., that only cases of primary intestinal tuberculosis can possibly have had their origin in infected milk or meat, and that "such cases are extremely rare." Dr. Koch refers to several large series of post-mortem observations that appear to justify this statement, and adds that he could have cited many more pointing to the same conclusion. Now, if it were a fact that all the statistics relating to this point were unanimous, it would have to be admitted that primary intestinal tuberculosis is rare in the human subject, and that cases of infection through milk are still rarer,

though even then it might be advisable to take measures to prevent the few cases. But the statistics are not by any means unanimous, and those that are likely to appeal with most force to the people in this country are not at all in accord with those quoted from Germany. During the last few years the evidence obtainable from the post-mortem records of two of the largest hospitals for children in this country have been analyzed with great care, in order to see what evidence they afforded as to the relative frequency of the different methods of infection in tuberculosis. In the case of the Hospital for Sick Children in Great Ormond Street this has been done by Dr. George Still, and in the case of the Royal Hospital for Sick Children in Edinburgh by Dr. Shennan. The conclusion at which Dr. Still arrived was that in 29.1 per cent. of the cases of tuberculosis in children primary infection appeared to have taken place through the intestine. That is very far from being an insignificant proportion, and it is a striking fact that Dr. Shennan arrived at an almost identical conclusion, and estimated that 28.1 per cent. of the cases of tuberculosis among children in Edinburgh are due to alimentary infection. There does not appear to be any ground for supposing that there is a large margin of error in these statistics, as the number of cases dealt with was considerable (547 in the two series), and in both series the post-mortem appearances were interpreted in a way to which no exception can be taken. In face of these statistics it is not possible to assent to the statement that cases of primary tuberculosis of the alimentary canal are extremely rare. Precisely the contrary conclusion is the one that must in the meanwhile be drawn with regard to the state of affairs in this country, viz., that, at least in children, primary infection by way of the alimentary canal is comparatively common.

I therefore submit that there is still a strong *prima facie* case against animal tuberculosis as a possible source of human tuberculosis, and it becomes necessary to consider whether there are any data from which one may estimate the extent of the danger to which human beings are exposed through the occurrence of tubercle bacilli in milk.

The evidence in favor of the view that the ingestion of tuberculous milk is one of the causes of human tuberculosis includes a number of recorded cases in which the relationship of cause and effect appeared to be obvious. From the nature of the circumstances, evidence of this kind is very scanty, and it must be admitted that very few of the alleged examples are abso-

lutely convincing. Tuberculosis is a disease that develops slowly, and, assuming for the moment that tubercle bacilli do occur in milk, and are a cause of disease in persons consuming such milk, it is obvious that, as a rule, the very act by which the infection is brought about destroys the only direct evidence of cause and effect that exists.

One could only expect to be able to trace the disease to the milk when, after the onset of symptoms pointing to infection by way of the mouth, the cow from which the milk had been obtained was still available for examination. In practice this is rarely the case, and it is therefore not surprising that medical literature contains very few specific instances of the infection of human beings with tuberculosis by means of milk. It is obvious, however, that the entire absence of evidence of this kind would in no way exonerate milk from the suspicion of being one of the causes of human tuberculosis.

We have already seen that, at least in this country, in a considerable number of cases of tuberculosis occurring in early life, the first seeds of the disease appear to have entered the body by way of the mouth. What proportion of these cases ought to be ascribed to tubercle-infected milk? It scarcely appears to be possible to give a very confident reply to this question, though some distinguished authorities have not hesitated to express the opinion that practically all the cases of primary intestinal tuberculosis occurring in childhood may be set down to this cause. The late Sir Richard Thorne Thorne, in the Harben Lectures on the administrative control of tuberculosis, which he delivered in 1898, expressed his conviction that tuberculous milk was the main cause of *tabes mesenterica* in children, and he characterized the loss of child life from this cause as appalling. The evidence on which this formidable charge was laid against the milch cow was of the following nature. The Registrar-General's returns show that during the last fifty years there has been a marked decline in the death-rate from human phthisis, which is the form that tuberculosis generally takes when the bacilli are inhaled. On the other hand, during the same period there has been only a slight decline in the death-rate at all ages from that form of tuberculosis which is ascribable to alimentary infection, and among children under one year of age there has been a notable increase in the mortality from that form of the disease. The decline in the death-rate from phthisis is ascribable to the great improvements which have been effected during the last fifty years in the hygiene of human habitations, such as im-

provements in lighting, drainage, and ventilation. These, naturally, have not interfered with infection through milk, which has therefore remained unchecked, and in infants has even increased, because, during the last fifty years, cows' milk has entered more largely into the dietary of very young children.

There are several weak points in this argument. Perhaps the weakest of all is the assumption that the deaths certified under the head of *tabes mesenterica* correspond closely with those which the pathologist would classify as cases of primary alimentary infection. It is scarcely possible to doubt that the term *tabes mesenterica* in the Registrar-General's Returns covers a heterogeneous collection of cases, of which the majority may not be cases of tuberculosis at all. But even if it is agreed to accept all the cases registered under the head of *tabes mesenterica* as instances of primary alimentary infection, the figures found in the Registrar-General's Returns do not support the contention that milk is responsible for all the cases of *tabes*. It is true that they indicate an increase in the death-rate from alimentary tuberculosis among children under twelve months' old, but, on the other hand, there appears to have been a considerable decline in the death-rate from the same cause at all ages between one and five years. Now, if tuberculous milk were a frequent cause of tuberculosis, one would not have expected the death-rate from that cause to decline among children between one and five years of age, for there is no reason to suppose that there has been any decline in the use of cows' milk in the feeding of children at that age during the last fifty years. The fact appears to be that the Registrar-General's Returns do not afford much trustworthy information with regard to the number of cases of primary alimentary tuberculosis, and are absolutely worthless as an indication of the extent to which human beings are infected by means of milk.

There is another direction in which one may turn for evidence on this point. We cannot with any pretence to accuracy ascertain the number of persons that annually become infected by milk, but we may be able to form some estimate of the existing danger in this connection by collecting information as to the frequency with which milk contains tubercle bacilli. We know that about thirty per cent. of all the cows giving milk in this country are tuberculous in some degree. This statement no doubt indicates a deplorable state of affairs, but in the present connection it is not quite so alarming as it at first sight appears. Fortunately not every cow that is tuberculous gives milk con-

taining tubercle bacilli. It is true that opinions with regard to this point are not absolutely unanimous, but there is ample evidence to justify the assertion that as a rule the milk is not dangerous until the udder itself becomes diseased. The experiments pointing to an opposite conclusion form only a small minority, and the results obtained in most of them were probably due to carelessness on the part of the experimenter.. In a few of the cases in which the milk of an apparently healthy udder was found to be infective, it is probable that the gland tissue was in reality diseased, though not to an extent discoverable without microscopic examination. The important question, therefore, is not what proportion of milch cows are tuberculous, but what proportion of them have tuberculous udders. Some authorities have estimated this to be as high as ten per cent., but the proportion is certainly much less than that in Great Britain. My own experience leads me to think that about two per cent. of the cows in the milking herds in this country are thus affected. Now, the milk secreted by a tuberculous udder always contains tubercle bacilli, and it sometimes contains enormous numbers of them, and when these facts are apprehended one begins to realize the seriousness of the danger to which, in the present state of affairs, those who drink uncooked milk are exposed. But there are one or two considerations that make the danger greater than the mere statement of the number of cows affected would at first sight indicate. In the first place, the udder disease is not attended by any pain or tenderness in milking, and the milk for a considerable time after the udder has become manifestly diseased may appear quite wholesome, though in reality it is charged with the germs of tuberculosis. It therefore often happens that the gravity of the condition is not realized by the milker or the owner of the cow, and the milk continues to be sold for human consumption. There is scarcely any room for doubt that if it were sold and consumed unmixed with other milk, some of the persons partaking of it would become infected. In practice it is usually mixed with the milk from other cows that have healthy udders, and thus the germs are distributed among a larger number of persons. Even tuberculous milk that has been thus much diluted may prove infective, but the danger to the individual consumer is in inverse proportion to the degree of dilution.

Since about one cow in fifty is the subject of tuberculosis of the udder, and the average number of cows in the milking herds of this country is less than fifty, it follows that the majority

of dairies and farms supply milk that is free from tubercle bacilli, or at least does not contain any derived from this source. On the other hand, when the infected material is present, it operates with the greatest intensity in the milk of single cows, and in the mixed milk from small herds.

It must be added that tuberculous disease of the udder is not the only source of tubercle bacilli found in milk. A great deal of the milk in the market contains a considerable quantity of dust and dirt, most of which comes from the cow's udder and the hands of the milker, and part from the dust of the air of the cowshed. When thirty per cent. of the cows in a byre are tuberculous, the dirt in that building, and the atmosphere in it, are almost certain to contain tubercle bacilli, and some of these are very likely to find their way into the milk. The more dirt milk contains, the greater is the chance that tubercle bacilli from that source may be present.

What has been said with regard to the extent of the danger to which the public are exposed through the sale of milk containing tubercle bacilli may be summed up as follows:—The danger cannot be defined by stating how many persons are thus infected annually, or what fraction the persons thus infected form of the total number who contract tuberculosis in the course of a year. At the same time, it is impossible to doubt that the danger is a very real one, since at the present time milk is a vehicle by which tubercle bacilli are often introduced into the bodies of human beings.

MEANS OF AVERTING THE DANGER.

The ideal method of counteracting this source of human disease would be to stamp out bovine tuberculosis, or to prevent the sale of milk from every cow that is tuberculous. Unfortunately, it must be admitted that at present that is unattainable. At the present time probably not less than thirty per cent. of all the breeding and milking cattle in this country are in some degree affected with tuberculosis, and to urge that the disease should be attacked on the lines adopted in dealing with cattle plague and pleuro-pneumonia is an effectual method of preventing any government from touching the subject. But, although the complete and rapid extermination of the disease is impossible, it does not follow that nothing can be done, or ought to be done in the way of prevention. The disease has attained to its present alarming proportions simply because, until quite recently, altogether erroneous notions were held regarding its cause, and because there has hitherto been the most absolute neglect of the

precautions necessary for its prevention. The greatest obstacle to successful action against tuberculosis, whether in man or animals is the ignorance of the laity regarding the cause of the disease. The immense majority of cattle owners are not yet convinced that contagion is the only cause of tuberculosis, and very few of them have yet made the slightest effort to check the spread of the disease. As a rule, cows and other cattle visibly ill from tuberculosis are still left alive and in close association with their fellows, although the lowest grade of common sense and prudence would suggest that such animals ought to be promptly killed, or, at least, isolated. It is not want of common sense, nor is it mainly lack of means, that is responsible for this inaction; it is simply a want of conviction on the part of cattle owners that tuberculous animals are dangerous to their companions.

The first thing necessary in this connection is education of the people regarding the nature of the disease. It is necessary, because in this country, where Parliament never moves except by the force of public opinion, the legislative action required will not be taken unless the people are satisfied of its wisdom, and also because even the most drastic sanitary measures enforced by the law are likely to fail if they are not supplemented by the intelligent coöperation of the people. The National Association for the Prevention of Consumption and the Royal Agricultural Society have been endeavoring to disseminate sound views regarding the cause of bovine tuberculosis among farmers and others, but much remains to be done in this direction. But it is not reasonable to ask that things should be left as they are until the education of the farmer in the matter of tuberculosis has been finished. If there are any practicable and reasonable measures by which, figuratively speaking, the flow of tubercle bacilli from tuberculous cows to healthy human beings can be stopped or impeded, they ought to be immediately enforced.

As soon as the valuable diagnostic properties of tuberculin had been proved by experience, it occurred to a good many people that its assistance ought to be called in in order to exclude tuberculous cows from milking herds. In other words, it was thought that although it might not be practicable to insist upon the application of the tuberculin test to all infected herds, and to compel the isolation or slaughter of all cattle thus found to be infected, it might still be possible to require that only cows found to be free from the disease by the application of the test should be kept for milch purposes. I doubt whether anyone

who is well acquainted with the circumstances of the case now believes this practicable. Here, again, the fact that one-third of the cows now giving milk are tuberculous is an insurmountable obstacle. The cost of carrying out the tuberculin test several times annually in all the milking herds in this country would be enormous, and the exclusion of all reacting cows from such herds would seriously disorganize cattle breeding as well as milk production. Moreover, to rely blindly on the tuberculin test, and to pronounce the milk of every cow that does not react to it free from tubercle bacilli, would be very unsafe. The test is recognized to be one of great value, but it is not infallible. Rather serious defects in connection with it are :—(1) that for a period after infection—a period that is sometimes very considerable—an animal will not react; (2) that in some advanced cases of tuberculosis no distinct reaction is obtainable; and (3) that in a considerable proportion of cases a second reaction is not obtainable for some days or weeks after the first. It is therefore clear that if we wish to exclude the milk of tuberculous cows, or if the object is the more restricted one of preventing the sale of milk from tuberculons udders, some system of inspection is necessary. This was the conclusion at which the Second Royal Commission on Tuberculosis arrived. We have already seen that whatever danger attaches to milk comes mainly from the cows with tuberculosis of the udder, and the public health would be almost entirely safeguarded from this danger if we could exclude such animals from our dairies. Periodic examination by competent inspectors would go a long way to securing this object, but the inspection would require to be at rather short intervals, for a tuberculosis of the udder may come into existence and attain most dangerous dimensions in a period of a few weeks. The more frequent the inspection the better, but, of course, this means a great deal of expense.

If every town and rural district produced its own milk, it would be a comparatively simple problem to organize and carry out a fairly efficient system of inspection of milch cows; but as the law at present stands, the majority of the population cannot obtain this safeguard. With the exception of Glasgow, Manchester, and a few other places, a local authority has no power to inspect cows outside its own district, and the helpless position in which this state of the law leaves the inhabitants of London and other large towns is obvious. If cows of which the milk is sold for human food had everywhere to be submitted to periodic inspection, such inspection would naturally be

undertaken by the various local authorities, each of which would supervise the cows and cowsheds in its own district; but the compulsory inspection of all the milch cows in the country would be a very large undertaking, and perhaps it would be premature to press for it. In the meantime, a good case can be made out for making general the special powers relating to inspection of cows in outside districts which a few fortunate cities have acquired by special Acts of Parliament. This also was one of the directions in which the members of the Second Royal Commission on Tuberculosis considered immediate action to be necessary.

There remain for consideration some other safeguards which would doubtless be less effective than those just discussed, but which, unlike these, would not be difficult to enforce, viz.:—(1) compulsory notification of udder disease and of any symptoms of tuberculosis in milch cows, with, of course, the power to inflict a considerable fine for not reporting; and (2) the interdiction of the sale of milk from any cow suffering from tuberculous disease of the udder, or exhibiting clinical signs of tuberculosis. Against the demand for the amendment of the existing law to the extent of granting the public these very reasonable safeguards against infection through milk it cannot be urged that they would be very expensive, or that they would press harshly on private interests. The present state of the law, or rather the almost entire absence of any law, dealing with tuberculous udder disease in cows is a scandal and a reproach to civilization. It scarcely sounds credible, but it is a fact that the owner of a cow in the most advanced state of tuberculosis, and exhibiting the most manifest signs of udder disease, may sell that cow's milk for human food as long as the sale has not been specially interdicted on the certificate of a veterinary surgeon, and no penalty attaches to this crime of deliberately or carelessly placing on the market a food material charged with the germs of a dangerous disease.

In the interests of public health, the sale of milk from tuberculous udders, and from cows that are obviously tuberculous in any part of the body, must be stopped, and it must be declared illegal to keep such animals alive. There need be no hesitation in pressing for this reform, because the measures demanded are in the interests of the owners of cattle, and would be advisable even if it were established that bovine tuberculosis is not transmissible to man. There is no dispute as to the danger of visibly tuberculous animals to others of their own

species, and it is the very reverse of a hardship to the owner of such animals to insist on their being slaughtered.

It would probably be regarded as a serious omission if I did not refer to one other method of counteracting whatever danger at present attaches to impure milk as a cause of human tuberculosis. No matter how highly charged milk may be with tubercle bacilli, it can be deprived of all danger from that source by raising it to the temperature known to be fatal to these germs. Less than the boiling temperature (212° F.) suffices for this purpose; but, unfortunately, the lowest temperature that can be relied upon imparts to the milk a flavor that many people find distasteful. That objection does not hold good in the case of infants and young children, and the custom of boiling or steaming the nursery milk for a few minutes cannot be made too general. But while abstinence from uncooked milk is a sure way of avoiding infection with bacilli present in that article of food, it cannot for a moment be admitted that this absolves public health authorities from all concern with the subject. Arsenical beer may be made harmless by adding the proper antidote before drinking it, but the most courageous brewer would not plead this as an excuse for selling the impure article.

In conclusion I would venture to express the earnest hope that the Congress will not endorse the view that it is inadvisable to take any measures to prevent the transmission of tuberculosis from the lower animals to human beings. To justify the introduction of measures to that end it is not necessary to contend that this is a common method of infection, or that the danger arising from milk can for a moment be compared with that present in human sputum. The inhalation of tubercle bacilli expelled from the bodies of human patients is doubtless the great cause of human tuberculosis, and every practicable means of preventing infection in that way ought to be employed; but, at the same time, we ought not to concede to the milkmen the right to sell us tubercle bacilli, even if we were assured that—like Dr. Koch's experimental pigs—we had nothing to fear beyond the development of "little nodules here and there in the lymphatic glands" of our necks and "a few grey tubercles" in our lungs.

THE French are recommending the bromhydrate of arecoline subcutaneously injected for azoturia. See Prof. Liautard's "European Chronicles" in this number.

[*ABSTRACT.*]

MEASURES TAKEN AGAINST TUBERCULOSIS IN DENMARK.

By Holzer Rördam,

Chief Physician of the First Class of Naval Marine.

Compared with many other countries in Europe, Denmark remained for a long while behind-hand in the struggle against tuberculosis, but during the last few years the inhabitants have taken up the matter with considerable energy.

The oldest hospital for tuberculous patients is situate in the peninsula *Refsnaes.* It was founded in 1874. It was arranged at first for 100 patients; later it was increased to accommodate 130, without reckoning twelve beds in the establishment for patients suffering from epidemic complaints, and sixteen beds in the ward for ordinary diseases.

The hospital only admits scrofulous children.

The construction of the whole establishment cost about 500,000 francs and the fitting of it up about 60,000 francs. The money for the construction and the working of the hospital has been furnished up to a certain point by private benefaction; but the State and the Municipalities have also contributed their quota. Thus, under the Financial Act of last year, a sum of 35,000 francs was voted from the Treasury, and the municipality of Copenhagen supplied 12,000 francs. The annual working expenses amount to 125,000 francs. Several savings banks, the great monastery of Vallor, as well as the Classen Trust, are donors of contributions. During the last twenty-five years the total number of scrofulous children treated has been 2750. 1222, or 52 per cent., have been completely cured; 878, or 35 per cent., have attained to a remarkable degree of health.

The Municipality of Copenhagen possesses, in addition, a small hospital for scrofulous patients at Snogebeck, in the island of Bornholm, where seventy chlldren were treated last year, this costing 10,000 francs.

The Society for Children's Hospitals in Copenhagen and its suburbs, which was formed ten years ago, now possesses an establishment at Hellebock, at which 197 children were treated in 1899. The aim of the Society is to found a sufficient number of small hospitals situate on the sea-coast, where weakly, and above all scrofulous children, shall be admitted without pay.

The Finsen Institute was founded at the initiative of Professor Nie's Rigberg Finsen, in 1896, for the purpose of making experiments, and of contributing to the progress of research on the effect of light on living organisms; above all, with the intention of utilizing the rays to the benefit of practical medicine. The Institute, the administration of which is under the presidency of M. Blagemann, manufacturer and municipal councillor, has received numerous private donations, and by the Financial Act of 1900, it has been voted a sum of 350,000 francs, as a loan without interest. The Institute is established at Rosenvaenget, in Copenhagen. The number of lupus patients that have been cured is very considerable.

A large hospital for scrofulous children at Juilsmind is in construction; the treasury has supplied 80,000 francs, and Prince Carolath has made a present of an excellent site.

As a hospital for phthisis, properly so called, there exists but one at the present time, situate on the fjord of Vejle à Fakkegrav; it was opened on March 1st, 1900, with room for 92 patients. The hospital was founded under the name of "Hospital for Consumptives," by a society, the aim of which is philanthropic. The dividend of shares being limited to 4 per cent., the subsequent profit will be employed to lessen the payments of those in straitened circumstances. The president of the administrative council is Professor Borck, Doctor of Medicine. The president of the management is M. Reisz, Councillor and Doctor of Medicine. Danish physicians have contributed a sum of 60,000 francs, and private persons 300,000 francs. The Treasury has given 150,000 francs, and for non-paying rooms a donation of 30,000 francs has been received. The Sanatorium is situated on the fjord of Vejle, and possesses forest-land 42 hectares in extent. All expenses included, the hospital has cost about 1,100,000 francs, that is to say, 12,000 francs per bed. During the ten months, March to December, 1900, 206 patients have been treated at the Sanatorium. The payment for Danish subjects per day is 10 to 11 francs for a separate room, 8 to 10 francs for a common room. To foreigners the highest fee is 5 francs daily. The hospital is under the management of Dr. Sangmann, the head of the staff.

The Municipality of Copenhagen are having a Sanatorium for Consumptives constructed in the forest of Boscrup, near Roskilde. For this purpose the Municipal Council has voted a sum of 800,000 francs. Two buildings will be constructed for the patients, one with 55 to 63 beds for men, and the other with

48 to 56 beds for women. The buildings have three stories and basements. Later on it is intended to construct a third house, which will permit of the patients being inoreased to the number of 102 to 110 men, and of 54 to 63 women. The payment will be 2 francs per day.

Up to the present day this is all that has been done in Denmark in the way of constructing sanatoria. On the part of physicians, however, much energetic work has been done in this direction. In 1898 the Association of Danish Physicians presented a petition, supported by an address signed by 200,000 of the population, to the Government and to the National Assembly, having as an object the construction of sanatoria for consumptives, as well as the founding of hospital establishments and the supply of aid to the families of patients. For this purpose they demanded the nomination of a commission, and the relief organizations in cases of sickness have, in 1900, presented an address, supported by 250,000 signatures, requesting the establishment of three State Sanatoria. On grounds of expense, the Government have not ventured to include this item on their budget.

On January 19th, 1901, at the instigation of M. Rördam, chief physician of the 1st class, and deputy; also of M. Karl Loventsen, doctor of medicine and editor of the Danish journal of hygiene, The National League to combat Tuberculosis was founded. The league was received with great enthusiasm on the part of political personages of the highest distinction, physicians, civil servants, and financiers. The minimum annual subscription is three francs, and the League now numbers 10,000 members, this giving an annual income of 100,000 francs. The Prefect of the Municipality of Copenhagen is President of the Alliance, and the President of the Chamber of Deputies, the Vice-President, the Deputy, Mr. Roerdam, are the Directors of the Committee of Operations. The aims of the Alliance are the establishment of popular sanatoria for the poor, public lectures to enlighten people as to the nature of tuberculosis, and the giving relief to the families of patients. The League is divided into twenty-five sub-sections, with local administration. In the course of the summer noted physicians, as well as political men, will hold a hundred meetings throughout the country for the purpose of giving information as to tuberculosis, and making collections for the League. The Alliance has its office at 63, Gothersgade, Copenhagen.

In 1898, there appeared, at the expense of the Treasury, a

leaflet on the nature and contagious character of tuberculosis. Of this 100,000 copies were distributed among the public. In all public establishments, as well as in many other places, information as to the nature and contagiousness of tuberculosis has been placarded about; similarly, expectorating has been forbidden on all tramways and in railway carriages.

As to precautions established by law against tuberculosis, there are very few of them in Denmark. According to the law relating to epidemics, gratuitous disinfection after cases of death due to tuberculosis is enjoined; the same law enacts that apprentices, before being admitted to manufactories, be bound to show a doctor's certificate declaring that they are in good health; and by a new law relating to labor in factories decreed last year, some regulations as to cleanliness in these establishments have been enacted. But that is all that has been done on the part of the Legislature.

The Sanitary Commission of Copenhagen, on the other hand, by a decision dated May 15th, 1901, has enacted that by public provisions pending a new order, practising physicians may have sputum examined for tubercle bacilli free of charge, in doubtful cases of phthisis. Receptacles required for the receipt and transmission of the sputum are to be had from all the pharmaceutical chemists in the city, and are delivered up for examination at the laboratory of the Sanitary Commission, 12, Norrevaldgade. The laboratories, in their turn, will send a written report on the result of the analysis to the physician concerned at the earliest possible moment.

In almost all the towns of Denmark, control over meat supply is established, but it is solely an affair of the town whether it elects to put such control in force.

In regard to tuberculosis among animals, thanks to the efforts of Professor B. Bang, Denmark occupies a position among the most advanced nations. In each year's budget there are voted on behalf of this department three or four hundred thousand francs. By means of subsidies from the State, on behalf of voluntary inspections against tuberculosis, every owner is authorized to have his live-stock disinfected; and it is ordered by law that the milk served from dairies as provender for cattle must be heated to 100° Celsius. Similarly, cattle suffering from tuberculous inflammation of the udder must be slaughtered pending compensation to the owner; and the residuum of the products of centrifugal machines must be burnt and not used as pigs' provender.

In almost all the principal towns there are private associations which are charged with controlling the wholesomeness and the price of milk.

All things considered, it appears that Denmark has not progressed badly in the battle with tuberculosis. As to the mortality caused by tuberculosis, it is diminishing in a very remarkable manner.

MORTALITY FROM PHTHISIS.

	Per thousand of those living.		Per thousand of those deceased	
	Copenhagen.	Other Towns.	Copenhagen.	Other Towns.
1870–74	3·42	2·53	143·1	131·8
1875–79	3·14	2·34	129·2	114·2
1880–84	2·89	2·24	124·0	112·6
1885–89	2·51	2·28	112·8	117·8
1890–94	2·05	2·20	99·0	105·6
1895–98	1·86	1·84	106·3	103·4

[*ABSTRACT.*]

I. TUBERCULOSIS IN BOVINE ANIMALS: ITS DANGERS, ITS PROGRESS, ITS PROPHYLAXIS.

By Ed. M. Nocard, Alfort.

CONCLUSIONS:

A.—Tuberculosis is one of the diseases of cattle which causes most loss to agriculture in all countries.

B.—Everywhere the disease is on the increase; everywhere it forms a menacing danger to public health as well as to public wealth.

C.—Infection being the only formidable cause of the increase of tuberculosis, there is need for the adoption of legal measures prescribing:—

1. *The complete separation* of unhealthy from healthy animals;

2. The slaughtering, without delay, of those sick animals which show clinical signs of the disease, and especially of cows attacked with tuberculous mastitis;

3. The interdiction from selling other tuberculous animals for a destination other than the slaughter-house;

4. The pasteurization of all the sub-products of butter and cheese manufactories.

II. ON THE RISKS INVOLVED TO MAN FROM TUBERCULOUS ANIMALS (CO-OCCUPATION, MEAT, MILK).

MEANS OF GUARDING AGAINST THEM.

Conclusions:

A.—The resemblance of tuberculosis in man and in mammals is no longer denied. Healthy cattle-sheds have been infected by lengthened occupation by consumptive cattle-men.

The converse is equally possible, at least theoretically. If it is not thought possible to prohibit cattle-men from sleeping in cattle-houses containing tuberculous cows, the least that can be done is to warn the proprietors of the risks of this practice, and of the responsibility they may eventually incur. The nightly supervision of the suspected cow-shed can be effected by means of a glass building looking on to the cattle-sheds, but having no direct communication with them.

B.—Meat obtained from tuberculous animals is rarely dangerous, and when it is dangerous it is only slightly so. The established regulations for the inspection of tuberculous meat would be sufficient to prevent even the shadow of danger, if such regulations were applied always and everywhere.

Unfortunately this is not the case.

The inspection of meat is organized only in a small number of large towns; it ought to be done everywhere, in villages as well as in towns, and it should be everywhere forbidden to sell meat not bearing the stamp showing that it has been declared to be wholesome by a competent inspector. This inspection could be easily carried out, and at little cost, on a similar plan to that adopted in Belgium for many years.

C.—The milk given by tuberculous cows is rarely dangerous, but when it is dangerous it is most often so in a very high degree; hence the necessity of submitting cow-houses to a periodical inspection when the milk yielded is destined for public consumption. Cows being really only dangerous when they have a tuberculous udder, the inspector's attention should be drawn to the state of the udder. Any cow showing clinical signs causing suspicion of the existence of a tuberculous mastitis, or of serious visceral tuberculosis ought to be isolated at once, pending the making of a diagnosis, this being easily and

rapidly done by the present process; the milk should be boiled before being sold and consumed, even by the animals on the farm. The dairyman should be obliged to give information to the inspector as soon as he has ascertained the appearance of a mastitis of any sort. When the diagnosis is confirmed, the diseased cow should be rigorously excluded from giving milk, and should be slaughtered without the least delay. Lastly, the subproducts of butter or cheese manufactories (skimmed milk, butter-milk whey, etc.) should not be delivered for the consumption of persons or animals until they have been pasteurized at the minimum temperature of 85 Centigrade.

III. Presentation of a goat attacked with experimental mastitis, and demonstration of the process of diagnosis called "harponnage."

IV. Presentation of tables demonstrating the efficacy of the procedure recommended by the author for rendering cow-houses that are most seriously infected with tuberculosis healthy, and to restore them to their original state without being obliged to buy a single animal from outside. Calves born of tuberculous cows remain healthy on the only condition of isolating them from their mothers as soon as they are born, and of feeding them by bottle with boiled milk.

[*ABSTRACT.—Section IV.*]

THE DIAGNOSIS OF TUBERCULOSIS IN LIVING ANIMALS BY SERUM-AGGLUTINATION.

By Professor Arloing, Lyons.

Since 1898, the author has been trying to discover the existence of tuberculosis in man and in animals by agglutination effected by the serum of suspected subjects (*des suspects*) and a homogeneous culture of Koch's bacillus in a glycerinated broth, *carefully selected for this purpose.*

Applied to animals of the bovine species the observations, carried out on more than 150 subjects, have demonstrated :—

1. That the blood serum of calves from five to eight weeks old does not agglutinate these cultures and does not clear them when in the strength of 50 per cent. (*i. e.*, 50 per cent. serum.)

2. That the serum of *healthy* adults agglutinates and very often clears when of 20 per cent. strength, but never completely when of 10 per cent. strength.

3. That the serum of tuberculous adults, with rather rare exceptions, agglutinates and clears completely when between

10 per cent. and 5 per cent., and sometimes even when weaker than that.

So that every suspected animal which clears with 10 per cent. serum, a culture that would be imperfectly cleared with 20 per cent. serum from a healthy animal, may be considered as affected by tuberculosis.

4. A diagnostic injection of tuberculin (injection révélatrice de tuberculine) does not perceptibly modify the agglutinating power of healthy cattle (bovine).

5. Serum-agglutination is therefore a new method of diagnosing tuberculosis in oxen, which can be utilized under any conditions *ad hoc*, especially in cases where recourse cannot be had to the use of tuberculin.

PROF. KOCH MAKES A STATEMENT—"EXPERIMENT NOT ARGUMENT."

BERLIN, Aug. 16.—Professor Robert Koch, in a signed statement, to-day says :—

"Experiment and not argument must be the watchword of medical and scientific men who would fight consumption to the finish. I deprecate very deeply—though not from a personal standpoint, but from the standpoint of the vital issues involved—that theories, by whomsoever advanced, should now sow only greater discord in our already many-minded ranks. We are well on the road to victory over consumption. The final triumph is denied only by those who are unwilling to sacrifice their hobbies and work together to the common end.

"I have one word and only one word to say, and that is what I said in London. That word is 'experiment.' I would send it to my brother practitioners the world over. The time has passed when we may be guided either with certainty or profit by statistics. Nothing short of actual dealing with actual conditions will avail. We demonstrated that human tuberculosis was incapable of transmission to cattle.

"We have now to lend ourselves to the reverse proposition. We cannot, of course, experiment with human beings or infect them. Therefore it is necessary to keep a rigid lookout on all suspicions cases of what seems to be natural infection with cattle tuberculosis, and in this way proceed to determine if such cases really come from cattle disease or from human disease. We must continue such experiments unceasingly.

"Here in Berlin the Prussian institute for infectious disease has already made arrangement for experiments on an extensive

scale. Considerable herds of cattle have been purchased for the purpose and they will be added to as the emergency requires. It is proper to correct two mistaken impressions which have grown out of my recent London address.

"First—I laid no claim either to priority or monopoly to any ideas therein propounded. I sought only to tell of my own private experiments, and was, in fact, glad of the opportunity given to mention my contemporaries in some of their experiments, among whom was one of America's greatest medical authorities, Dr. Theobald Smith.

"Second—I did not mean to recommend the abandonment of comprehensive and expensive systems of regulation, prevention and inspection that are now in operation. I simply said that it was injurious and unnecessary to go further with such systems when we were justified in expecting that our long sought remedy was found and almost within our reach. Why, then, should we rear higher structures which must inevitably fall to the ground?"

KOCH'S TUBERCULOSIS CONCLUSIONS.

SPECIMEN COMMENTS OF THE MEDICAL AND AGRICULTURAL PRESS.

REVIEW BY THE "NEW YORK MEDICAL JOURNAL."

Several years ago Robert Koch startled the world by announcing that in tuberculin he had found practically a remedy for incipient tuberculous disease. At that time he had already achieved great distinction as a bacteriologist, and physicians everywhere, relying implicitly on his expressed convictions, vied with each other in obtaining and promptly employing the product, but it soon appeared evident that it was of no considerable curative efficiency save in the particular form of tuberculous disease known as lupus. Enthusiasm did not rise so high over his more recent *tuberculinum residuum* (T. R.), and now we hear little about it. It is no wonder, then, in view of the virtual failure of tuberculin, that when, before the recent British Congress of Tuberculosis, Koch belittled the precautions generally taken at the present day against the spread of tuberculous disease from cattle to man, there was a very general dissent from his views. It will, we think, take more than a few experiments, coupled with rather sweeping deductions from common observation, to demonstrate to the medical profession

that the supposed fact by which those precautions are warranted is no fact at all, for that is what Koch's contention will generally be interpreted as amounting to.

Professor Koch seems to have convinced himself that cattle are nearly, if not quite, insusceptible to infection with the micro-organism that occasions tuberculous disease in human beings. His experiments, not many in number, but extending over a considerable period of time and persistently and systematically carried on, it must be admitted, have failed to convey the human disease to cattle, whether they consisted in feeding them with tuberculous sputum, in implanting it in a serous cavity, or in injecting it beneath the skin, whereas the same forms of inoculation with tuberculous material of bovine origin promptly resulted in infecting the animals with tuberculous disease. Great weight should undoubtedly be accorded to these experiments and to any opinion expressed by so acute an observer as Professor Koch, but in our opinion they cannot be held to be decisive by themselves alone. Opposed as they are to almost universal conviction, they cannot be accepted offhand as final. Further experiments, varied perhaps in some ways that have not occurred to Professor Koch and that possibly will not at once suggest themselves to the minds of others, will have to be made before the question of the transmissibility of human tuberculous disease to cattle can be regarded as quite settled. Perhaps there are few qualified observers who would at the present time declare without reserve that "tuberculosis of man and cattle is identical," as the United States Veterinary Medical Association did by resolution in 1896, but at least they are so nearly identical that each is capable of yielding a product known as tuberculin, and surely that is a dangerous approach to identity.

Furthermore—and this is a far more momentous matter for the human race—Koch argues against the transmissibility of bovine tuberculous disease to man. Deliberate experiments to decide this point are of course out of the question, but Koch thinks that the world is unconsciously performing experiments that suffice to sustain his view; that is to say, that beef, milk, and butter contaminated with living tubercle bacilli are constantly being ingested by many human beings, and yet primary tuberculous disease of the digestive tract is rare. To argue from such observations that the disease is not transmissible from cattle to man seems to us rather inconclusive. Theoretically, it may be granted, a tuberculous process at the initial

point of contact of the germ with receptive tissue should be set up before an invasion of other parts took place, but we cannot regard it as proved that such is always the case. Who can say that in every instance of tuberculous disease of the meninges, of a joint or of any other structure not directly exposed to contact with germs a local tuberculous process is first set up at the point of their original lodgment. Reasoning from analogy, we may refer to M. Jullien's article, entitled "Two Clear Cases of Syphilis without a Chancre," published in the *Medical Press* for July 3d and abstracted in this issue of the *Journal* under the head of "Miscellany."

Finally, let us consider the action of tuberculin. Are we to take it for granted that all the tuberculin that is capable of giving rise to the diagnostic reaction in cattle is of bovine origin? Apparently, that would have to be the case if human tuberculous infection were not transmissible to cattle. If it is the case, Koch's deductions will receive support in a substantial form, though it must still be borne in mind that, as a rule, infectious diseases which affect both man and the lower animals are not so readily transmitted from the one to the other as they are from one individual to another of the same species. All things considered, we must still urge upon sanitary officials the folly of discontinuing the precautions now resorted to until the needlessness of them is much more clearly shown than it has been thus far. As subjects of thought and further investigation, Professor Koch's propositions are quite in order, but that, it seems to us, is all that can be said of them at present. Even if they ultimately turn out to be well founded, the interests of stock-breeders and dairy-farmers will still require the extermination of tuberculous cattle.

FROM THE "BREEDER'S GAZETTE."

The katabasis has come. For years the noble army of tuberculine squirt-gun manipulators has been marching up the hill, beating tom-toms and brandishing the pole-axe, crying, "Kill, Kill." This fierce and bloodthirsty campaign against our herds has been waged on the disputed assumption that tuberculosis in cattle is a menace to the public health. Broadly and yet accurately speaking it has been based on the discoveries and the declarations of Dr. Robert Koch, the eminent German bacteriologist, who at first believed he had found in tuberculin a cure for consumption. Servile worshippers of asserted authority, the half-baked scientists and zealots of the squirt-gun brigade have

pushed their work of destruction until it has mounted to millions of dollars, despite the protests of scientists of high standing who denied the alleged danger. This was the anabasis—the going up against the husbandmen of the world whose herds furnish milk and meat for the sustenance of the people.

But the katabasis has come. The going down has begun. In London last week before the scientists of the world assembled at the British Congress on Tuberculosis Koch recanted. He had previously affirmed the transmissibility of tuberculosis to man from the meat and milk of animals. After a decade of investigation he now declares with unqualified positiveness that "*human tuberculosis aud bovine tuberculosis are radically different diseases.*" He declares that he has absolutely demonstrated that cattle cannot be infected with human tuberculosis and that he has satisfied himself that it is impossible for bovine tuberculosis to be transmitted to man. The danger of infection from milk he considered "so slight as to be unworthy of precautionary measures"!

Now watch the noble army of matadors march down the hill. But not with its banners of death's-head and cross-bones flying in the breeze; squirt-guns and pole-axes will be carried at "reverse arms." The man who first furnished inspiration and weapon has spiked its guns and it will fall back in a rout.

It should be remembered that Koch's London declaration is a recantation, a reversal of view, a signal surrender to stubborn facts discovered in years of investigation. But there are many scientists who have long held this clear vision. They have been in the minority, it is true, because the crowd blindly follows constituted authority. The theory of the transmissibility of tuberculosis through milk and meat has been held as "not proved" by many and has been vehemently disputed by some, armed with the facts of human experience and scientific investigation. Now that the acknowledged great authority on tuberculosis has cast aside his first-held views and joined the minority, a New York physician is doubtless correct in saying that "the enlightened minority of the medical profession, which has maintained that tuberculosis cannot be contracted from animal substances, will speedily become a majority of the profession."

But even assuming that some extremists, with the bigotry that holds to a preconceived opinion in the face of new and convincing evidence, try to continue the scare against milk and meat, in what position do the matadors find themselves? Simply this: standing on disputed ground, with the most emi-

nent authority on tuberculosis in the world squarely antagonistic to their theory, they wage murderous warfare on the herds of of the husbandman. It is against this outrage that *The Gazette* has persistently protested. It raises no objection to a study of this disease at public expense; it has stoutly opposed the experimentation on private property which has characterized the tuberculin crusade and has demanded that it cease until more light is shed on the subject.

Now a great light has shined. Truly enough "the sanitary systems of the world have been shaken to the very roots. The word revolution but faintly expresses what the discovery will precipitate." The supposed menace to public health from tuberculous cattle is wholly eliminated by Dr. Koch. The question then becomes merely an economic one, concerning only the breeders and owners of cattle. If a man believes he has the disease in his herd he can use the tuberculin test if he wishes. Valuable breeding animals that may react can be isolated and bred from. Sanitary conditions can be instituted, for in the language of a French scientist at the London congress, "a sanitary house is anti-tubercular."

But the reign of the pole-axe in the hands of the public official is doomed.

DEPARTMENT OF SURGERY.

By L. A. and E. Merillat.

Chicago Veterinary College, 2537–39 State Street, Chicago, Ill.

SURGERY OF THE EYE, EAR AND UPPER AIR PASSAGES.

(*Concluded.*)

4. *Periotomy* is the resection of a part of the conjunctiva around the cornea Although it is an operation that is seldom attempted, it is a procedure that should be selected when no other surgical interference or palliative treatment will improve the existing condition, which may be considered an indication for the operation. In veterinary practice we would not recommend the operation, excepting when no other treatment can be used instead, and when unsatisfactory results would not lessen the usefulness of the patient. Undesirable sequelæ common to the operation cannot be obviated in animals as in man, even if the greatest care is taken to do the operation aseptically; the danger of subsequent infection is much greater than in human

patients, because animals do not protect themselves against secondary infection, which is favored in lower animals by their environment; but, even with such unfavorable conditions, there are instances when the operation is indicated and the results from the procedure are sometimes very good.

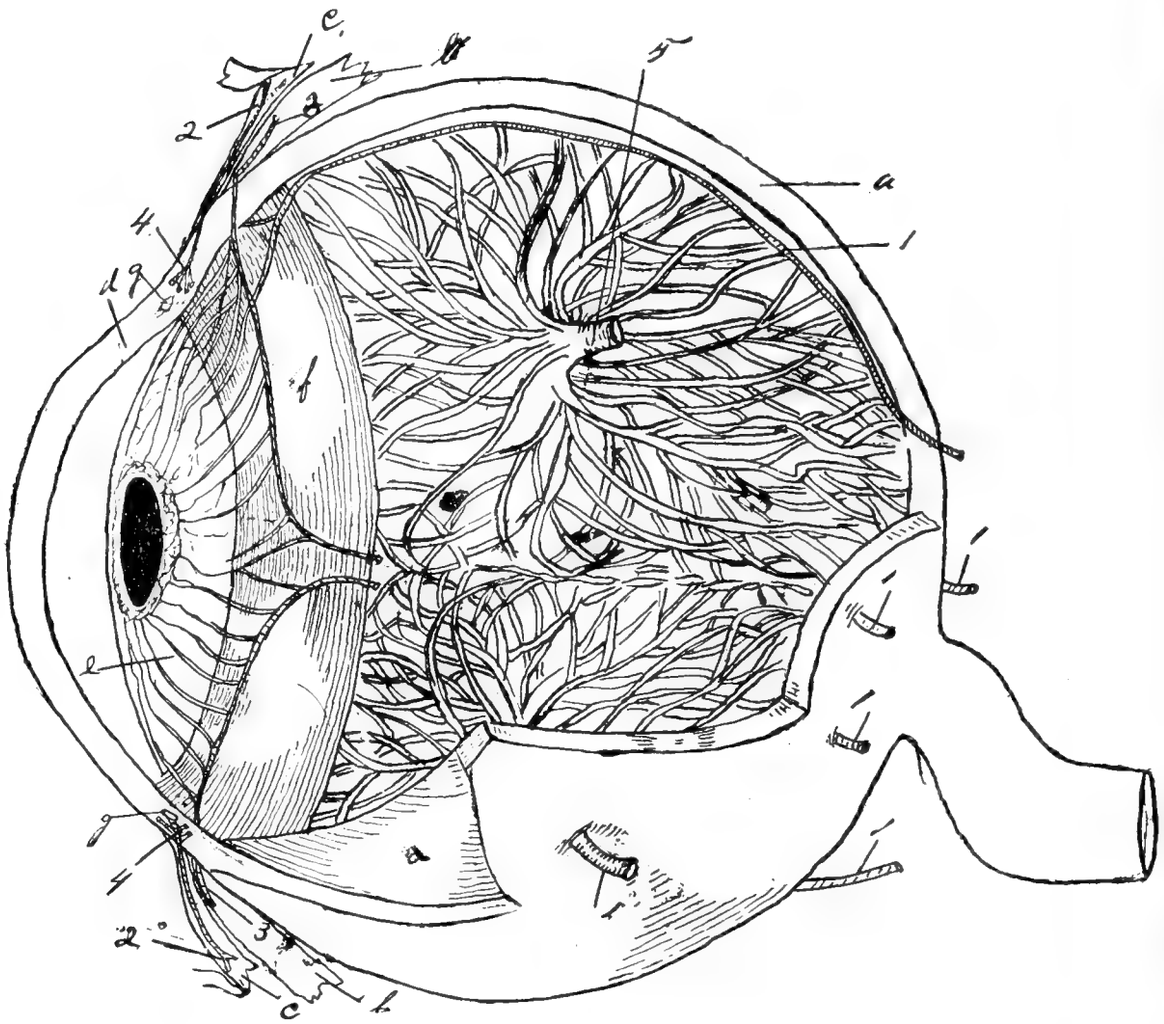


FIG. 57.
CIRCULATION OF THE EYE.

a, sclera; *b*, straight muscles; *c*, conjunctiva; *d*, cornea; *e*, iris; *f*, ciliary muscles; *g*, canal of Schlemm; 1, posterior ciliary arteries; 2, anterior and posterior conjunctival arteries; 3, anterior ciliary arteries; 4, Sclero-corneal plexus (capillary); 5, venæ vorticosæ.

Indications.—Any vascular condition of the cornea that cannot be improved otherwise is an indication for the operation; but, we must not treat all vascular corneæ by such intervention, for there are many of these cases that will yield to other treatment. Vascularization of the cornea may be a sequel of trachoma, entropion, trachiasis, or, result from hypernutrition. When the vascularity occurs as a sequel of entropion or trachiasis, it is usually lessened by the removal of the cause; especially,

when this is done in the early stage of either of these conditions; and, when it is a secondary condition, it is usually confined to the superficial layers of the cornea (*pannus tenuis*); but if due to a trachomatous condition it generally invades the proper substance of the cornea (REVIEW, *Vol. XXV., No. 3, p. 208*), and in such cases the layers involved become very thick (*pannus crassus*), sometimes involving the entire cornea, which becomes so thick that the iris cannot be seen. If the pannus is the result of a trachomatous process, it seldom terminates without ulceration; but if due to hypernutrition, the newly formed blood vessels in the connective tissue are sometimes obliterated by absorption. As pannus is generally a secondary condition, the treatment necessarily must be directed to the primary cause; and that removed, either by surgical means or otherwise; but when the vascularity remains after the cause is removed, then the treatment must be direct to the condition itself.

The treatment adopted in such cases, should be either one of the following:

(*a*) A reduction of the blood supply to the newly formed tissue, or:

(*b*) Increased absorption of newly formed tissues.

The latter (*b*) is generally not very successful, although various methods have been recommended for this purpose; such as infusions that will cause inflammation of the conjunctiva; or, the insufflation of powdered remedies to cause inflammation and increase absorption; these methods of treatment, however, have never given very good satisfaction, but are the only substitutes for surgical intervention.

Most cases of pannus, when allowed to run their course without treatment, terminate in ulceration of the cornea (*suppurative keratitis*), especially in severe extensive vascularity; therefore, when the condition is such that the indications point to such an unfavorable termination, the only course of treatment to select is surgical intervention which will reduce the blood supply to the cornea.

There are several methods of operating for vascularity of the cornea, and we shall mention one besides the operation in question (*peritomy*) which has been considered a good substitute for periotomy. The procedure was introduced into the list of ocular operations by Kenneth Scott, and according to his method of operating for vascularity, the blood vessels are cut one by one until all have been divided. In order to accomplish this, it is necessary to use a magnifying glass; for without the

use of the glass, the smallest vessels cannot be seen and are therefore overlooked. The instrument necessary for the operation is a Graefe knife.

Operation.—The instruments used in periotomy are an eye-speculum, a sharp-pointed knife, small scissors and a small pair of dissecting or fixation forceps. The instruments and all other articles, such as sponges and bandages, must be well sterilized and the operation performed aseptically. The procedure, though comparatively simple, is a tedious one. A narrow band of the conjunctiva is dissected out from around the cornea and all the blood vessels going to it are resected; the strip removed may vary in width from 3 to 4 mm. Heretofore, the greatest annoyance during the operation was the hæmorrhage, but now, since the efficiency the extract of supra-renal capsules as a local hæmostatic has been ascertained, hæmorrhage is not such a disturbing factor. The blood supply to the seat of the operation is from the anterior and posterior conjunctival arteries (*Fig. 57–2*), which form a plexus around the cornea (*Fig. 57–4*); these arteries anastomose with the anterior ciliary (*3*) and posterior ciliary arteries (*1*) in the scleral conjunctiva (*c*), which gives it very abundant blood supply. The hæmostatic may be applied as a subconjunctival injection before the operation is begun, which will make the conjunctiva bloodless. Another method of applying the hæmostatic is, to make the peripheral incision and treat it with the hæmostatic before the inner incision is made and the strip of conjunctiva is removed; this also enables the surgeon to do a bloodless operation. The patient must be cast or placed upon an operating table, a general anæsthetic administered, and then, if cast, placed in the most convenient position that will enable the operator to work without being hindered in any manner; when this is accomplished, the eyelids are retracted by the adjustment of the speculum; the eyeball is fixed with the thumb and forefinger of the left hand, and with a small sharp-pointed knife, two incisions are made around the cornea about 3 or 4 mm. apart, and the conjunctiva between the incisions dissected out with a sharp knife and dissecting forceps. The part dissected out should not be more than 3 mm. (⅛ inch) in width; if the space between the two circular incisions is made too wide, it leaves a large cicatrix, which is always very noticeable, but if made very narrow, it leaves only a small mark in the conjunctiva, which is scarcely perceptible; and obliterates all vessels going to the cornea as well as when a wide strip is removed.

After-Treatment.—After the operation, the eye should be covered with cloths wrung out of ice water to prevent inflammation; or a compress securely adjusted to the eye, and ice water from a fountain syringe allowed to trickle upon it for the first twenty-four hours. The compress should then be removed, and washed well with a weak solution of boric acid, or a normal salt solution made with sterilized water; after which, another compress must be applied to the eye, saturated with either of the above solutions, and hood adjusted (REV., *XXV, No. 3, p. 213, Fig. 51*). This last dressing must be renewed every day, the eye thoroughly washed and examined for adhesions of the ocular and palpebral conjunctivæ.

SURGICAL ITEMS.

Removal of the (scent) Gland from a Specimen of Mephitis Mephitaca (common skunk).—A short time ago a gentleman of sporting proclivity asked me if I would remove the scent gland from a skunk for him, and remembering that I had read of the operation having been done by my friend and preceptor, Professor J. M. Wright, of Chicago Veterinary College, I told the gentleman that it could be done. When the skunk arrived I tried in vain to find Professor Wright's article, but that copy of the REVIEW had eluded me, so I proceeded in the following manner: Rolled the animal in a blanket and anæsthetized him with ether, washed the anus and adjacent parts with creolin solution and distended the rectum with the finger and made a small incision over the gland, grasped it with forceps and enucleated it; the same on the other side; washed the parts again with creolin solution and let him revive. The second day the little fellow was a trifle dull and I washed out the rectum with a solution of magnesium sulphate, and from then on he made an uneventful recovery. I wish to say that two medical gentlemen volunteered to assist me, which they did from the opposite side of the street.—(*W. L. West, Belfast, Me.*) The article referred to by Dr. West is a "surgical item" found in Vol. XXIV, p. 444, of the REVIEW (Sept. number, 1900).—(*E. M.*)

Mesoneurectomy and Some of its Sequels.—It is now about five years since mesoneurectomy has become a standard operation in the United States. Unlike double tibio-peroneal neurectomy, which is at times a tedious operation, at least the peroneal part of it, mesoneurectomy is easily performed and an exceedingly valuable and safe operation. It is not the writer's desire to discuss anatomical landmarks; suffice it to say that along

that line—the site of incision—is indirectly responsible for the frequency of nerve tumors which some report. The writer has performed 124 mesoneurectomies and resected three fibroneuromata three years ago; since that time no more nerve tumors have been observed, because the orthodox site of incision has been changed—a point to be discussed another time. From time to time reports have appeared in the current literature in regard to mesoneurectomy, nearly all of which covered a limited number of cases and simply represented a corroboration of the data contained in Liautard's translation, which induced the bulk of the American operators to try this form of neurectomy. There are two sequels which the writer has observed from time to time and which to his knowledge have not been reported. The one is a partial paralysis of the radial nerve, the other an intense degree of itching on the internal aspect of the operated leg below the fetlock. 1. Partial paralysis of the radial nerve. In my work on the "Clinical Diagnosis of Lameness in the Horse," under the head of "Paralysis of the Radial Nerve," on page 44, the diagnosis and differential diagnosis given there correspond exactly with the symptoms which are about to be described and which were observed in five cases of mesoneurectomy: *Case 1.*—The first horse the writer ever mesoneurectomized. Topical anæsthesia with 10 per cent. cocaine. The animal behaved nicely and 15 minutes were probably consumed in throwing him and performing the operation. As soon as the animal regained its feet there was total inability to support weight upon the operated leg. As soon as the leg was extended by hand he stands squarely upon it, to knuckle over and break down when the slightest shock is experienced by the toe. No treatment save rest and close attention to the wound was ordered; this paretic state persisted more or less for three days, when it disappeared permanently. My feelings when the horse got up also were of a paralyzing nature. The olecranon muscles appeared flat and flabby and the peculiar forward jerk of the scapula so characteristic of this lameness was well marked. *Case 2.*—Was chloroformed; same symptoms, but less marked; had good use of his leg 24 hours later. *Case 3.*—Was chloroformed; same symptoms. The paretic state of a mild degree persisted for 10 days. *Case 4.*—Was cocained; same symptoms; was neurectomized in both fore legs at the same time, as the writer often does. The horse after the operation hopped into its stall on the hind legs only, like a kangaroo; he went to work in the third week. *Case 5.*—Was chloroformed; same symptoms, but

very aggravated; 4 weeks passed before the animal regained full control over the paretic leg. *Pruritus.*—To judge by the action of the animal there seems to be an agonizing itching right below the fetlock on the internal aspect of the operated leg. The creature persistently gnaws the parts until a large raw surface is created, which by no means causes him to discontinue his gnawing. When means of restraint are employed to prevent the chewing he will paw more or less with the operated leg. The writer has observed three such cases. The itching in these three instances set in about three to four weeks after the operation and persisted for about one week to ten days, at the end of which time no further trouble was experienced.—(*W. E. A. Wyman, Milwaukee, Wis.*)

"*The Technique of Bloodless Work*".—In the August number of the *New York State Journal of Medicine* we find an article with the above title, by Robert H. M. Dawburn, M. D., which begins by stating that: "The older the surgeon, the greater becomes his respect for a drop of blood. All cutting operations on the extremities should be bloodless ones, and all elsewhere as near as possible. Every drop of blood saved is a safeguard against shock; and bloodless work permits the same speed and facility of dissection that one could employ on the dead body." To all that is mentioned in the above text, we may add that the presence of blood in an incision acts as foreign material and prevents union by first intention; this is one of the reasons why surgical wounds of large domestic animals do not heal as readily as those of small ones or even man.

No veterinary surgeon has yet been able to make the removal of shoe-boils or large tumors, a bloodless operation; in fact, besides the neurectomies and tendonotomies of the extremities, we have but a few bloodless operations in the surgery of the horse. Exsanguination of the extremities by the use of the Esmarch bandage has given very good satisfaction, but where it cannot be applied, we have no method of arresting capillary hæmorrhage, which is much greater in the horse than in the human patient. Arterial hæmorrhage can be controlled by ligation or torsion; but the capillary oozing from the walls of the incision cannot be arrested but by the actual cautery or strong astringents that will destroy the tissues and encourage sloughing, which impedes granulations or union of parts. What is most needed in surgical operations that require deep incisions, is some hæmostatic that will cause local anæmia without injury to the tissues. We believe that this will be accomplished be-

fore long, either by therapeutic agents, such as extract of suprarenal capsules, moderate application of heat, such as electrothermic hæmostasis, or extraction of heat from the parts by liquid air or other refrigerants.—(*E. M.*)

Professor Koch's Conclusion, as to the transmission of bovine tuberculosis to man, is of no surgical value; but, the "Surgical Department" of the REVIEW recognizes its importance to the veterinary profession and live stock interests in general. There has been nothing new but this conclusion placed before the medical and veterinary profession during the past decade to excite enthusiasm in the discussion of the disease, and to encourage experiments on the line of transmission. He has aroused everybody from their lethargy, and beseeched them to obtain and countenance the truth. If the dairy products of a tubercular herd are not injurious to man, everybody should know it; if the meat of tubercular meat-producing animals is fit for food, it should be known generally, and to a certainty, and thereby save the thousands of dollars that are sacrificed each year for prophylactic measures; but, on the other hand, if the experiments that are likely to follow in verifying this proposition are well directed and carefully made by every progressive nation or government respectively and prove that the preventive measures that have been in vogue during the past have not been a waste of professional and scientific energy, they will serve to convince those who have heretofore been indifferent or skeptical about the transmission of the disease, that they have done themselves and humanity an injury by their attitude. Such a conclusion emanating from any one but he who opened up the avenue to the micro-biology of the disease, could not have awakened so much anxiety among the chauvanistic, disinterested, indifferent and skeptical; and, we believe that the stand he has taken will be a benefit to all concerned, "be it as it will."—(*E. M.*)

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D.V.S., Bureau of Animal Industry, Milwaukee, Wis.

TO THE TREATMENT OF NYMPHOMANIA AND BARRENNESS IN CATTLE [*Servatius*].—Nymphomania and barrenness in

cows is often disagreeable to the owners, and it occasionally may cause great loss to them. A treatment, accompanied with good results, therefore, would be very much welcomed. The author succeeded in 80 to 90 per cent. of cases, to allay the diseased condition, and of the cured in about 30 per cent. to bring on the regular period of œstrum. The treatment consists of crushing the cysts in the ovaries, by the way of the rectum, which almost in every case are the causes of nymphomania. After the operation the symptoms disappear in a short time. The hollowing on the sides of the first coccygeal vertebræ, which is considered almost as a pathognomonic symptom of nymphomania, will disappear as a rule, in the course of a few days, as the dropped broad ligaments of the pelvis will regain their normal position. The ceasing of œstrum in some cases may be due to the insufficient transformation of the corpora lutea. Those also can be determined by a rectal examination and squeezed out, after which procedure the period of œstrum will often reappear.—(*Mittheilung d. Ver. bad. Thierärzt.*)

To the Treatment of Lung Tuberculosis with Tuberculin [*Dr. Goetch, with a Postscript of Prof. R. Koch*].—In cases of tuberculosis which were not considered as mixed infections with suppuration, the tuberculin treatment was applied by G. The diagnosis of tuberculosis he establishes in the patient, by the presence of tubercle bacilli in the sputum, or by the suspicion from the constitutional and physical condition of the body, and by the response of the tuberculin test, with an elevation of the temperature. By gradually increasing the dose in such a manner that a new increase is not undertaken before the last injection expires without a reaction, the patient stands a dose of 1 gm. of tuberculin, which then completes the cure. The bacilli and cough will disappear, and an increase in the bodily weight will be observed. To these interesting observations Koch adds the remarks, that the unfavorable results with tuberculin are often to be traced back to the cause, that it has been applied in cases which were not pure tuberculosis, but complications with suppurative processes. In the early states of tuberculosis which are not too far advanced in nonfebrile lung tuberculosis, the tuberculin treatment was effective in every case. One must avoid a strong reaction. Dr. Goetch, as much as possible, avoided reactions, and finally arrived to very high doses. From these astonishing good results of the author, Koch personally convinced himself in the Slawentzitz sick house.—(*Deutsche Medec. Wochenschr.*)

CONTRIBUTION TO THE TREATMENT OF HÆMOGLOBINURIA [*Kas*].—K. applied in 16 cases of hæmoglobinuria in a horse, the bromide of potassium treatment as recommended by Metzger, obtaining 15 complete recoveries, most of which were over the effects on the second or third day, and at latest on the fifth. K. administered 70 to 75 gm. of the bromide of potassium in 400-500 gm. of water, which dose in severe cases was repeated on the second day. The animals were also bled and an eserin injection (1.5 gr.) was given. Outside of these friction was applied to the hind-quarters with spirits of camphor. At the same time artificial evacuation of the rectum and bladder was resorted to through salines and aloes.—(*Thierarzt. Centralblatt.*)

HOOF OPERATION IN AN ELEPHANT UNDER THE INFLUENCE OF MORPHINE ANÆSTHESIA [*Frick*].—In the zoological garden, at Hanover, an elephant's hoof proved to be affected by an abnormal growth of the horn. Due to deficient wearing the horn on the hind legs grew out very long, which rolled up in a spiral way. By this the skin became affected right over the horny part, and on the left hind leg, there was a 15 cm. long and 4 cm. wide defect of the skin, which profusely suppurated and was filled with flabby granulations. Years before that, the elephant was placed in stocks and was operated upon, but on this occasion he became suspicious and would not enter the stocks. Therefore all that was left to be done was to place the animal under anæsthesia. Frick decided on the administration of morphine by the mouth, of which 40.0 gm. in a liter of rum and a liter of water with the addition of 7.5 gm. sugar was to be given. If this would prove insufficient doses of 5.0 gm. of morphine were to be repeated. On March 12th at 8 A. M. the mentioned dose was given, which the animal drank voluntarily; at 9 another dose of 10.0 was placed before the animal in rum, but of which only ¾ gm. of morphine was taken in. At 11.15 A. M. the elephant suddenly fell down, and in the beginning made efforts to rise, but without success. Gradually the struggling with the legs ceased, so that at 12.15 the animal was completely anæsthetized.—(*Deutsch. Thierarzt. Wochensch.*)

ENGLISH REVIEW.

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

AZOTURIA WITH UNUSUAL PREMONITORY SYMPTOMS [*By E. W. Hoare, M. R. C. V. S.*].—Under this heading the author

relates the case of a mare in which the first manifestations of the trouble were only that the near hind leg was unable to carry any weight, with which the animal when standing was constantly striking the toe on the ground in a convulsive manner; if forced to stand the mare would knuckle over on the fetlock. There was on the inside of the femoral region a soft circumscribed swelling, hot and painful, and below this the leg was cold and almost without sensation. The urine was of a deep yellow color, thicker than normal and highly ammoniacal. The off hind leg was taken in the same way the next day. The urine remained in the same condition and only became a little deeper in color towards the end of the disease. The animal died. The history of the case was not given to the author until the second day of his attendance. The treatment consisted in the administration of chlorodyne, purgatives, diaphoretics and cannabis indica to control the convulsive spasms of the animal. This last was rather satisfactory.—(*Vet. Record.*)

Successful Tenotomy after Median Neurectomy [*By E. Langford*].—This form of neurotomy is certainly gaining great notoriety in veterinary surgery, and it may not be surprising if a day will not come when it will lose the value of its merits, by the fact that it has been abused, and, like plantar neurotomy, applied even in cases where it was least needed. At any rate, this case is that of a cart horse, suffering with acute lameness due to a contracted and painful condition of the perforatus tendon. The animal knuckled considerably. Firing, blistering, and long rest failing to relieve, median neurectomy was resorted to. It also failed. The author then decided to perform tenotomy; he divided the perforans and perforatus tendons, and also cut the artery. The wound, however, healed well, and after a while the horse went to work. It does not knuckle any more either.—(*Vet. Record.*)

Luxation of the Tibia and Astragalus [*By A. L. Farrant*].—This is an uncommon case, which the author records because he has not found such a case recorded except once by a French author, who stated that he had obtained a successful reduction. Mr. Farrant has been less fortunate; he had to destroy his patient. A well-bred mare bolted, and in turning a corner collided with a truck with such tremendous force that the hind legs spread laterally, whilst the body fell upon the near side, and the tibio-tarsal joint was completely dislocated. The animal struggled to its feet, however, and when standing the leg hung from the hock in a pendulous manner—

the tibia being entirely out of the pulley grooves of the astragalus and was pointing inwards. The internal, lateral, anterior and posterior ligaments were torn and the skin lacerated. There was but little hæmorrhage.—(*Vet. Record.*)

VOLVULUS OF THE COLON [*By E. W. Hoare*].—The correct diagnosis of the nature of colics is sometimes so difficult that any case has its interest and value, and even old practitioners are surprised at the lesions that they find at post-mortems of cases which they have lost. We certainly think it was the case with the author when after treating an animal for colic with more or less severe manifestations he discovered at the autopsy that he had had to deal with a case in which the first and second divisions of the colon were twisted and required to be turned three times before the twist was got rid of. Of course the intestines were acutely inflamed at the anterior portion of the twist; the blood vessels were enormously distended. There was a small rupture of the most acutely inflamed portion of the intestines also.—(*Vet. Record.*)

EMBOLIC LAMENESS [*By W. H.*].—After a few remarks upon the facility of making diagnoses in cases of lameness due to embolism the author points out the fact that there are cases where it is, on the contrary, somewhat difficult to come to a conclusion as to the true cause of the trouble. He then relates three cases of embolism where the symptoms presented different aspects. In the first, a mare, which had always worked well, was suddenly taken with lameness forward while at work. She was brought home on a float, grew worse, and the next day her symptoms were so aggravated that she was destroyed. Post-mortem: Embolism of the axillary artery, which was filled by a clot several inches long. In the second case a gelding showed the ordinary symptoms of lamenese of one hind leg, which occurred with work and subsided by rest, and in which embolism of one of the iliac arteries was readily made out by rectal examination. In the third case the symptoms were altogether of an abdominal nature, and rectal examination revealed embolism of both iliacs extending forward into the aorta. In conclusion the author says: "These observations suggest that the first attack is always the most violent one; that after attacks are less serious, unless the horse is forced to keep moving; that colicy pains occur only when the clot extends forward from the iliac to the aorta."—(*Vet. Record.*)

AN ENORMOUS SARCOMA [*By Walter Parkman*].—A seven-year-old horse had been slowly losing flesh, which was sup-

posed to be due to overwork. He was turned out for a month, during which time he had one or two slight attacks of colic, and after six weeks was returned to light work in a much improved condition. After a short time, however, he began to lose flesh again, and as his condition seemed to grow rapidly worse, he was destroyed. On making a post-mortem a large mass was found surrounding both kidneys and firmly adhering to the back and to the ribs. The whole mass was carefully removed with both kidneys intact, and when placed on the scales was found to weigh *one hundred and twenty-five pounds.* The mass was formed of solid, firm tissue, which was of the nature of round-celled sarcoma with the microscope made by Prof. McFadyean. This was evidently a unique case and a unique weight for a sarcomatous growth to attain and give rise to so little disturbance beyond the wasting of the body referred to.—(*Vet. Record.*)

ITALIAN REVIEW.

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

Suppuration in the Guttural Pouches, with Ulceration of the Membrana Tympani [*By Dr. Durante Luca*].—This case is undoubtedly very unusual. It relates to a horse which was brought to the clinics of the Veterinary School of Pisa, and which presented all the symptoms of suppurative collection in one of the guttural pouches, that of the right side. There was a swelling in the parotid region accompanied with muco-purulent discharge from the nostrils, but more from the right. When the animal would carry his head low down the discharge would increase, and become more grumelous. And, besides this, it also offered the peculiarity that the discharge would then also appear running from the right ear; and on that account the skin was more or less soiled with dry crusts of suppuration. A simple treatment of antiseptic irrigations was prescribed, and after a certain time it was found that the trouble of the ear had entirely disappeared, while that of the guttural pouch remained about the same. Surgical interference was decided upon. At first it was tried to wash the pouch by pushing fluid through the catheter of Gunther, but as this did not work, hyovertebrotomy (cisti-gutturotomy) was performed as follows: By an incision superiorly and inferior in the centre of the triangle of Viborg. A

drain-tube was introduced, by which the cavity could be washed and ridden of a caseous hard mass which was contained in the sac. When the discharge had entirely ceased and the drain-tube removed, a blister was applied to absorb the thickening remaining. The most interesting part of this case is the presence and escape of pus through the right ear, which indicates that the suppuration must have found its way through the Eustachian tube into the middle ear and provoked the ulceration of the membrana tympani.—(*Il Nuovo Ercolani.*)

LARYNGOTOMY FOR MALIGNANT TUMOR IN A DOG [*By Dr. Carlo Parascandolo, Prof. at the R. University of Naples*]. —Benignant as well as malignant tumors in the larynx of our domestic animals have been recorded by Lanzillotti, Mecke, Scruby, Degivé, Weber, Fleming, Gwilt, and others. The former can be removed per mouth sometimes, and again through opening of the larynx, when by simple excision, the ecraseur or cauterization their extraction can be completed. In this case the author had to deal with an epithelioma, characterized by a marked swelling as big as a small nut, wich thickening of the whole larynx, which in being explored with a rubber tube was found the seat of a foreign body. The dog had a hoarse bark, coughed frequently, with labored breathing, difficult deglutition, and sensitiveness to pressure of the throat. The breath was fœtid, the saliva, of bad odor, was mixed with blood. Examination with the laryngoscope revealed a neoplasm of the larynx with an ulceration as large as a ten cent piece localized at one point, but with the laryngeal mucous membrane highly inflamed. The temperature of the animal was normal. The only indication possible was the removal of the larynx. After careful measures of general antisepsy practised for several days, the animal having received subcutaneous injections of chloral and morphine, and separation being made of the crico-tracheal ligament, a tracheotomy tube similar to the one used in the operation for roaring was introduced in the trachea, and the larynx having been exposed, the extrinsic muscles were separated from their attachment on the hyoid bone and the cartilages, and when the whole cartilaginous frame was isolated it was drawn through the cutaneous incision and its section completed. The floor of the pharynx was closed by stitches uniting the muscles of each side, and the stump of the trachea being secured with stitches to the skin, a tracheotomy tube was introduced, to be removed and cleaned every day. The animal was kept fasting for two days after the operation, then fed by

rectum for three days, afterwards with eggs and broth, and finally with solid food. The animal, a year after the operation, was in perfect health and there was no sign of return of the disease.—(*Il Moderno Zooiatro.*)

CERVICAL TORSION IN A MARE CURED WITH DEEP CAUTERIZATION [*By R. Carozzo*].—On September 15, 1899, the author was called to visit a mare which had been cast one night with one leg caught in the rope of the halter. She was found in the morning panting, with the body covered with perspiration, and having extensive bruises and lacerations of the external face of the left knee, of the right elbow and of the left thigh. The animal was raised and placed in slings. The various wounds were treated according to their nature, those of the knee being so extensive that gangrene had set in and the tendon of the lateral extensor of the phalanges was exposed. From the first day a swelling had been observed on the left side of the neck, which was treated by local astringent applications. Notwithstanding this, the swelling continued to increase and the neck soon began to be bent to the right, stiff, with the head carried close to the ground, and without possibility to straighten it or to even temporarily bring it back to its normal direction. The deviation was such that the animal was unable to trot, and if made to move would fall heavily on the ground. In the presence of such condition the operation recommended by Prof. Lanzillotti for such affection was recommended, but objected to by the owner, who afterwards, having waited two months for a natural recovery without obtaining any improvement, left it to the author to do what he thought best. He then resorted to actual cauterization. The animal was thrown on the right side and firing applied on the left convexity with fifteen points of iron applied two or three centimetres apart. The iron was introduced deeply down to the transverse processes of the vertebræ and applied two or three times in each point. About one month after the cauterization the deviation of the neck began to diminish, and after three months recovery was complete, the neck having resumed its normal position and regained its natural flexibility.—(*Clinica Veterin.*)

NEOPLASM OF THE RUMEN [*By Dr. Bruno Scotti*].—A steer of nine years had been suffering for some time with tympany, and of late, notwithstanding the use of all kinds of treatment, had resisted all of them and was always tympanitic. His appetite was very capricious, rumination was gone and he was losing flesh rapidly. Attempts were made to find out if there was some

foreign body in the œsophagus. These were negative except that in one instance the probang which was used was tinged with blood and covered with fragments of tissue. Failing in making a diagnosis and the animal being yet in fair condition he was destroyed for the butchery. When he was opened an examination was made of the abdominal organs; a great number of papillomatous growths were found at the extremity of the œsophagus and extending over the entire surface of the inferior wall of the rumen. These tumors had quite a wide base, of soft consistency and without ulcerations, except on those which had been injured during the catheterism.—(*Il Nuovo Ercolani.*)

CYST OF ECHINOCOCCI IN THE HEART [*By Dr. Bruno Scotti*].—A steer which had been turned out in liberty fell down suddenly and died. The post-mortem was made at once and a cyst as big as a large nut was found in the walls of the left ventricle. Those were very much reduced in thickness, and the interventricular septum likewise. The lungs and the liver contained similar cysts, acephalocysts, readily recognized with the microscope. With the exception of the diseased parts, the carcass was allowed to be used.—(*Il Nuovo Ercolani.*)

SUCCESSFUL VAGINAL HYSTEROTOMY (*By Dr. Gallo Zoroastro*).—A primipara cow was suffering since 24 hours with labor pains. She was still standing, but manifested continually excessive, violent, expulsive efforts. A vaginal examination revealed a contraction of the os, which felt like a hard tumor, as hard as wood. The contraction of the os was such that one finger could scarcely be introduced and the body of the fœtus just felt. The case was very critical, and notwithstanding continuous irrigations of warm water, which had sometimes given good results to the author, he had to resort to hysterotomy to remove the fœtus. To this effect he introduced his finger through the os and drew it strongly towards the vulva, when it was taken hold of with a sharp hook and pulled by an assistant. With a blunt bistoury introduced then through the os, it was divided upwards and sideways to the left in its whole thickness. The hand could then be introduced into the uterus, the envelopes ruptured and the fœtus removed alive. It, however, died soon after. The cow was much exhausted after the operation. She was given drenches of good hot wine, and her utero-vaginal passages were irrigated with warm solution of corrosive sublimate. The next day the animal was comfortable, her appetite good, temperature normal, and no trouble was manifested from the operation. Although the author has already performed

this operation in other cows, he has not had as good a success, the animals having died with metro-peritonitis.—(*Chinica Veterin.*)

AMPUTATION OF AN EVERTED UTERINE HORN [*By Dr. Gallo Zoroastro*].—The author was called to attend a cow which had calved 48 hours before, and by violent expulsive efforts had brought about a prolapsus of the uterus. He found the right horn protruding with two lacerations measuring about 10 centimetres in length. The cause of these lacerations could not be found out, as by the report of the owner the cow had calved without assistance, and no one had attempted to reduce the prolapsus. The case was serious, the organ being much swollen; there was much infiltration, and the parts were threatened with gangrene. Reduction being impossible, it was decided to resort to amputation. A strong ligature, previously boiled, was applied tight on the tumor near the place where it protruded through the vulva, and involving healthy structures, when the other part was amputated. There was no hæmorrhage. The uterus was returned to its normal position, and repeatedly disinfected by irrigations, with substantial diet. For a few days the appetite was gone, the milk arrested, but soon returned, and complete recovery took place.—(*Clinica Vet.*)

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The semi-annual meeting was held at Stetter's Assembly Hall, 844 Broad Street, Newark, on Thursday, July 11th.

Preceding the regular meeting a clinic was held at the hospital of Dr. Werner Runge, 130 Union Street, Newark, and was under the management of Drs. Runge, McDonough, Hogan and Hopper. Much credit is due the members of this committee for the excellent clinic planned and executed by them. Although the attendance was large, the spacious quarters furnished by courtesy of Dr. Runge proved ample for all requirements. Dr. Runge presented two cases, one of osteo-porosis, an aggravated case upon which he had experimented with good results, and another of cancerous growth of horse's head. Dr. McDonough gave a practical demonstration of the use of stocks. Dr. Miller, the experienced and expert ridgling castrator, performed the operation of castration with the subject in a standing position. Dr. McCully, of New York, with the assistance of Dr. Hopper, performed caudal tenotomy upon several subjects. Dr.

McCully is an expert in this line of surgery, and the transformation which he wrought upon several difficult cases was a revelation to the attending surgeons. The committee on clinic for the Atlantic City meeting is fortunate in securing Dr. McCully for an operation.

The regular meeting was called to order at 12.30 by the President, Dr. Wm. Herbert Lowe. Thirty-five members responded to roll-call, and two members were proposed and elected to membership.

Dr. T. E. Smith, of Jersey City, rising on a point of privilege, presented to Dr. Lowe, on behalf of the association, a handsome gavel, neatly and appropriately inscribed. Although completely taken by surprise, the President replied to the courtesy of his fellow-members in a fitting manner.

It was voted that the Committee on Legislation be authorized to take legal action against those in the State who have registered illegally or are practicing without regard to the law, and it is probable that the act to protect the title of veterinary surgeons and to regulate the practice of veterinary medicine and surgery in New Jersey, approved March 4, 1889, will be thoroughly tested in the near future. It was voted that a committee be appointed to draft resolutions expressing the satisfaction of the association for the noble efforts made by the workers for the Army Legislation Bill.

Voted that the Chair appoint a press committee.

The report of the Animal Industry Committee was given by the Chairman, Dr. J. Payne Lowe. Report of the Committee on Legislation was read by the Chairman, Dr. T. Earle Budd. Report of the Public Health Committee was given by Dr. Werner Runge, Chairman. Drs. Magill and Wm. Herbert Lowe, delegates to the meeting of the Pennsylvania State Association, made their report. The Treasurer's report showed the treasury to be in a satisfactory condition.

A paper, entitled "Argentum and Its Preparations; Their Value in Veterinary Practice," was read by Dr. Ancker.

A paper was presented by Dr. Pope, the subject being "Insects in their Relation to the Practice of Veterinary Medicine and Surgery."

The committee on arrangements for the Atlantic City meeting reported the need of more funds, and it was voted that a committee of one from each county of the State be appointed to solicit and collect from veterinarians. The committee of arrangements, consisting of Dr. A. T. Sellers, Chairman, Drs.

J. O. George, E. L. Loblein, J. P. Lowe and Wm. B. E. Miller, was accordingly augmented by the following: Drs. T. Earle Budd for Essex Co., T. E. Smith for Hudson Co., J. Payne Lowe for Passaic Co., G. F. Harker for Mercer Co., Chas. E. Magill for Camden Co., J. B. Hopper for Bergen Co., James M. Mecray for Burlington Co., Wm. Gall for Monmouth Co., E. L. Loblein for Middlesex Co., James Mosedale for Morris Co., E. R. Voorhees for Somerset Co., Whitfield Gray for Sussex Co., F. A. Zucker for Union Co., and J. M. Everitt for Warren Co.

It was voted that the next regular meeting be held at Trenton, exact place of meeting to be announced later.

GEORGE W. POPE, *Secretary.*

NIAGARA AND ORLEANS COUNTIES VETERINARY MEDICAL SOCIETY.

The annual meeting was held in the Court-House, Lockport, N. Y., August 16th, when the President, Dr. Stocking, in a few well-chosen remarks called the meeting to order, which was the largest and most interesting in the history of the society.

The prosecuting committee reported having given Mr. Perry, of Pekin, notice to comply with the law in relation to practicing; said Perry agreed to remove his sign and refrain from further practice. Several cases of the same nature were reported and turned over to the committee with power. The Secretary reported Mr. Mattison, of Niagara Falls, having settled the penalty recovered against him for illegal practicing.

The Treasurer's report showed the Society was in a flourishing condition financially.

Dr. W. E. Stocking read a paper on "The Veterinarian and Profession." Dr. M. D. Williams read on "Milk Fever"; and Dr. J. O. Moore read on "Open Joint." All the papers were well received and drew forth considerable discussion, which was of more than ordinary interest.

The following officers were elected for the ensuing year:

President—W. E. Stocking, Medina.

Vice-President—M. D. Williams, Middleport.

Secretary-Treasurer—Anderson Crowforth, Lockport.

Drs. J. O. Moore, Wilson; J. T. Liddle, West Shelby; G. C. Kesler, Holly; N. Hoffman, Lockport; and Wm. R. Hunter, of Niagara Falls, N. Y., were elected Censors.

Meeting adjourned to meet in Medina in February, 1902.

ANDERSON CROWFORTH, *Secretary.*

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The REVIEW gave a very full list of papers to be read and operations to be performed at the meeting of this society, which occurs at Ithaca on the 10th and 11th inst. While the programme as given then was a certain guarantee that this year's meeting is to far excel in interest, value and attendance all others in its history, we have received notification of the following additional papers:

"The Tuberculin Test as a City Health Ordinance," Dr. C. H. Jewell, Dunkirk.

"Fracture of Tibia," Dr. E. H. Nodyne, Sodus.

"The Influence of Altitude on the Results of Surgical Operations," Dr. J. A. McCrank, Plattsburgh.

"A Peculiar Affection of Cattle," Dr. W. H. Phyfe, Delhi.

"Rectal Manipulations," Dr. J. W. Corrigan, Batavia.

"Bob Veal," Dr. W. H. Kelly, Albany.

"Rabies," Prof. James Law, Ithaca.

Veterinarians in attendance upon the meeting of the A. V. M. A. are cordially invited to extend their trip to Ithaca. This arrangement will be especially convenient for those who purpose visiting the Pan-American Exposition.

NEWS AND ITEMS.

DR. W. L. WILLIAMS, of the New York State Veterinary College, spent his vacation at his old homestead in Argenta, Ill.

WE regret to hear of the serious illness of Mrs. H. D. Gill, of New York, from appendicitis.

DR. J. E. RYDER'S San Toy obtained a red ribbon in the saddle class at the Bayshore (L. I.) horse show, Aug. 10.

DR. J. F. DEVINE, of Rhinebeck, N. Y., has recovered from a serious attack of appendicitis.

DR. E. A. A. GRANGE is now located in New York City, associated in practice with Dr. F. C. Grenside.

DR. WALTER SHAW, of Dayton, Ohio, has been appointed a member of the Ohio State Board of Veterinary Examiners.

DR. H. L. RAMACCIOTTI, of Omaha, Neb., has opened a hospital at 856 South 28th Street, that city.

DR. WM. HERBERT LOWE, Paterson, N. J., and Dr. T. Earle Budd, Orange, N. J., have been appointed Good Roads Commissioners by Governor Voorhees.

DRS. W. H. HOSKINS and R. S. Huidekoper have formed a practice co-partnership with headquarters at 3452 Ludlow Street, Philadelphia, Pa.

DR. W. A. SAVAGE, graduate of Chicago Veterinary College, class '95, spent several months relieving inspectors at western stations, during their vacations.

DR. ROBERT JAY, who was with the Bureau of Animal Industry at Kansas City during part of the year, was assigned to Chicago. Dr. Jay was formerly from Davenport, Iowa.

DR. TAIT BUTLER, recently State Veterinarian of Kansas, has accepted a similar position in North Carolina and will organize a veterinary department to the State University. His headquarters will be at Raleigh.

DR. H. G. MOORE, graduate of Veterinary Department of Iowa State College, who was in charge of the microscopic work of B. A. I. at Kansas City, has been transferred to Chicago, Ill.

DR. W. H. MCKINNEY, inspector B. A. I., graduate of Chicago Veterinary College, class '88, was assigned to duty at Kansas City, after serving over one year at Chicago in the capacity of meat inspector. Dr. McKinney is a member of Chicago Veterinary Association, and a good industrious inspector.

CIRCULAR NO. 35, Bureau of Animal Industry, just issued, treats of roundworms in sheep, goats, and cattle, and outlines treatment for their destruction by various drugs in drenches. Dr. Ch. Wardell Stiles, the zoölogist of the bureau, is the author.

TUBERCULOSIS IN A SNAKE.—The daily press of August 14 gave an account of the putting to death by chloroform in the Academy of Sciences, Lincoln Park, Chicago, of a large African boa constrictor, which had been sick for two years, and which had not tasted food for three months. At the post-mortem tuberculosis of the bronchial glands, lungs and liver was found.

SOME practical points for veterinarians are contained in the article on "Electrocution in Horses" contained in this number. In the cities so many accidents occur to horses through the electric currents used in propelling street cars that veterinarians should be posted upon the effects of electricity both in the subject and in the cadaver.

DR. W. W. WORCESTER, of the class of 1900, Veterinary Department of the Ohio State University, who has been with the Bureau of Animal Industry at Chicago, Ill., during the past year, has been transferred to Salt Lake City, Utah. He is a

member of the Chicago Veterinary Association, and left the city with the best wishes of every veterinarian who knew him.

A NEW CANINE TABLET.—At the suggestion of Dr. Robert W. Ellis, of New York City, the Abbott Alkaloidal Company have placed on their list a one-grain aloin tablet. The doctor, who has made a study of alkalometry in canine practice, says that the dose to produce catharsis is from one to two grains, and that the $\frac{1}{6}$ and $\frac{1}{12}$ grain tablets require too much administration.

NEW YORK CITY VETERINARIANS were never so busy as during the summer of 1901. After the influenza and heat prostrations, purpura hæmorrhagica was very prevalent. It was the experience of many in this latter disease that a lung full of pure air was better than a stomach full of medicine. Removal from unsanitary stables to the air and grass of the field will save these patients in the great majority of cases.

DR. FRANK H. MILLER, of New York, removed two tumors from the fore feet of the large alligator "Big Mose," Aug. 9, at the Zoological Garden, after a struggle in which it required eight men and many yards of strong rope to confine him. Even bound securely thus the patient would jerk his legs away as the operator would attempt to inject cocaine, so that it was found necessary to place him under chloroform anæsthesia, it requiring three ounces to accomplish this.

A PHYSICIAN NOMINATED FOR MAYOR.—Dr. Edward F. Brush has been nominated for mayor of Mt. Vernon by the Republican City Convention. Dr. Brush was the first mayor the city ever had. He was elected in 1892, and made an excellent official. There was a general demand for his renomination ever since, but he has always declined. Dr. Brush was for several years professor of cattle pathology at the American Veterinary College.

DR. D. E. SALMON, Chief of the Bureau of Animal Industry, in an interview in the New York *Herald*, is sure Prof. Koch is wrong in his conclusions before the London Tuberculosis Congress. Prof. James Law, director of the New York State Veterinary College, is of the same opinion. The venerable scientist, Prof. Virchow, takes decided issue with Koch. It may be stated that medical Germany and England are solidly against the Koch theory.

DURING THE RECENT HOT SPELL, "Zenoleum," that most excellent antiseptic, prepared by the Zenner Disinfectant Co., Detroit, has proved a balm to the bruised and abraded surfaces inflicted upon animals that have suffered from heat prostration,

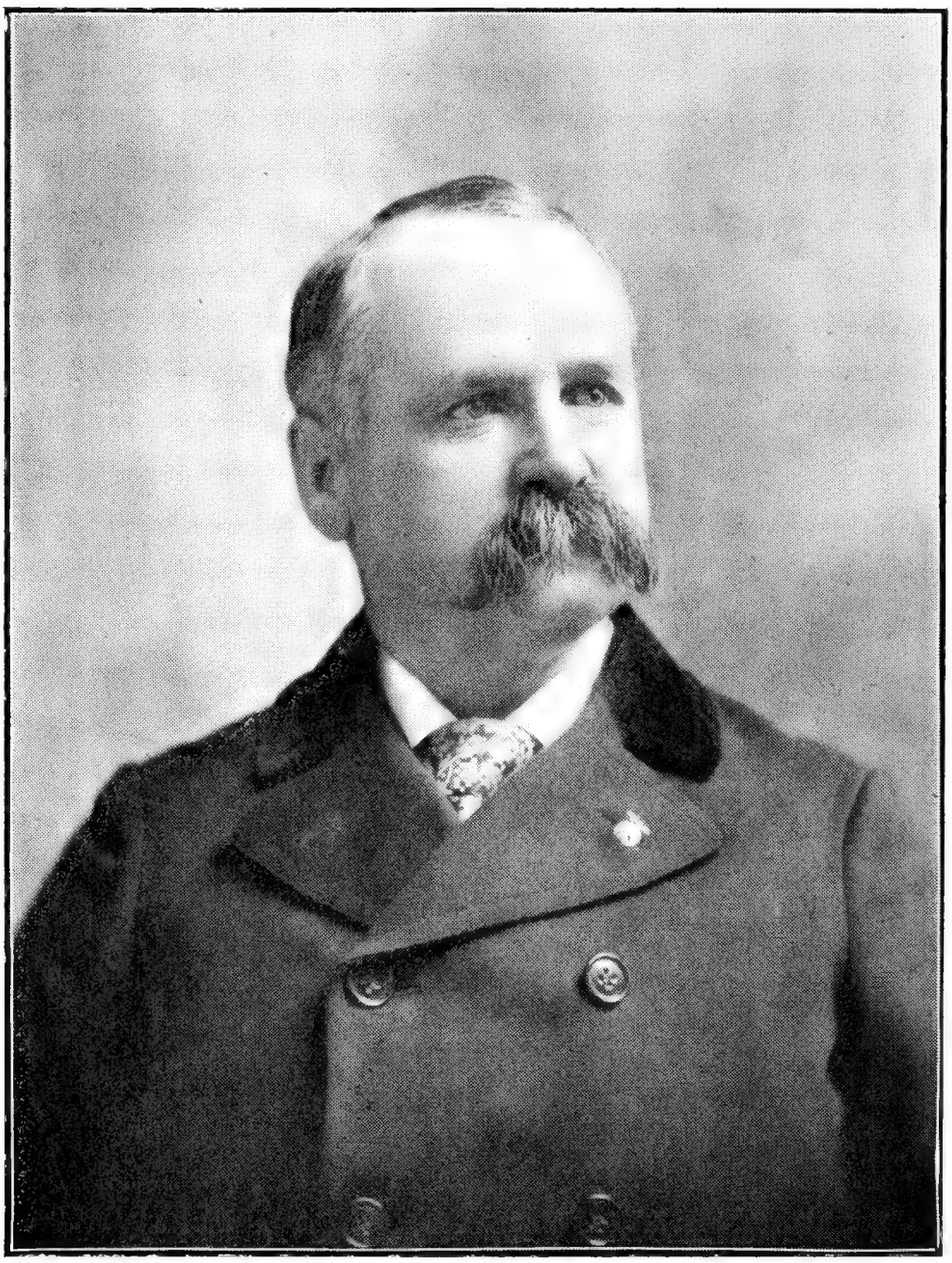
and lain for variable periods upon the pavements of the city streets. Sponged off with a pailful of an emulsion, made by adding a small quantity of "Zenoleum" to a pail of cold water, the animals seem refreshed, the tumefactions subside, and the abrasions dry up.

DOUBLE IMPREGNATION.—A story alleged to be true comes from Missouri that on April 28 last a cow gave birth to a calf showing forth unmistakable evidences of Short-horn ancestry. May 24, or less than thirty days later, the same cow brought forth another fully developed calf, showing as unmistakably that it had been begotten by a Hereford bull. The owner of the cow and calves is said to be the cashier of a bank, who personally vouches for the transaction all around. He relates that last season the cow was bred to a Short-horn bull and later pastured in a field where a Hereford bull ran with the cows.—(*Breeder's Gazette.*)

MINNESOTA MATTERS.—At the meeting of the Minnesota State Board of Health, July 10, 1901, Dr. S. D. Brimhall was chosen director of the Veterinary Department. Since the transfer of this department to the office of the State Board of Health, August, 1900, Dr. Brimhall has been performing the duties of director although not bearing this title. Various rules were presented to the board looking to the prevention of the importation of animals suffering from contagious diseases, such as tuberculosis, glanders, sheep scab, etc. A very interesting report from Dr. S. D. Brimhall of the Veterinary Department and Dr. L. B. Wilson of the Bacteriological Laboratory of the board was presented upon 64 cases of hæmorrhagic septicæmia in cattle.

THE GASTRIC JUICE OF THE DOG AS A REMEDY.—Dr. Frémont, of Vichy, has given the name *gastérine* to a preparation made from the gastric juice of the dog, obtained through a gastric fistula established for the purpose. At a recent meeting of the Medical Society of the Hospitals of Paris (*Gazette hebdomadaire de médecine et de chirurgie*, July 4th) M. Mathieu reported having observed great benefit and occasionally "veritable resurrections" from its use in cases of dyspepsia. Some of the patients had been so cathectic as to lead to the suspicion that they were cancerous. The gastric "chemism" continued faulty, but the patients were benefited in some unexplained way. Another speaker said that quite the same effects were produced by the use of hydrochloric acid.

VETERINARIANS NEEDED FOR THE U. S. ARMY.—There are now twenty-one vacancies in the office of veterinarian, U. S. Army, and four more will occur in the near future. Veterinarians are required for service in the cavalry and field artillery. They are allowed the pay and allowances of a second lieutenant of cavalry—$1500 per annum with 10 per cent. increase for each period of five years' service up to twenty years and quarters. They are not commissioned officers, but wear the uniform of a second lieutenant without the shoulder straps. It is the intention of the War Department to hold a competi ive examination at an early date for the purpose of filling the vacant places, and any one desiring to take the examination should make application at once to the Adjutant General of the Army, Washington, D. C. Applicants must be citizens of the United States, not less than 22 nor more than 35 years of age; must be graduates of some recognized veterinary college; must be of good moral character and physically sound. They will be required to pass a written examination in the following subjects: *Basis Examination*—English grammar, arithmetic, geography, history. *Subject Examination*—Anatomy and physiology, pathology, practice of medicine, descriptive and operative surgery, materia medica and therapeutics, sanitary medicine, conformation of the horse and examination for soundness, horseshoeing, meat inspection, veterinary hygiene, general feeding and watering, stabling and care of animals in garrison and field, saddling, bitting, packing, etc.



DR. J. F. WINCHESTER, of Massachusetts,

PRESIDENT OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION, 1901–1902.

AMERICAN VETERINARY REVIEW.

OCTOBER, 1901.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

PRESIDENT McKINLEY.

While bowing in humble submission to the will of the Great Ruler of the Destinies of Nations, we acknowledge our utter helplessness to fathom the inscrutableness of the divine wisdom in His removal of the beloved President of the United States—that man among men, that God-fearing, sagacious, upright leader of a great people, who had accomplished so much for the cause of the Creator and his fellowman. Prostrated by this additional evidence of His wonderful wisdom, we can only exclaim: "Thy will be done."

EUROPEAN CHRONICLES.

KOCH AND NOCARD.—Everybody is out of town. Societies, medical or veterinary, have suspended their work; meetings are adjourned, and until October, when having recuperated strength by rest in the country or on the seashore, in the mountains or at the watering places, the scientific world will once more set to work, little news can be looked for in our "Chronicles," and on that account this installment will be short.

It is not, however, that nothing more can be said of past events, and certainly subjects which we have already alluded to are not without offering room for further consideration. For instance, I was just looking into the *Suisse Medicale*, and my attention was attracted to the late English congress by the title of

an article: "British Congress of Tuberculosis for the *Preservation of Phthisis.*"

Is it sardonic enough?

And, yet, is it not correct? Prof. Koch has no doubt made the most sensational among the numerous important communications that were presented to the Section on Bacteriology.

In the article that I refer to I find the answer of Prof. Nocard, who opens his refutation by a most flattering compliment, a salute to the *greatest bacteriologist of the whole world.* Prof. Nocard is in reality too modest, and his opening remarks when he alludes to the sympathy expressed by Koch towards the French scientific mission (Roux, Strauss, Nocard and Thuillier), which in 1883 was sent into Egypt to study the prevailing epidemy of cholera, and when Thuillier died from the scourge in 48 hours, were certainly worthy of the great new struggle which is going to be inaugurated.

Koch's communication charms and satisfies Nocard, but again it frightens him, and seems to him full of dangers.

What Nocard likes in the communication is that it justifies the efforts of those who at first protested against exaggeration of the prophylactic measures. Truly a wise reaction has taken place since a few years. The communication of Koch will increase it; will it not exaggerate it? "I am in fear, that after having resorted to excessive and absurd measures against imaginary dangers, we will not protect ourselves any more against the real dangers that bovine tuberculosis threatens public health with." Nocard, we all know, has always said that dangers from bovine tuberculosis were small, but small as they are, they exist, nevertheless, and it would be a serious mistake to ignore them.

From his experiments, Koch concludes that bovines are refractory to human tuberculosis, that man has nothing to fear from bovine tuberculosis, that it is useless to guard against it.

But the principle of experimental method says that negative facts, no matter how numerous, do not upset positives, and those are numerous.

Among the first who brought the value of their experiments in that same direction stands Chauveau, who took all the necessary precaution as to condition of health, of age, etc., and the results were positive, and prove that human tuberculosis may be communicated with difficulty, but it can, nevertheless.

How to explain such different results, obtained by two great masters, is difficult, perhaps.

But: "It is a well-known general law that the gradual adaptation of any parasite, in a media, inert or living, where it succeeds in developing, confers to him the aptitude to develop more easily in medias similar to the former.

"This is true for the bacillus of tuberculosis as for all other microbes.

"Every one knows how difficult it is to obtain a first culture of the bacillus of Koch on the most favorable medias.

"What is true of inert medias is still *à fortiori* more true of the living ones.

"Every one knows that the bacillus of rouget of swine grows with difficulty the first time in the rabbit's organism; to kill a rabbit surely, three or four must be inoculated, and death takes place only after four or five days, perhaps later; but if the microbe is made to pass from one rabbit to another its virulency becomes such that it will kill in a few hours; and this bacillus, then, so virulent for the rabbit, has lost all its virulency for the pig, whence it comes; it can be inoculated to pigs in large doses without killing him or even making him sick."

Nocard has besides shown how the bacillus of tuberculosis of man or of cattle, cultivated in the peritoneum of chickens, protected from phagocytary action by the use of collodion bags, would slowly acquire, little by little, the characters of the bacillus of aviary tuberculosis and become unable to kill guinea-pigs, or kill them only with lesions analogous to those of aviary tuberculosis.

"All those facts make me think that the results obtained by Prof. Koch proceed from causes of the same order," says Nocard.

"Bovines take tuberculosis from man seldom; but if, by any cause, the resistance of the cells is modified, reduced or suppressed, the human bacillus will be able to grow, proliferate and invade the organs of the subject whose resistance has been destroyed; and then the bacillus, adapted to this new media, will be able to develop in other healthy bovines, which would have proved refractory to the action of the same bacillus taken directly from man."

But, anyhow, in admitting that bovines are really refractory to human tuberculosis, would that give the right to conclude that the reverse is also true? "No," says Nocard, "a hundred times no; it would be contrary to all the principles of experimental methods, contrary especially to existing facts."

How many veterinarians have been victims of it by wounds received at post-mortems. Some have recovered, like Prof. Jensen of Copenhagen; others, less fortunate, have died, such as Moses of Weimar, Thomas Walley of Edinburgh.

And the numerous and authentic facts of infection from the milk of cows with tuberculous mammitis, among which is, as most known and certain, that of one of the daughters of Prof. Gosse of Geneva.

Finally, the works of the great English hygienist, Thorne, who proved by evidence the reality and severity of the danger. While for 50 years the death rate in England by tuberculosis has diminished 45 per cent., that of abdominal tuberculosis of children has increased 37 per cent.

The general improvement in lodgings, working shops, hygiene, etc., explains the first. As nothing has been done against the dangers of infection by the digestive tracts, the second is also explained.

Prof. Nocard closes his remarks by saying: "I will keep loudly repeating to-morrow what I said yesterday: Mothers, don't give milk to your children unless it has been thoroughly boiled."

No matter what variety of facts future experiments may develop, the last cry of Prof. Nocard to the Congress of London

will no doubt remain the one that wise and loving mothers all over the world will always remember to protect their little ones.

A. L.

THE ASSOCIATIONS.

As promised last month, the REVIEW presents in this issue full and, as it believes, accurate accounts of the great National and State gatherings of veterinarians which occurred during the first half of September. At the same time, we very sincerely regret that the important meeting of the Pennsylvania State Association, which convened at Pittsburg on the 17th ult., is not among the number included in our reports, which is owing to no fault of this journal, since we have on very many occasions endeavored to have the secretaries of all the Pennsylvania associations transmit reports of their deliberations for publication. We feel that we owe this explanation to our large list of subscribers in that State, who have expressed surprise that, while the REVIEW regularly prints the proceedings of every association in the country, it so infrequently contains those of their own State. It is to be deplored that our readers are debarred from profiting by the very earnest work done by the progressive veterinarians of the Keystone State, with its three well-attended associations, and we again place our pages at their disposal, to be used as freely as they may wish.

Taking the fall meetings of 1901 as a whole, they were the best in every sense ever held in this country, attracting larger numbers, with keener interest in all that transpired, whether in the assembly hall or the clinic-room, with admirable fellowship and the most pleasant social features. All of which augurs well for the future of the profession and of the associations.

JOHN F. WINCHESTER, D. V. S.

Elsewhere in this number will be found an excellent reproduction of the pleasing face and noble bust of this gallant son of Massachusetts, who was, last month, exalted to the position of President of the American Veterinary Medical Association,

the highest honor in the gift of the profession of the Western Hemisphere, and we are risking nothing when we say that the ermine has never fallen upon worthier shoulders. Dr. Winchester has been one of the strong supports of the Association almost since his eligibility, and in the days when the great structure was being erected, before there were so many robust pillars to divide the burden of holding up the framework, his shoulders always bore a large share of the weight, which was sometimes so great as to threaten collapse. Now, when the edifice has been so far completed as to be in position to resist all the elements, it has done honor to itself by thus honoring one of its truest dependents. We congratulate both, and feel assured that when he turns the gavel over to other hands the Association will be stronger for having had Winchester as its head.

ORIGINAL ARTICLES.

PRELIMINARY OBSERVATIONS ON SKIN DISINFECTION AND WOUND INFECTION.*

By Veranus A. Moore, Ithaca, N. Y.

It has been my privilege during the last few years to study somewhat closely, and to have certain investigations made concerning the bacteria of the skin, the efficiency of certain disinfectants, and the bacterial contents of various wound infections, more especially in the horse. While our work in these lines is but fairly begun, the results already obtained seem to warrant a discussion of the preliminary findings, in so far as they bear upon antiseptic and aseptic methods. In carrying on these investigations, I wish to acknowledge the aid received from Doctors R. J. Standclift, C. W. Gay and C. E. Shaw, who as students in advanced bacteriology have rendered valuable assistance in this work. I desire also to express my indebtedness to Dr. W. L.

*A Paper read before the 38th Annual Meeting of the American Veterinary Medical Association at Atlantic City, N. J., Sept. 4, 1901.

Williams for his hearty coöperation and for furnishing material from his surgical clinic.

In the first application of bacteriology to comparative medicine, it was natural that investigations should have been made respecting the etiology of the more serious epizoötic diseases. However, the significance of bacteria in wound infection claimed early attention in human surgery, and it is along the line of asepsis that the teachings of bacteriology are, at the present time, accomplishing, perhaps, the greatest amount of good. In veterinary surgery, however, antisepsis and asepsis seem to have received less attention than they rightfully demand. The fact is recognized that the domesticated animals are, as a class, less susceptible to invading micro-organisms than man and consequently the cause for the quite prevalent assertion among practitioners that in the lower animals there is little or no need for antiseptic precautions. Nevertheless, the not uncommon infections with serious loss warrant an inquiry into the entire subject of skin disinfection as applied to these animals.

My attention was first called to the desirability of a better knowledge of the bacteria of the skin and the efficiency of some commonly used disinfectants in studying the cause of certain lesions following surgical operations where the prescribed disinfecting methods were carefully followed. An inquiry into the source of the bacterial findings in chronic lesions more distant from the seat of skin laceration or injury, but which seemed to be traceable to them, suggested still further the importance of this knowledge. The more interesting of these chronic disorders of a local nature, were those commonly known as scirrhous cord or botryomycosis, omphlalophlibitis, infectious cellulitis in cattle, the commonly so-called "foot rot" of sheep and other though similar abnormal conditions. In taking all of these disorders into the list of wound infections, it is necessary to include as wounds, all lacerations, incisions, and punctures of the skin, whether of sufficient size to be detected or not. It will be seen that it does not always seem to be necessary to have even a puncture, as blows or intense straining of the integument may

be sufficient to liberate into the living tissnes bacteria deeply seated in the ducts of glands and possibly the hair follicles of the skin. The problem before us, then, resolves itself into three quite distinct parts, namely :

1. The determination of the bacterial flora of the skin.

2. The finding of the degree of efficiency of different disinfectants when applied to the integument.

3. The finding of the species of bacteria which produce the more chronic disorders here included in wound infection.

In starting with the existing methods of preparing the field for operation, we find practically the same procedure recommended in veterinary as in human surgery. It is desirable, therefore, to compare the structure of, and the bacteria of the skin of man and of the horse in order to determine whether or not the method prescribed for the first is equally suited to the second. If we follow the results of the every-day operations there seems to be more frequently in veterinary than in human surgery either acute wound infection or more chronic and possibly metastatic lesions of a more or less serious nature. The question whether this is due to the operator, or, bacteriologically speaking, ill considered methods, is waiting for an answer. It is also true that veterinary surgeons who follow the prescribed course very largely avoid these otherwise common sequences, but it is for the prevention of the occasional failure that the best methods are striving.

In comparing the structure of the skin, we will at this time mention but two features which suggest greater difficulty in preparing the operative field in the horse than in man, namely, (1) the presence of a thicker layer of dead epithelium, and (2) longer and deeper seated glands and hair follicles.

Investigations concerning the bacteria of the human skin have been carefully made by a number of workers, among whom may be mentioned Bizzozero*, Mittman†, Unna‡, Fürbringer§,

* Virchow's Archiv. Bd. 98.

† *Ibid.* Bd. 113.

‡ Monatshefte für praktische Dermatologie 1889-1890-1891

§ Disinfection d. Hände d. Arzter Wiesbaden, 1888.

Preindlsberger *, Robb and Ghriskey †, and Welch ‡. The researches of Robb and Ghriskey and Welch § have shown that in addition to the varying bacterial flora of the epidermis there is in the deeper layers of the skin, within the ducts of glands and possibly along the hair shafts, a micrococcus, belonging to the staphylococcus group, which seems to be a quite constant inhabitant of the integument. It frequently appeared in surgical wounds, and while it seemed to be possessed of little pathogenesis it was often the apparent etiological factor in stitch abscesses. A very extensive series of examinations is being made by Dr. W. G. McDonald of Albany. His preliminary reference‖ to this work shows that it is not always easy to obtain in the human subject a perfectly sterile field for operation.

In the horse we find very similar conditions. The bacterial flora of the untreated skin is very rich in both numbers and species. Like the human subject it is exceedingly variable in different individuals, and on different surface areas of the same individual. Technically, however, the bacteria resting simply on the surface of the body where they have been brought and lodged by various agencies cannot be considered as belonging to the flora of the skin. This term should include only the bacteria that are the inhabitants of the deeper layers of the epidermis, the ducts of glands and along the hair shafts and follicles. In the horse, this flora consists of a number of genera, but micrococci and streptococci seem to predominate, although bacilli are often present. B. subtilis is very commonly encountered and a source of much trouble in isolating the bacteria of the skin, owing to its rapid and spreading growth on the surface of plate-cultures. Among the numerous bacteria which have been found in the skin of the horse, our attention has been given almost entirely to three species which are of interest from the wound infection point of view. These are :

* Zur Kenntniss der Bacterien des Unternagelraumer U. S. W. Wein 1891.

† Johns Hopkins Hospital Bulletin, Apr. 1892.

‡ Transactions of Congress of American Physicians and Surgeons, Vol. II, 1891.

§ Transactions of the Medical Society of the State of New York. 1900. p. 46.

1. A streptococcus which I have been unable to differentiate from a streptococcus often found as the apparent cause of peritonitis following castration, and in septic pneumonia following other operations.

2. A micrococcus which grows in clumps and forms almost milk white colonies on agar plates. This organism has frequently been isolated from cases of fistulous withers. It was not pathogeric for the experimental animals. This micrococcus is very similar to the one isolated from the human skin by Robb and Ghriskey.

3. *Micrococcus pyogenes aureus.*—This differs very little from the one described from man. It has frequently been found in closed abscesses (botryomycosis?) apparently as the exciting cause.

It was suggested from our earlier investigations that these three species of skin bacteria were the essential ones* against which skin disinfectants should be more especially directed. Their almost constant appearance in a considerable variety of lesions of a probable wound infection origin gave strength to such a conclusion. Accordingly, our inquiries were continued in a series of examinations made with different disinfectants for the purpose of finding if possible the most efficient agents for this purpose. Here, again, our results are but partial, as a number of substances reported as reliable skin disinfectants have as yet not been tried.

The method followed was to make bacteriological examinations of the skin of horses, either those to be operated upon or to be used for dissection. In all, ten cases may be included, in which nine disinfectant solutions were employed on as many different areas, with one untreated area as a check. In preparing the field for operation the hair was clipped, the skin scrubbed with soap and water, closely shaven and washed again with sterile water, after which the disinfecting solution was applied and allowed to act for from eight to ten minutes. Pieces

* The bacilli of tetanus, malignant œdema, and anthrax are not considered here in this connection.

of the treated skin were then removed with sterile instruments and placed in tubes of bouillon and liquid agar, from which plate cultures were made. The pieces of skin taken were about one centimeter square. The disinfectants used, together with the results of the examinations, are given in the appended table.

TABLE SHOWING THE RESULTS OF DISINFECTANTS AS INDICATED BY THE NUMBER OF COLONIES WHICH DEVELOPED ON AGAR PLATES MADE FROM PIECES OF SKIN FROM AREAS TREATED WITH THE DIFFERENT DISINFECTANTS:

Disinfectants.	Number of cases that gave sterile plates.	Number of cases with few (5 to 30) colonies.	Number of cases where colonies were numerous or very many.	Total.
5 per cent. carbolic acid . .	2	3	5	10
3 per cent. permanganate of potassium	0	1	9	10
3 per cent. lysol	0	1	9	10
33 per cent. Sanitas	0	4	6	10
2½ per cent. chloro-naptholeum	0	2	8	10
1-1000 per cent. bichloride of mercury, aq. sol	0	1	9	10
1-500 per cent. bichloride of mercury, aq. sol	0	1	9	10
1-1000 per cent. bichloride of mercury, alc. sol.	1	1	8	10
1-500 per cent. bichloride of mercury, alc. sol.	2	0	8	10
Check	0	0	10	10

A study of the cultures showed the interesting fact that 80 per cent. of those made from the fields treated with 5 per cent. carbolic acid and alcoholic solutions of corrosive sublimate did not contain micrococci and streptococci. The bacilli were not appreciably affected. With the other disinfectants used there was no apparent destruction of the micrococci and streptococci. It is of interest to add that of the seven species

isolated from the plates two bacilli were capable of and did produce suppurating lesions when injected subcutaneously in the horse.

Without entering into wearisome details, the results of our work on the disinfection of the skin of the horse indicates that the five per cent. solution of carbolic acid and the alcoholic solutions of corrosive sublimate are the disinfectants tested which have a sufficiently penetrating power to destroy in most cases the pyogenic bacteria in the deeper layers of the skin. Several solutions used more or less commonly as skin disinfectors do not seem, in the strengths employed, to be of value in this connection. It is presumed, but not determined, that most if not all of these solutions are fatal to the bacteria which come in contact with them. It is very likely that it will be very difficult, if not impossible, to find solutions that will in all cases sterilize the field for operation.

It is instructive to note the close resemblance between the bacteria of the deeper layers of the skin and those found in the lesions in such affections as septic peritonitis, scirrhous cord, or botryomycosis, closed subcutaneous abscesses, infectious cellulitis, and many other nonspecific infections. The bacterial findings* in fistulous withers and poll-evil show a similar relationship to the pyogenic bacteria of the integument. The hypothesis is suggested by present results that possibly these troublesome lesions are the result of the setting free in the living tissues, possibly from injuries of many kinds, certain of the bacteria deeply seated in the integument. However, the results of many observations will be necessary before positive conclusions are warranted. With the other lesions mentioned, the possible relation of their cause to the bacteria of the skin is more clearly indicated. The infection from the hands of the operator, or from unsterilized instruments is, of course, a very large factor in

* Moore. AMERICAN VETERINARY REVIEW, Jan.–March, 1900.

Gay. *Ibid.*, March, 1901, p. 877.

Gay found streptococci associated with either the white or yellow micrococcus (both in two instances) in nine cases of fistulous withers and poll-evil.

wound infection in careless or unscientific work, but in modern surgery such accidents should, at the most, be exceedingly rare. In a few cases which I have examined the infective lesions have followed operations where the usual method of disinfecting the skin was observed, the hands of the operator cleansed and washed in bichloride, and the instruments boiled just prior to their use. While this does not exclude external infection, it suggests either errors in methods, or the presence of the infecting micro-organisms in the skin of the patient, from whence they were carried into the wound.

The selective power on the part of the horse, or better, perhaps, that only a certain few species of bacteria which may gain entrance to the fresh living tissues can survive, seems to be well established. This power, if you please so to put it, is well illustrated in case of navel-ill, where the infection unquestionably comes from without and where many species of bacteria are brought into competition. I will describe briefly one of the cases which I have examined to exemplify the point in question.

A colt, about three weeks old. It was in good condition and seemed to be perfectly well excepting for the diseased joints. Killed for examination. The umbilical vein, from the umbilicus to the liver, was distended with blood, pus cells and bacteria. All of the internal organs appeared to be normal. In both knee joints and one hock joint there was extensive suppuration. A bacteriological examination showed the umbilical vein to contain many species of bacteria, among which may be mentioned *B. coli communis*, *Micrococcus pyogenes aureus* and a streptococcus. One of several tubes of media inoculated from the liver developed the streptococcus, the others remained clean. All media inoculated from the heart blood, spleen, kidneys and glands remained sterile. All of the media inoculated with the pus from the joints gave pure cultures of the streptococcus.

The cases of navel-ill which I have seen in lambs were due to an infection with a bacillus belonging to the colon group. The lesions were subcutaneous and intermuscular suppurative cellulitis.

The lesions known as botryomycosis are from the etiological standpoint the most interesting of those here included in wound infections. The cases which form the basis for these

remarks were diagnosed clinically by Dr. W. L. Williams, who kindly sent them to me for a bacteriological examination. They include the forms known as scirrhous cord and closed abscesses from different parts of the body. There is a difference of opinion concerning the etiology of these lesions. Bollinger, Rivolta, Rabe, and Johne have found in them a peculiar species of micro-organism, which has been given a variety of names, but generally designated in more recent publications as *Micrococcus ascoformans*. These authors look upon botryomycosis, in consequence of this supposed single causative agent, as a specific disease. A number of works on comparative surgery and pathology treat it as such. On the other hand, Kitt, Hell and de Jong have failed to find this organism, but in its stead they isolated *Micrococcus pyogenes aureus*. The extent to which other bacteria or fungi are involved in these lesions does not seem to be clear. Gay (l. c.) found a streptococcus associated with a micrococcus in four cases. In two cases the cultures were sterile.

In my study of these lesions, I sought diligently for the supposed specific *M. ascoformans* in cover-glass preparations, in many and varied cultures, and in sections of the thickened cord and walls of the closed abscesses, but invariably with negative results. During the last two years I have thus examined six cases reported by the surgeon in charge to be characteristic botryomycosis. Four of these were in the spermatic cord and two were closed abscesses located elsewhere on the body. From three of these, the two abscesses and one cord, I obtained pure cultures of *M. pyogenes aureus*. All of the media inoculated from the other three cases remained sterile. These were of long standing.

The micrococcus obtained from one of the abscesses was very virulent both for rabbits and horses. In the inoculated horses extensive suppurative lesions developed in four days. The rabbits died of septicæmia within thirty-six hours.

In another case of recent origin, following castration, pure cultures of a streptococcus were obtained from the inflamed cord. This, however, cannot be considered as the cause of

scirrhous cord, as the lesion was too recent and acute to indicate what the final outcome might have been.

In one of the scirrhous cords of long standing and from which the bacteriological search gave negative results, the firm fibrous tissue of the much thickened cord contained numerous pockets filled with a soft spongy tissue in which were embedded minute masses of growth resembling the ray fungus of actinomycosis. Sections of this tissue were sent to several pathologists for opinions, and without exception they pronounced the masses of a fungus nature and most probably that of actinomycosis. This is suggestive in the light of Jensen's observations and also the good results reported in its specific treatment with iodide of potash as advocated by Thomassen and others.

Finally, the conclusion seems to be warranted, at least for a working hypothesis, that botryomycosis is not a specific diseased condition, but that it is the result of infection with any one of several micro-organisms, among which *M. pyogenes aureus* seems to be the most common. With these somewhat general and simple statements, which are offered here for discussion, the subject must rest until the results of additional and more extended investigations can be recorded.

THE SCHMIDT TREATMENT FOR PARTURIENT PARALYSIS.

By John J. Repp, V.M.D., Veterinarian to the Experiment Station, Ames, Ia.

For the purpose of assisting in the introduction of the Schmidt treatment for parturient paralysis into Iowa, and of determining what the results of this treatment would be in the hands of the veterinarians of this country, in September, 1899, I addressed a circular letter to each of the 150 graduate veterinarians in Iowa requesting their coöperation in the work of this research by applying the treatment in their practice and reporting their results to me. Ninety of these replied, signifying their willingness to use the treatment. I should say that a few

of these had already put the treatment into use in their practice. These, however, agreed to report their subsequent results to me. Accordingly a circular of instructions, an infusion apparatus, two ounces of potassium iodide, and ten special blanks for report of cases treated were forwarded to each veterinarian who had consented to coöperate. In November, 1900, a letter was issued to each of these veterinarians requesting that the reports they had collected be sent in. Up to this time I have received replies from thirty-three veterinarians. In all, 166 cases were reported; of these 166, 119 resulted in recovery, while 47 were fatal. Of the fatal cases in eight of the cows death may be traced to some complication such as prolapse of the uterus, foreign-body, pneumonia, etc. In these cases the Schmidt treatment cannot be said to have failed, for it is not in any way intended that it shall be able to overcome such accidental conditions. If the cow has recovered from her condition of paralysis as a result of the Schmidt treatment far enough to be out of danger from that source and to promise recovery, but later falls victim to some complication that is in no measure a part of parturient paralysis, but only a result of that disease, it may with justice be said that the Schmidt treatment was a success so far as the malady against which it was directed is concerned. Looking at the reports from this generous point of view, in 127 cases out of 166, or 76.5 per cent., the Schmidt treatment was successful so far as the parturient paralysis was concerned.

I regret that the limit of this article forbids the presentation of a full report of each case, and that it must be confined to the following tabulated report, which gives a summary of the important features of these reports.

1. Breed—

Shorthorn	*31	Galloway	1
Jersey	17	Polled Angus	1
Holstein	4	Devon	1
Hereford	3	Grade	42
Not stated	66		

*NOTE—The figures represent the number of cases.

2. Age—
   - Four years 2
   - Five years 8
   - Six years 19
   - Seven years 24
   - Eight years 26
   - Nine years 10
   - Ten years 8
   - Twelve years 5
   - Thirteen years 1
   - Not stated 63

3. Condition—
   - Fat 33
   - Fair 57
   - Thin 2
   - Not stated 74

4. Quantity of milk given—
   - Very large 41
   - Large 24
   - Small 6
   - Not stated 95

5. Care and feeding before parturition—
   - Fed lightly 3
   - Stabled, fed liberally. . . . 14
   - Pasture only 52
   - Pasture, other feed 19
   - Not stated 78

6. Had parturient paralysis before—
   - Once 4
   - Twice 2
   - Not stated 83

7. Character of parturition—
   - Normal 80
   - Difficult 3

8. Number of calves borne by each cow—
   - One calf 1
   - Two calves 2
   - Three calves. 13
   - Four calves 19
   - Five calves 19
   - Six calves 14
   - Seven calves 9
   - Eight calves 2
   - Nine calves 1
   - Not stated 88

9. Afterbirth retained—8

10. Prolapsus uteri—2

11. State of os uteri during attack—
   - Relaxed 28
   - Contracted 8
   - Not stated 130

12. Disease appeared before parturition. 1

13. Length of time between parturition and first symptoms of disease—
   - One hour 2
   - Two hours 1
   - Three hours 2
   - Six hours 2
   - Eight hours 7
   - Ten hours 6
   - Twelve hours 9
   - Fourteen hours 7
   - Sixteen hours. 5
   - Eighteen hours. 7
   - Twenty hours 9
   - Twenty-four hours 19
   - Thirty hours 8
   - Thirty-six hours 9
   - Two days 5
   - Three days 7
   - Five days 1
   - Eight days 1
   - Not stated 59

13. Time between inception of disease and beginning of Schmidt treatment: One to twenty-four hours.

14. Number of times infusion of potassium iodide was repeated—

Once	22	Twice	2

15. Time elapsing between application of Schmidt treatment and time the cow was able to stand—

One hour	1	Sixteen hours	6
Two hours	1	Twenty hours	5
Four hours	1	Twenty-four hours	4
Five hours	1	Thirty hours	5
Six hours	11	Two days	6
Eight hours	10	Three days	2
Ten hours	5	Four days	3
Twelve hours	5	Not stated	94
Fourteen hours	6		

16. Number of relapses 4 (fatal).

17. Number of cases of pneumonia 6 (fatal).

18. Quantity of milk secreted during first five days after treatment—

Small	26	Not stated	137
Normal	3		

19. Number of cases in which Schmidt treatment was followed by Mastitis—7.

That in many cases in the above table certain features are put down as "not stated" is in large measure accounted for by the fact that only 110 of the reports were made on the blanks which I sent to the practitioners, the rest being made in the form of a brief summary in a letter. Of these reports made on the blanks only a few gave in detail all of the particulars called for by the questions. I infer, however, that the features set forth in the table may be taken as a fair representation of all the cases treated.

The table shows that most of the cows affected were grades. I may add that most of these were shorthorn grades. Next in point of numbers is the shorthorn breed. It should not be inferred from this that the shorthorn breed is more susceptible, for it is probable that the order of numbers affected among the various breeds is in close proportion with the number of cows of these breeds in the State.

It will be seen by reference to the table that cows affected were chiefly between the ages of six and nine years and at the birth of the third to the sixth calf. This is in accordance with observations elsewhere. Only one of these cases occurred in the primipara and only two in the secundipara.

Nearly all the animals were reported either fat or very fat. Only two cows affected by the disease are reported as thin in flesh. This also is in accord with the usual observation.

The table is in a measure contradictory to some of the current teachings on this subject in respect to the care and feeding of the animal prior to parturition. In the majority of the cases in which this feature was reported upon the cows were at pasture and had no other food. They also had plenty of exercise. Only 14 were stabled and fed liberally, conditions generally thought to predispose to this disease. Only 19 were at pasture and received in addition other food. That most of the cows took the disease while at pasture and not receiving any other food may arise from the fact that this is the way in which most cows are kept in Iowa during the pasture season. We cannot conclude that pasture alone may not constitute a liberal diet to a cow with good appetite and digestion, although it is generally considered that if the grass diet is not supplemented with grain ration the cow is reasonably safe from an attack of parturient paralysis. The above figures would indicate that the conclusion in this respect needs some revision. It is encouraging to note that only 3 cases occurred in cows fed lightly with a view to preventing the disease.

It is worthy of note as being in accord with the usual teaching that nearly all the cows were large or very large milkers.

In nearly every case the parturient act was accomplished in a normal manner. In only three cases did parturient paralysis develop after a difficult parturition. This, however, may be in the same ratio as the normal to the difficult births not followed by the disease. Were this so it would not damage Schmidt's theory of the etiology of the disease, for in order to prove his theory it is not at all necessary to show that the disease followed

an easy birth, although Schmidt cites this circumstance in support of his theory.

The table would indicate that one may look for this disease most commonly within the first 24 hours after the calf is born. In one case, however, it had its onset before parturition; in others, after the first day.

The table shows that the infusion of potassium iodide into the udder was repeated in the course of eight to twelve hours in 22 cases, and was repeated twice in two cases. Of the 22 cases which received two doses each, 7 were fatal, two having had relapses and one pneumonia. There is no means of learning from the reports just what the second or the third dose contributed toward the cure of the disease, but as all these cases were severe ones and the repetition of the dose was strongly indicated, it may be inferred that it is good practice to repeat the dose in eight to twelve hours, provided the cow has not then responded to previous treatment. I think it may be safely concluded that 20 or even 30 grammes of potassium iodide injected into the udder within twenty-four hours will not do harm, but on the other hand may contribute largely toward the cure of the case. It would not be advisable, however, to repeat the dose if the cow has responded to the first one.

It appears from the table that one may expect the cow to have pretty well recovered from her attack within 12 hours after the treatment is administered, although some cases do not yield so soon. A relapse may be expected at any time and it would seem that this renders the prognosis very grave.

Pneumonia is a very grave complication. None of the six cows in which this complication arose recovered. This leads to an inquiry into the cause of the pneumonia. It may be due to dust or particles inhaled during the attack, but is most likely set up in most cases by the entrance into the lungs of drenches designed for the stomach, but failing to reach their destination on account of the inability to swallow. This would lead me to recommend that no medicines be given by the mouth while the animal is unable to swallow, unless given by means of the pro-

bang. The heart stimulants, such as strychnia, atropina, caffeina, tincture of digitalis, can readily be given hypodermically, as can also the cathartic in the shape of a dose of physostigmine. One would judge, however, that, since physostigmine is such a powerful motor depressant, it would be contra-indicated in this disease, yet it has been given with favorable results. For my own part I should not use it and cannot recommend its use. It is not manifest upon examining the theory of the etiology of the disease and the state of the alimentary canal that a cathartic is strongly indicated. The fæcal matter is usually normal except in the lower part of the large intestine and the rectum, from which places it may be dislodged by enemata and by manual means. Would it not be well then to withhold the purgative at least until the cow has regained the power to swallow? I believe, withal, it is good practice to give a cathartic whenever the cow is able to swallow.

One practitioner who has treated a large number of cases with very good success frequently gives nothing but the infusion of potassium iodide into the udder. There is no doubt that many cases are hurried on to a fatal termination by excessive medication. Just where to draw the line is a difficult point which each practitioner must decide in the case before him.

The report of seven cases followed by mastitis warns us that too much care cannot be exercised in sterilizing everything that comes into contact with the udder during the process of introducing the potassium iodide solution. It is certainly true that the potassium iodide alone will not give rise to this accident, which should not be charged against the treatment. It is probably the result of infection introduced into the udder by lack of adequate disinfection.

In most cases reported milk secretion was much below normal in amount for a few days after the injection of the potassium iodide, but was restored to normal in all cases in which mastitis did not develop. This is to be expected, for the treatment brings success partly because it diminishes cellular activity in the udder.

Although the reports do not show the relative value of treatment early in the disease and late in the disease, for some cows treated early promptly died, while others treated as late as 24 hours, got well ; yet it is fair to conclude that the earlier the treatment is instituted the more likely it is that the cow will recover.

In the event that the cow suffers from tympanites during the attack of parturient paralysis, resort must be had to puncture of the rumen with the trocar. Some veterinarians have administered medicine through the canula after the puncture has been made and the gases evacuated. This procedure is doubtless as useful as it is unique.

With 76.5 per cent. of cures to the credit of the Schmidt treatment in the hands of the general practitioner in Iowa, who is called upon to treat these cases under all sorts of adverse circumstances, it only remains to advise that this treatment be promptly resorted to in all cases of parturient paresis. If it is not infallible it is at least the best form of treatment for this malady that has thus far been introduced.

It is also to be expected that as veterinarians acquire more practice in its application they will be able to apply it better and with a greater degree of success.

IMPORTANCE OF RECTAL EXPLORATIONS AND MANIPULATIONS.

By J. W. Corrigan, D. V. M., Batavia, N. Y.

Paper read before the New York State Veterinary Medical Society, Sept. 10, 1901.

We have looked at this part of the alimentary canal as a channel merely used to excrete waste matters no longer needed by the organism, but there are other functions of very great importance to us in our practice of veterinary medicine and surgery.

Briefly the anatomical relations of the rectum are: Superiorly to the sacrum ; inferiorly to the bladder, vas deferentia, vesiculæ seminales, Cowper's and prostate glands in the horse ; in

the mare, to the vagina and uterus; laterally with the walls of the pelvic cavity. Besides these, the parts that may be recognized from the rectum are: Floating colon, great colon, cæcum-spleen, kidneys in small horses, small intestines, internal ingui, nal ring, rumen in cow, ovaries in mare.

The rectum is a great aid in diagnosing many diseases, and a proper diagnosis will be of great help in treatment. Conditions that may be recognized are: Twist or rotation of the colon, enlargement of the spleen and kidneys, abdominal and inter-abdominal tumors, distension of the large intestines with gas, as in flatulent colic; volvulus and intussusception.

In Möller's "Surgery" are two chapters relating to these important conditions, and he lays great stress on rectal explorations; intestinal concretions, various conditions in a pregnant animal, dropsy of the uterus, fracture of the back part of the spinal column and of any of the bones of the os innominati, scrotal and inguinal herniæ, lameness resulting from thrombi in the iliac arteries due to action of the parasite, *strongylus armatus.*

As an aid in performing surgical operations the rectum will be of service in such operations as cryptorchidism, where it is an aid in locating the testicles, in reducing scrotal and inguinal hernia, reducing fractures of the sacrum, ilium, pubis and ischium, reducing twist or rotation of the colon. Of this condition Möller says ("Möller's Surgery," page 286): "The symptoms are not characteristic, but a rectal examination generally removes any doubt. When colic, at first sight, is accompanied by continued pain, and becomes worse hour by hour, the bowel sounds weaker, the pulse smaller and more frequent, and some form of stoppage of the bowel seems certain, a rectal examination will generally clear up the point. Close in front of the anus one feels the distended colon, which may for the moment be mistaken for the overfilled urinary bladder, but careful examination reveals its real nature. The longitudinal muscular bands can be distinctly felt, and show, not only that we have to deal with the colon, but also in what direction torsion has

occurred. When the bowel is in its proper position, they run nearly parallel with the long axis of the body, but in twists a change in their course is distinctly appreciable. In torsion towards the right they run backward and inward; in torsion towards the left, backwards and outwards."

According to Jelkmann, the rectal mesentary, whose fixed border can be felt below the lumbar vertebræ, appears greatly stretched, and in right rotation does not pass perpendicularly downwards, but towards the left, and pressure on it causes the animal pain. Careful examination of the direction of the bands of the colon seems to me of more importance in diagnosis, and no doubt can exist either as to the presence or direction of the torsion if they can be discovered, but the posterior bands of the cæcum, which can be distinctly felt when the latter is distended with food, must not be mistaken for those of the colon. Such an error is avoided by remembering that the cæcum runs from the outer angle of the right ilium in a bow directed backwards and ends near the left stifle.

Treatment is commenced by giving a clyster of lukewarm water in order to clear the rectum as far as possible, and to obtain sufficient room for introducing the hand. Jelkmann inserts the left hand, presses forward towards the left abdominal wall, and endeavors to thrust the left portion of the colon with the convolutions of the rectum forwards from this point towards the middle line of the abdomen. Once the bowel is brought into this position, Jelkmann passes the hand slowly upwards, when the colon falls back over it into its normal position; he considers that the convolutions of the rectum, displaced towards the left lower abdominal wall, having been thrust upwards, leave room for the colon to return to its normal position. My own experiments tend to support this explanation. I replaced a left rotation of the colon in the following way:—After emptying the rectum, the right hand was introduced, and discovered the bands of the colon running from in front, backwards and outwards or towards the left. I now employed the bands of the colon lying above to bring about reposition. Whilst the hand

in the rectum was strongly adducted, I laid its volar surface, or the fingers, against the bands, and after repeated careful attempts finally succeeded in drawing these so far toward the right that that the colon again took up its position parallel with the middle line of the body.

As I had discovered in my experiments on dead animals, in torsion towards the left, the bands of the lower section of the bowel offer a purchase for retroversion. After effecting this, the pelvic flexure of the bowel, until then filled with gas, at once collapsed, the symptoms of colic disappeared, peristaltic action, which had almost completely ceased, again set in, the small frequent pulse altered its character, and half an hour later the recovery of the animal could be confidently foretold.

It is clear that all torsions of the colon cannot be treated by one and the same method; differences in displacement will render modification necessary; but when attention has been directed to the point, experience will give valuable indications for procedure. Puncture of the over-distended colon might possibly assist reduction (p. 275). Jelkmann was compelled to puncture the cæcum five times in thirteen cases, after which retroversion succeeded; the use of the trochar caused no bad results.

The rectum is of great aid in treating diseases—by the use of enemas in flatulent and spasmodic colic, suppositories and enemas for inflammation of the prostate and Cowper's glands. Medicated enemas act almost as quickly as though the medicine was given orally. In cases of torpidity of the bowels due to impaction of the colon, water may be introduced through the rectum clear in to the colon, where it will soften the contents so that it may be gotten rid of. Warm enemas relieve pain in genito-urinary organs and produce urination where urine is suppressed. Cold (not ice-cold) enemas reduce temperature and supply water to the system in pneumonia and other febrile diseases. In dogs suffering from hæmorrhoids and constipation enemas are serviceable and necessary.

The large intestines may be punctured through the rectum when the gas cannot be reached through the flanks.

In some cases, especially in the ox, where the S-shaped curve of the urethra almost prohibits passing the catheter, the bladder may be punctured through the rectum to prevent its rupture and to remove its contents.

In some cases where it is necessary to pass the catheter in the horse the point of the catheter may and does frequently enter the vesiculæ seminales unless directed in the proper course along the urethra by the hand in the rectum.

When it is neeessary to remove the contents of the bladder and the catheter is at home, by placing the hand, which is in the rectum, over the bladder to the fundus and exercising gentle pressure down and backward the urine can be gradually forced out of the animal.

In diseases like tetauus, purpura, strangles, diseases of the throat, and in any condition where the animal cannot swallow, nourishment may be given by the rectum and will support the animal for a great length of time or until it is able to take nourishment in a normal manner.

I know there are many things that I have not mentioned, but hope that I have drawn attention to this valuable, to us, part, and hope to have offered suggestions that may prove of assistance, and in closing I would like to impress upon my fellow-practitioners the advisability of being thoroughly familiar with the anatomy of the parts that can be examined by the aid of the rectum, and this can only be accomplished by making use of this very important channel as often as possible, and although it is a dirty job the dirt will wash off and the satisfaction and the benefit will more than counteract the work of cleaning up.

I am sure that many cases will be treated more intelligently, for many cases result in the death of the animal that had they been examined per rectum, thus learning the true state of affairs, they might have been saved, and if not, at least a correct diagnosis could have been made.

NEXT to the veterinary college, the veterinary journal is the greatest professional educator. None should fail to read it regularly.

THE TUBERCULIN TEST.

ITS USE IN DETERMINING THE PRESENCE OF BOVINE CONSUMPTION.

By H. P. Clute, V.S., ex-State Veterinarian, Marinette, Wis.

Read before the Wisconsin Agricultural Society.

There are many views presented to the public through certain agricultural papers, that are non-professional, and from parties that have had no experience whatever with the disease or tuberculin test for the same, or have arrived at a conclusion from reading articles from such sources as mentioned, or carry the idea that because they have never had tuberculosis in their family or their own herd of cattle, that such a disease does not exist to any extent. I very frequently have filed copies of the *Breeder's Gazette*, dug up and shown me through the country, to prove some insane idea about tuberculosis or the tuberculin test. All skeptical parties are very easily convinced after they have once watched a tuberculin test on a herd where there was known infection, and the subsequent post-mortems of the reacting animals, with the exception of one man, Dr. Roddermund, of small-pox fame. He admitted the animals were diseased, but thought that the rest of the herd ought to be slaughtered, to convince him that they were not in the same condition ; although he had seen pus enough, had he been in a smearing business that day, to cover him from head to foot, in which condition he would look well in an antiseptic glass cage, placed in some corner of a dime museum. There are too many Roddermunds in regard to the contagion of tuberculosis.

Tuberculosis is an infectious disease, the germ of which was discovered by Professor Koch in the year 1882. Up to that time the disease was thought, by a majority of the medical profession, to be hereditary in most cases. As soon as the bacillus was isolated, it gave a field for experiments, which have proven the disease to be contagious in the larger percentage of cases.

It was through Professor Koch's experiment with Koch's lymph or the bacillus of tuberculosis neutralized, that the veterinary profession came in possession of the tuberculin test as a diagnostic agent for tuberculosis, by its causing a rise of temperature in the patient affected with the disease, and no rise or change in those not affected.

ORIGIN OF TUBERCULIN.

Tuberculin is prepared by first injecting the bacillus in a horse, and in twenty-one days drawing off a small quantity of blood, which at that time contains the bacillus in a mild state —on the same principle that diphtheria antitoxin is prepared, or the virus of small-pox is passed through the bovine species to make vaccine to guard against small-pox, only in the latter cases the scabs from the pustules are taken. To doubt the practicability of the tuberculin test at the present time is, I think, analogous to doubt vaccination against small-pox as being a success.

In applying the tuberculin test, you must be very careful to keep the animal as near a normal state as possible, for the bovine species is very susceptible to a high temperature, from excitement, change of food, driving a few miles in warm weather or in hot weather; in the latter I have seen the temperature in many cases run up to 105° F.

The normal temperature ranges from 100 to 102 according to the kind of food the animal is receiving. A steer fattened on corn, or a cow being forced for the milk product, often runs 102 at normal. It is not practical to apply the tuberculin test in hot weather, as the temperature is liable to run up in the middle of the day enough to bring the animal inside the limit of 2 degrees, which I condemn, while many claim one degree and a half is sufficient. I had much rather keep a suspected animal not rising the required 2 degrees and retest at a future date. I am satisfied that the tuberculin test, when carried out properly, is infallible. I apply the test by taking the temperature morning, noon and evening to get the normal temperature.

If I find all animals normal, nor rising the 2 degrees give any other cause for rise of temperature, the next day I inject tuberculin at 8 P. M., and begin to take the temperature at 6 A. M. next morning, taking the temperature every three hours. You will generally find the temperature of an affected animal the highest at from 13 to 16 hours after injection and generally it will begin to recede at 21 hours, therefore not necessary to take any more readings of the thermometer, only in occasional cases, where there is a gradual rise up to that time. The affected animals during the forenoon may have a chill, shiver, and if the thoracic cavity is affected or the adjacent glands, the animal generally coughs a good deal more than usual while undergoing the test.

The animals not affected do not evince any change whatever. It is not uncommon for an animal affected to run up 5 degrees. The animals in the incipient stage of the disease react the highest, the ones permeated with the disease show the least reaction. I find that by giving larger doses than is usually prescribed to chronic cases, they will react stronger. I have, in various parts of this State, post-mortemed 278 head of cattle of all breeds and ages. In every case where the animal reacted 2 degrees, barring one, I have had no trouble to find the disease. I have held post-mortems in every case where there has been a part of a herd affected, to satisfy the owner, for in many cases it would hardly be believed that the animals were diseased until it is shown on the post-mortem. An expert would not be able to tell in those cases, without the aid of the tuberculin test; thus the animal may be in condition to throw off the bacillus and spread the contagion long before the owner notices that the animal is sick. This of course necessitates the slaughter of animals in the incipient stage of the disease or the isolation of the same from those not reacting.

WHERE MOST PREVALENT.

The older the dairy country, the more prevalent we find the disease. It is more widely disseminated in the southern part

of the State, which rule follows the same as the larger percentage in foreign countries, where dairying has been carried on extensively, and also in the Eastern States. In Denmark, when they began to try to eradicate tuberculosis the test showed 40 per cent. of the cattle to be affected. In Massachusetts, about 18 per cent., and so on down. In Wisconsin we are not so badly off, our percentage being about 7.29 per cent. affected.

Out of 586 head tested, where there was known infection, 210 animals reacted to the test, which I have slaughtered and post-mortemed. Out of 3223 tested where there was no known infection, 68 reacted. The cattle tested where there was no known infection were in State herds and stock for shipment, the larger percentage being picked milk cows for Illinois and were from all parts of the State. Total tested 3809, reacted, 287. The cattle where there was no known infection being nearly six times greater than where the infection was known to be present, it is fair to presume that 7.29 per cent. is as close an estimate as we can arrive at at the present time.

While the percentage is not large, it is too large to countenance without using the most strenuous measures to prevent the spread of the contagion. The contagion of bovine tuberculosis spreads slowly, still surely. It is hardly noticeable until the breeder or dairyman has a badly infected herd. It certainly is too large for breeders to form associations against, as has been done by the shorthorn breeders of Iowa, or equivalent to the same, an anti-tuberculin association. It is as preposterous as forming an association against vaccination to stop the spread of small-pox.

When you contract to buy an animal for breeding purposes and the owner will not submit to have the tuberculin test applied, rest assured the owner is afraid the animal may be affected and does not want to run the risk of having it known. Such an animal is dangerous to take into your herd; in fact, if breeders would make it a rule not to take a strange animal into their healthy herds without submitting them to the tuberculin test, they have done a great deal toward the suppression of the spread

of the contagion. A great many breeders and dairymen have suffered large losses in this State by bringing an infected animal into their herds. The Clap herd of Guernseys, which were dispersed, carried infection into over 20 herds, as far as known.

There has been much said about the susceptibility of different breeds of cattle to contract the disease. I do not think there is any difference in regard to the different breeds if they are subjected to the same conditions and same source of contagion. Cattle that are housed most of the time with one that is affected will more readily contract the disease, as the bacillus raised in the pus from the lungs will readily dry and be disseminated and taken through the air passages or food. While, on the other hand, light or heat or severe cold will render the bacillus inert. You are very apt to find reacting animals on both sides of one badly affected with pulmonary tuberculosis for from two to three animals each way, if the animal is stationed near the middle of the row, and in other cases no other reacting animals in a herd of 40 or 50.

The proudest breeders in the State to-day are the ones that have had their herds tested and the diseased ones disposed of, and well they may be. They can sell any animal for breeding purposes to a neighbor and feel that they are not endangering the herd of the same to the contagion, or a milch cow, or milk, or the product of their dairy, without feeling that they are endangering the lives of any family. There is no question but that the contagion is carried by milk, and is communicable from bovine to man and from man to bovine.

I found one cow with affected udder and held post-mortem upon two of her calves, one eight months old and the other a year and a half. I found both calf and yearling badly affected along the abdominal viscera and one in the glands of the thoracic cavity and one lung. They had all reacted to the tuberculin test. It is not absolutely necessary to slaughter an animal in the incipient stage of the disease, but as you can never tell at what time they arrive at the point of spreading the contagion, I think it is better in most cases to dispose of them at once.

THE DEATH METHOD.

It has been proven in Denmark, and followed in this country, that healthy calves can be raised from tuberculosed cows. This is called the Danish method. It is carried out by taking the calf from the cow as soon as it is dropped, isolating the cow and sterilizing the milk from same to feed the calf. You can readily see that this is very expensive, as you have to keep a cow for at least a year and a half with no other remuneration coming from same except the calf. I would recommend this as being practical only where you want to save a strain of stock that you cannot, in your estimation, replace or in very expensive animals, that you could figure out a profit in.

I find one objection that breeders of blooded cattle have to the tuberculin test, is, they are afraid that if any animal would react it would be scattered abroad. They have had infected animals in their herds and thereby hurt the sale of their stock. The result of a test should have directly the opposite effect, as after their herds have been tested, infected ones removed, that is evidence that their cattle are healthy and certainly are worth more to any man for breeding or milk purposes. The stock raisers that raise blooded stock ought to be the first to create the latter impression, while on the other hand many are going exactly the opposite direction and the contagion goes on. I do not believe in going at it in too radical a way, the way they have done in some of the Eastern States, not but what I think they are right in trying to eradicate the disease, but they defeated the end that they aimed at in many cases, simply because the breeders and dairymen had not looked into the matter thoroughly themselves and they thought they were being persecuted. I believe that when they thoroughly look into the matter and see that it is for their own interest and more thoroughly understand the disease, that they are the first people to help suppress it. It has been my whole aim since I have held my present office to do as much to enlighten the cattle interests on this subject as possible, and think that I have done more to do so by the post-mortems I have held of reacting animals than any other way.

Seeing a thing is not reading what some one else has seen, or in many cases probably written about and not seen. I find some people who don't care to see, but they are the ones that do the most talking against the tuberculin test and the presence of tuberculosis. A case of this kind occurred the other day at Fond du Lac, when I held post-mortems at a slaughter-house on 19 head of cattle that reacted to the tuberculin test. These came out of three different herds; eleven were thoroughbred shorthorns. A gentleman who had known of the cattle for some time and knew that two in one herd had died of the disease in the previous six months, said: "You have got cattle in that bunch there that there is nothing wrong with." I asked him if he had had any experience with the tuberculin test; and he said: "No." I then asked him to come and see the post-mortems and convince himself as to whether the test was right or wrong. He said he would not; that he didn't believe in it; that I might just as well slaughter his cattle as the ones in question.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

PECULIAR AND PERSISTENT SYMPTOMS CAUSED BY IMPACTION OF THE CÆCUM IN A HORSE.*

By L. R. Webber, V. S., Rochester, N. Y.

July 12th, 1901, I was called to see a black mare. Dr. Carr Webber responded and found her suffering apparently with severe colic. Gave her the usual treatment. Was recalled the same evening and found her still suffering, with intervals of ease. Gave usual treatment and ordered one quart of raw oil. Left instructions to remain with her until easy and report in the morning.

July 13th. Owner reports that mare has colic again. We responded and found that mare had very slight pain and only once in a while. No disturbance in pulse nor temperature.

*Read before New York State Veterinary Medical Society, Sept. 11, 1901.

Gave usual colic draught and did not think it strange, as we often have cases recur once or twice. At night still has attacks of pain occasionally. Removed her to hospital; gave pint raw oil and calomel, one drachm. Saw no sign of pain after being taken in hospital.

On 17th she was eating two quarts oats at each meal; sent her home and sent solution of nux and gentian to be given three times a day.

July 19th. Called again with the same report; horse had been eating until noon; had not worked and had been fed on grass, bran and oats. Took her to hospital; gave two drachms aloes and one drachm calomel.

On the morning of the 20th she was physicing quite freely. While in hospital neither myself nor the men who are about night and day ever saw her show any signs of pain. Sent her home on the morning of 23d eating fairly well, pulse and temperature normal.

She was returned the same evening with report of same old trouble. Could hardly believe it, as she showed nothing wrong whatever. Had her put in straight stall so as to watch the condition of her bowels. They seemed to be normal, but no great quantity. She was eating only fairly well. Gave a quart of raw oil and gave gentian and nux three times a day. Kept her until the 28th. In all this time she had no pain, no abnormal pulse nor temperature. Sent her home with instructions to exercise and put at light work.

Heard no more until August 3d, when owner reported that mare had colic again. My brother, Dr. Carr Webber, responded and reported that he guessed owner was mistaken, as she seemed O. K., with temperature and pulse normal.

August 4th. Owner said mare had several bad attacks during the previous night. Pulse and temperature normal; not eating.

August 5th. Same report, and mare had slight pain while I was there. I expressed opinion that it might be from ball of aloes and calomel I had given the day before.

August 6th. Mare still off her feed, lies down considerably, paws once in a while, pulse and temperature normal. Pulse has been weak for past two days.

August 7th. Called 6 A. M.; mare very bad; sweating a great deal, temperature 108°, not able to get any pulse. Died about 9 A. M.

Post-mortem.—Bowels almost empty and slightly reddened

in streaks, cæcum packed full and hard—so hard that the contents could be rolled about after being removed. Cæcum was also ruptured near the ilio-cæcal valve.

PROLONGED PARTURITION.

By W. S. STINSON, Crystal, North Dakota.

On June 6th, 1901, a Mr. Carr called at my office and asked me to give him some medicine for a mare that was bleeding from the vagina. After questioning him, I told him I was unable to prescribe without seeing the patient. On arriving at his stable, I found the mare feeding and expelling a small amount of a chocolate-colored fluid from the vulva at short intervals. I asked if she had been working and was informed that she had been until that day, when it was raining so that it was not a fit day to work. Owner said that mare had lost her foal one week previously, being turned to pasture at night and brought into stable in morning and fed grain before going to work. He said the night she lost her foal he found her in the morning by herself and noticed the ground pawed in several places and thought she had an attack of colic during the night. On being brought to the stable Mr. Carr's father said she had foaled and to turn her out to pasture, which was done. She ran directly to one of those places where the ground was pawed, stood there and neighed. That was more convincing that she had lost her foal in the timber. Search was made for the foal without finding any trace of it; they felt satisfied, however, that the foal was eaten by hogs or wolves. The mare was taken in and put to work; she ate, drank and worked for a week without showing any signs of sickness. I then made an examination and found the colt still in the uterus; the os was fully dialated, and a hock presentation. I removed foal, which was so badly distended with gas and so decomposed that when the hips were outside of the vulva the abdomen burst and let the intestines run out on the floor. The colt was fully developed to all appearances, and had come to proper time to foal.

The reason I report this case is that the mare had been trying to foal in the pasture, then all labor pains ceased; she fed and worked as usual up to the date that I relieved her of her foal. I have always been of the opinion that when a mare commenced to foal the labor pains would continue until the foal was delivered or death ended the mother, and those that I have had an opportunity to talk with were of the same opinion. While this is a peculiar case to me, it may not be to others, and

I wish those who have had similar cases would report them. I may say that the mare made a quick and complete recovery.

DEPARTMENT OF SURGERY.

By L. A. and E. Merillat,

Chicago Veterinary College, 2537–39 State Street, Chicago, Ill.

SURGERY OF THE EYE, EAR AND UPPER AIR PASSAGES.

(*Continued.*)

5. Surgical Treatment of Wounds of the Eyeball.—In our brief consideration of the superficial wounds we will adhere to the following outline, which will include most of the common injuries to the eyeball of domestic animals:—

I. Wounds or injuries.
  1. Penetrating.
    (*a*) Punctured.
    (*b*) Incised or lacerated.
  2. Superficial.
    (*a*) Incised.
    (*b*) Lacerated.
    (*c*) Scratched.
    (*d*) Abraded.
    (*e*) Compressed.
    (*f*) Contused.
    (*g*) Contusive.
    (*h*) Erodent.
II. Rupture of eyeball.
III. Abscesses.
IV. Fistulæ.
V. Ulcers.
VI. Burns and Corrosions.
VII. Foreign bodies in eyeball.

1. *Penetrating Wounds* are not very common in domestic animals; we occasionally meet them in general practice, in animals that have been injured by street cars, railway trains or "runaways." These wounds are most always in the anterior part of the eyeball, generally in the cornea or sclero-corneal margin; their shape, form and size depend much upon the way in which the injury was inflicted, and the nature of the object which caused the wound. Some of these wounds may be so small that they can scarcely be noticed and still may injure the deeper structures

of the eye to such an extent that the sight may be impaired or even destroyed; while others may destroy a large part of the eye and extend to structures beyond, and injuring the orbit. Such punctures are invariably serious and the only object in view in the treatment is to prevent infection.

There are other incised and punctured wounds of the eye which are more frequently observed in horses than those above mentioned; such as are inflicted by stones or other hard solid substances thrown by boys; wounds caused by whip lashes, or those inflicted by buckles on halters or bridles used by brutal, merciless and inhuman attendants in beating horses over the head. Wounds of this class are usually in the cornea, it being the least protected, and are most invariably serious ones, but yield to treatment much better than penetrating. Penetrating wounds with prolapsus of the iris or lens are always followed by loss of sight; but punctures in the sclera or sclero-corneal margin are occasionally successfully treated, leaving the eye with but a small cicatricial impression, and the patient with unimpaired sight; but when these wounds are in the cornea, the results are not so encouraging, even if infection is obviated and the wound healed by first intention, it is seldom that in such instances the cornea can be "cleared up" sufficiently to not impair the sight.

Besides the cases of penetrating wounds of the eye that have come under our observation, Dr. Wm. Schumacher, of Lagrange, Ill., reports a case in which a horse was injured by a street car, and the eye punctured by a piece of glass. The contents of the eye were removed and infection prevented.

Dr. A. H. Baker, of Chicago Veterinary College, in a summary of results obtained from the treatment of punctured wounds of the cornea, states that but a small percentage of cases terminate favorably; most of them are left with unsightly cicatrices, impaired vision or unpreventable infection, which subsequently requires enucleation or evisceration.

2. *Superficial Wounds of Eyeball.*—Wounds of this class may vary in severity according to the danger of infection and extent of the wound. A great many of these wounds are found in the cornea or corneo-scleral margin, this being the part of the eyeball most exposed. The extent of wounds of the cornea is determined by inspection, which is aided by a reflection of light upon it at various angles; this will show irregularities in the surface and structures involved. Slight injuries to the cornea are often only detected by very close inspection. Large

denuded areas may exist and pass unnoticed unless detected by the use of fluorescin. Fluorescin used for this purpose is a 2 per cent. solution with sufficient carbonate of soda to give it an alkaline reaction. When this solution is dropped upon the cornea, the part divested of its epithelium will become greenish-yellow, while the portion which is only partly deprived of its epithelial covering, or entirely free from injury, will be unaffected. By this simple procedure a very thorough examination of the cornea will enable the inspector to detect the slightest injuries that may involve the subepithelial structures.

Superficial wounds may be caused in the same manner as perforating wounds, together with many other circumstances, which only cause slight or superficial injuries; the nature of these have already been mentioned.

Incised Wounds of the anterior surface of the eyeball may be surgical or traumatic; the surgical are usually made with aseptic precautions and generally heal very readily, but traumatic wounds are often infected by the object that inflicted them; and, unless rendered aseptic immediately, they are likely to terminate unfavorably.

Lacerated Wounds require more attention; they are more difficult to clean and may require excision of its ragged edges, which often makes it impossible to close the wound by sutures.

Wounds caused by contusion or concussion are much the same in severity. Contusions of the eyeball usually result from blows with some solid or blunt object, such as a fork handle, club or "twitch"; or a compression of the eyeball by some sudden force, such as a man's weight upon an animal's head when cast will occasionally cause such injuries. Contusions are bruises without breaking the external covering of the eyeball; they may bruise the underlying structures without any apparent laceration or may result in a solution of contiguity or continuity of these structures. Blows on the eye sometimes cause spasm of the iris, which is marked by a contraction of the pupil (*myosis*); paralysis of the ciliary muscle (*cycloplegia*), which is often accompanied by a dilatation of the pupil (*mydriasis*); temporary loss of sight without any perceptible anatomical alteration of retina (*traumatic amblyopia*); and paralysis of the iris (*iridoplegia*).

Concussions seldom cause superficial wounds, but the lesions following them are generally intraocular, with the exception of rupture of the eyeball. The lesions may be simple or multiple, and may consist of ruptures, detachments, lacerations, paralyses, spasms, or dislocation of the lens.

(*a*) *Ruptures.*—Concussions or compressions may cause a rupture of the eyeball, choroid coat, zonula of Zinn, intraocular blood vessels or capsule of the lens; each of these may occur singly, but in some instances, two or more of these ruptures are caused by the same injury. (*b*) *Detachments.*—The retina, choroid or iris are occasionally detached by concussions and sometimes lacerated. Detachments of the retina more commonly result from morbid conditions that are not caused by traumatic injuries, although such injuries followed by a loss of vitreous humor is sometimes followed by such a condition. Concussion of the retina (*commotio retinæ*) is probably the most common condition following such injuries, and may terminate in œdema of the retina, which is a very serious sequel; or, it may produce a condition known as traumatic anæsthesia of retina marked by only a temporary impairment of vision. Detachment of the choroid is a rare condition and seldom occurs without a displacement of the retina; although it is an exceedingly rare condition, it is known to be caused by concussion of the eyeball (*Amer. Jour. Opthal., Mar.*, '97). Detachment of the iris is a common condition resulting from contusions, concussions or compressions of the eyeball. In some instances the iris is detached from the entire peripheral attachment (*traumatic aniridia*), while in others, only part of it is detached from its periphery (*iridodialysis*). Beside these detachments, we may detect radial and meridional lacerations. (*c*) *Lacerations* of the iris and ciliary bodies. The iris may be lacerated in various ways; the radial fibres alone are sometimes torn, while in other instances both meridional and radial fibres are involved (*traumatic coloboma*). Lacerations of the ciliary bodies are not easily detected and seldom, if ever, occur without complications.

(*d*) Paralysis of the iris and ciliary muscle are two conditions that occasionally are caused by trauma. Paralysis of the iris (*iridoplegia*) due to injuries to the eye may be of short duration, lasting but a few days, but in some cases, especially when associated with other injuries, the dilatation of the pupil (*mydriasis*) becomes permanent; this is caused generally by adhesions of the iris to surrounding structures. Paralysis of ciliary muscles (*cycloplegia*) sometimes follows concussions, or contusions, of the eye. This, however, is not so serious as iridoplegia.

(*e*) Spasms of iris and ciliary muscle are conditions that are not very common, at least they are not detected in domestic animals.

(*f*) *Dislocation of Lens.*—The changes in the position of the lens may be acquired by concussion or compression. The lens is held in position by the zonula of Zinn, and its displacement is made possible by the rupture or relaxation of its fibres, which usually results from injury to eyeball by concussion or compression, that forces the aqueous humor against the lens. The displacement may be partial or complete, the lens may be forced into the vitreous humor or into the anterior chamber of the eye; when the zonula is only partially ruptured, it may be thrown into the pupil and held in that position by the sphincter of the iris; and, when the sclera is ruptured, it may be lodged under the conjunctiva or Tenon's capsule. In veterinary practice, the surgical treatment of dislocation of lens is not a very valuable procedure; if located under the conjunctiva it can easily be removed, but the advantages gained from such interference does not increase the appearance or usefulness of the patient; in fact, surgical intervention should not be attempted unless complications indicate undesirable sequelæ.

II. RUPTURE OF EYEBALL.—Ruptures of the eyeball are *partial* or *complete*. In *partial rupture* of the sclera the inner fibres are torn and the outer ones are only stretched. Such injuries are usually accompanied by intraocular lesions. *Complete rupture* of the sclera is not a common occurrence, but when ruptured, the wound is generally in the anterior part of the sclera between the cornea and Tenon's capsule and above the cornea.

The prognosis in ruptures of the eyeball is never very favorable; the iris may adhere to the cicatrix; the eyeball may atrophy or shrink from the loss of humors; extensive intraocular hæmorrhage is often followed by inflammatory reaction; and, partial ruptures of sclera may never reunite, and be followed later on, by the development of scleral staphyloma. Only in very rare cases is the vision unimpaired. The treatment in most cases is confined to the external wound; while in severe injuries of this kind enucleation or evisceration is indicated.

III. ABSCESSES are very uncommon conditions in domestic animals; they may occur in the cornea, sclera or conjunctiva. Those of the cornea are generally sequelæ of other pathological conditions, which are usually traumatic or infectious; those of the sclera are very rare, and when they do occur, they result from traumatic injuries; they are seldom, if ever idiopathic; and those of the conjunctiva are more common than either of the above mentioned abscesses; however, the palpebral conjunctiva is more susceptible than the ocular.

All abscesses should be opened and thoroughly cleaned, if necessary they may be scraped or curetted. When a clean healthy surface is obtained, the wound is treated as a surgical wound, and unless a large area is involved, it will heal very readily if it is not located in the cornea.

IV. FISTULÆ may result from various causes, usually, however, from traumatic or surgical wounds. Perforating wounds that open the anterior chamber are often very troublesome; intraocular pressure drives the aqueous humor through the opening, and prevents union by first intention. Paracentesis of anterior chamber sometimes causes open wounds, which do not heal very readily. Cysts in the coats of the eyeball occasionally open into the anterior chamber and allow the aqueous humor to be forced through the fistula, causing an enlargement or sac or bulging of the conjunctiva (*chemosis pallida*). The *treatment* of ocular fistula is sometimes a very simple procedure; it depends much upon the nature of the wounds; if infected, it must be made aseptic, and when this is accomplished, the intraocular pressure must be removed by paracentesis of the anterior chamber; if the wound has been made aseptic, it will unite before the anterior chamber is refilled.

V. ULCERS on the antro-external surface of the eyeball are very common conditions; they may be simple, traumatic, and toxic. Ulcers are generally located in the cornea, and may be sthenic or asthenic, especially when due to infection; occasionally some of them are very obstinate, and do not yield to treatment, but keep spreading in all directions (*serpiginous*) from the sclero-corneal margin; when they involve the deeper structures, they are named rodent ulcers; these sometimes cause perforations. Ulcers in the conjunctiva or sclera are generally due to trauma, and are more satisfactorily treated than those of the cornea. Corneal ulcers are sometimes very difficult to detect, especially when they result from vesicular keratitis; these vesicles often rupture and leave large epithelial denudations, which, in the early stage, can scarcely be discovered without the use of *fluorescin*. In serpiginous ulcers (*creeping ulcers*) the destruction of tissue may extend until it involves the entire anterior surface, and leaving nothing but Descemet's membrane; and, when this is perforated, the aqueous humor escapes and the iris falls against the posterior wall of the cornea, which closes the opening; in the course of time the iris adheres to the wall (*anterior synechia*) and the anterior chamber refills. When the opening is very large we may have prolapsus of the iris. The

course in all cases of ulceration depends upon the activity of morbid agents, and the ability of the tissues to resist their encroachment. In very old patients and those out of condition, superficial ulcers are more serious than in young or healthy ones.

Treatment.—The treatment in ulceration of the next rael surface of the eyeball should be preventive, therapeutic, and surgical when necessary. If these wounds are infectious, the patient should be isolated, and all possible care taken that the disease is not transmitted to other animals. The therapeutic treatment must be governed by the physical condition of the patient. The surgical treatment must meet the requirements necessary to encourage reparation; such as cauterization, curetting, paracentesis or subconjunctival injections should be used when indicated. The conjunctival sac must be thoroughly washed and rendered aseptic if possible; the eye must be well bandaged and dressings changed as often as necessary.

VI. Burns and Corrosions.—These are injuries that seldom occur in domestic animals, excepting as rare accidents. Heat and chemicals have the same effect upon the tissues of the eye; the anterior portion of the ball being the most exposed is the part affected; the wounds are generally sup erficial.

Treatment.—In the treatment of these wounds' the first step to be taken is to allay pain by the application of cocaine. When the injury is due to caustic alkalies, the alkali may be neutralized by a diluted acid, such as acetic acid (*vinegar*); if caused by acids, the acid must be neutralized by an alkaline solution made of bicarbonate of soda or bicarbonate potash. After neutralization, the eye must be thoroughly washed and all foreign substances removed from it. Cold packs should be applied to prevent inflammation, and the treatment subsequently required is generally the same as that of other wounds of the eyeball. Adhesions of the palpebral and ocular conjunctiva must be prevented by passing some smooth flat substance between the lid and ball at least once a day, until the danger of adhesion is passed.

VII. Foreign Substances in Eyeball.—Under this head we will consider foreign bodies in the external coats of the eye and those within the eyeball. Small bodies of various substances are sometimes found in the ocular conjunctiva imbedded in the epithelium. These bodies are often very difficult to detect; in the early stage their presence is marked by severe pain and lachrymation, which is soon followed by inflammation. These

foreign bodies are only detected by careful inspection, aided by whatever means can conveniently be used to make a good examination.

The treatment in such instances consists of nothing more than the removal of all foreign substances by the most conservative means, making the wound aseptic and preventing infection.

Foreign Bodies Within the Eyeball are more serious than those lodged in the coats of the eye. Any small, hard object, such as pieces of glass or stone; spicula of steel, iron, brass or copper, or splinters of wood, may be forced through the coats into some of the structures within. They most frequently enter through the anterior part of the eye—cornea or corneo-scleral margin.

The most important features in connection with these wounds are, the size of the object, the immediate effect upon vision, the direction and course of the object and its location. If the object cannot be located and if on its course it has destroyed the lens and let the humor escape the sight cannot be restored, and the only method to adopt in such instances is enucleation or evisceration. Penetrating wounds in the eyes of domestic animals are always very serious, but when the object does not go beyond the anterior chamber or iris, it can be removed and the wound treated as a penetrating wound. If the wound can be made aseptic, the sight may be restored, leaving but a cicatrix in the external surface of the eyeball. The course to adopt in such cases is to learn the extent of the injury and to adopt conservative surgery. An attempt may be made to save the eye when there is a possible chance to do so; but if there is no possible chance of restoring vision, the eyeball should be enucleated or eviscerated.

SURGICAL ITEMS.

"*A New Name for an Old Operation.*"—The new (?) method of performing tracheotomy, described for McKillip in the September number of the REVIEW, has been in use for more than a quarter of a century—tube and all. Möller, Cadiot, Chauveau, Hoffmann, Dick and others, all refer to transverse tracheotomy through the inter-cartilaginous bands, but since these surgeons and writers have found no occasion nor thought it worth while to claim it as their own artifice, we presume that no exception will be taken to the new nomenclature.—(*L. A. M.*)

In the Journal of the American Medical Association, August 31, 1901, appears an article entitled "Notes on Anæsthetics," by D. H. Galloway, M. D., of Chicago, Ill. Most of the notes referred to in the article are as important to the veterinarian as to the human surgeon; and we will quote the valuable ones to the veterinary surgeon with due credit to the author and *The Jour. A. M. A.* "A man cannot do two things at once so skillfully as he can do either one of them by itself. A surgeon cannot do his most skilful operating while devoting half his attention to the anæsthetic. * * * A surgeon is frequently more concerned about the result of the anæsthetizer's work than he is about the results of his own work. * * * Constant anxiety about the anæsthetic divides the attention of the surgeon between what he is doing and what some one else is doing and must hinder the progress of the operation. * * * In many cases more skill is required to administer the anæsthetic than is required to do the operation. * * * An operation may be devoid of danger; an anæsthetic is never administered without jeopardizing the life of the patient. * * * In more than half of the cases the patient is in greater danger from the anæsthetic than he is from the operation. * * * A good anæsthetizer need not necessarily be a good operator; neither are all surgeons good anæsthetizers. * * * Death from an anæsthetic may occur in the hands of the most skilful anæsthetizer, but in a great majority of cases in which death occurred the anæsthetic has been in the hands of the unskilled. * * * The skilled anæsthetizer seldom, if ever, touches the globe of the patient's eye with his fingers; it is unnecessary and may do much damage. * * * The anæsthetizer should be considered a consultant to the surgeon, rather than his assistant; it is as important that he be an expert in the giving of anæsthetics as that the surgeon be an expert in operating. * * * The surgeon cannot do any operation of consequence and administer the anæsthetic too; therefore, the patient should be made to understand that at least two men are required and that they are equally entitled to pay for their services. * * * The anæsthetizer must not forget that the anæsthetic is to be given on account of the necessity for surgical operation and that the reverse is never the case; hence, the anæsthetizer's position is of necessity subordinate to that of the surgeon. As a rule the anæsthetizer must use the anæsthetic selected by the surgeon, though when anæsthetics are administered only by skilled men it is probable that a selection of the anæsthetic will be left to the anæsthetizer. * * * No man can safely administer an anæsthetic and watch the op-

eration at the same time; if a death occurs while he is so engaged he should be held guilty of criminal carelessness. * * * During anæsthesia the patient's life is in continual and *imminent* danger and his safety depends not only on the skill of the anæsthetizer, but also on that persou's constant and undivided attention. The indifferent or inattentive person has no business with anæsthetics."—(*E. M.*)

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D.V.S., Bureau of Animal Industry, Milwaukee, Wis.

MEAT AND EGGS [*Balland*].—The chemical composition of meat in mammalia and fowls, and also of the chicken egg, was subjected to a series of thorough experiments, which were communicated to the Paris Academy of Sciences, by the food chemist Balland. It is very difficult to determine truthfully the chemical composition and by this the nourishing value of the different meat products, as the samples submitted for examination show marked differences, so that unobjectionable results can only be obtained by a very extensive work. Such was performed by Balland, and his principal results can be summed up as follows: The meat of the four quarters, in the principal mammalia which serve as food (cattle, calves, goats, sheep, rabbits, hogs, asses, horses and mules), contain (after the removal of the proper layers of fat) on an average 70-78 per cent. water, ½-5-4 per cent. mineral agents, 1.4-11-3 per cent. fat, and 2-3½ per cent. nitrogen. Heart, liver, lung and kidney contains the same quantity of water and nitrogen as lean meat, the amount of fat remains under 5 per cent., the inorganic substances vary between 1-1.7 per cent.; besides the lung contains small quantities of mangan. In the blood of cattle, calves, sheep or hogs, there is up to 83 per cent. water, its inorganic substances are below ½ per cent., traces of fat, and the same quantity of nitrogen as it is found in lean meat, which naturally contains less water than the blood. Fried or broiled meat contains about the same quantity of nitrogen, fat and salts as are present in raw meat. But when taken in consideration that the meat in frying loses a great amount of water, and therefore shrinks, so the nourishing property of fried meat, compared with the same

weight of raw meat, is considerably higher. In frying the water contents is reduced to 64-42 per cent., depending on the thickness of the pieces and on the length of time it is in contact with the fire. Boiled or stewed meat does not only lose water by preparation, but also soluble nitrogen substances, fat and especially salts, which enter the bouillon of the soup or the gravy of the stew, and still then the boiled meat has more nourishing properties for the same weight than raw meat. The meat of fowls (geese, ducks and chickens) contains the same nutrients as the meat of mammalia, but in somewhat higher proportions, as the amount of water does not reach 70 per cent., and in the roast chicken becomes reduced to 52 per cent. The chicken egg deserves special mention. It is known the white and the yolk have a different composition; the white contains 86 per cent. water, 12 per cent. albumen and ½ per cent inorganic agents; the yolk only 51 per cent. water, 15 per cent. nitrogen, 30 per cent. fat, 1 ½ per cent. inorganic substances. The egg in whole consists of ¾ of its weight of water, and therefore produces ¼ pure nutrients. Two eggs weigh on an average without the shell about 100 gm. and accordingly 20 eggs possess equal nutrient material to 1 kilogm. of meat. Consequently a hen furnishes inside of a few days a large amount of nutrients, equalling its own weight; they are certainly wonderfully productive, and one cannot emphasize enough the cultivating of the higher breeds from the standpoint of food economy. As an example, to illustrate the importance of the hen's egg as food in large cities can be taken the fact that Paris in the year 1898 consumed 588,299,120 eggs, which by an average weight of 50 gm. represent the nutrient properties of 27,000,000 gm., which is equivalent to 168,200 head of cattle with an average weight of 400 kilogm (dressed). These eggs represent the same amount of nutrients as two-thirds of all the introduced cattle of the same year.

Carcinomas in Young Animals [*Dr. Goerig*].—The statistic as to the occurrence of carcinomas in man teaches that this is a disease principally of old age. Fröhner also proved in 262 cases of dogs, that only older animals were affected, while in dogs under two years, he never observed a case of carcinoma. Goerig found tumors in the kidneys in two seven-months-old hogs, which he diagnosed microscopically as adeno-carcinomas. Likewise he observed in the liver of a two-year-old heifer a carcinoma 27 cm. long, 17 cm. wide and 8 cm. thick. In another case, the left ovary in a two-year-old heifer transformed into a

tumor of the size of a man's head ; here, too, was the diagnosis of carcinoma established.—(*Deutsche Thier. Wochensch.*)

ACUTE GLANDERS IN MAN [*J. Koch*].—At the meeting of the "Free Union of Berlin Surgeons," on May 13, 1901, J. Koch reported an interesting case of acute glanders infection in man, which is rarely observed. The described case is of very great interest as it treats of a primary lung glanders, a mode of infection which is still disputed by some observers. Reporter also remarks that this case particularly is of interest to veterinarians as it concerns their colleague, who became a victim of his profession. The case described by Koch is as follows : A county veterinarian, 45 years of age, became sick with high fever and a slight left-sided pleuritic exudate. After a few days a peripleural abscess formed on the left side between the 10th and 11th ribs, which was operated upon by Prof. Dr. Rotter. At the expiration of two more days pustules and abscesses made their appearance on the skin all over the body, which numbered about 500 in all ; at the same time the back of the nose reddened and widened in the form of an erysipelatous swelling. There was a scanty purulent discharge from the nasal mucous membrane. With this a continual high fever was present, over 39° C. The patient died from his sufferings after 14 days. The diagnosis of glanders was established during life by the characteristic pustules and abscess formations on the skin, by the results of the bacteriological examination, showing the bacilli on the dry coverglass preparate, which were taken and preserved from the contents of the pustules. The pathological condition of the lungs found on autopsy makes it very probable that they were the organs primarily affected. Both apexes of the lungs contained glandular nodules, the largest in the apex of the left lung, which was of the size of an apple, and was already infused with pus. Further, there were deep hæmorrhagic nodules in the hyperplastic spleen present. Growths of the bacilli were obtained from the blood of the left auricle, from the pleuritic exudate of the left side, from the nodules of the lungs and spleen, also from the contents of almost all the skin pustules. Two male guinea-pigs succumbed to the infection from inoculation of glandular material, when two days after the inoculation a great swelling of the testicles appeared (the Strauss testicle reaction). From the experiments on the guinea-pigs it becomes evident that a reaction can be obtained, not only from an intraperitoneal inoculation of the material, but also from a subcutaneal inoculation. Koch con-

siders as a constant symptom of glanders the high continued fever. Chills are not present. As the second most frequent symptom considered by the author, is the appearance of the pustules and abscesses on the skin. This manifestation indicates that the glanders bacilli are spread all over the system, and is a positive sign of the approaching death. Frequently the glandular nodules may be present in the skin and muscles. Only in about 50 per cent. of glanders in man does glanders of the nose appear, which, with the erysipelatous swelling of the back of the nose, becomes characteristic. In some cases there may be observed a diseased condition of the joints, with pussy infiltration and phlegmonous periarticular inflammation; the spleen is always hyperplastic. By differential diagnoses are to be separated: articular rheumatism, typhus, influenza and septic infection.—(*Deutsche Med. Wochenschr.*)

FRENCH REVIEW.

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

PROBABLE TRANSMISSIONS OF THE "SARCOPTES MINOR" OF CATS TO BOVINES [*E. Chapellier*].—Unfortunately the microscopic examinations were delayed and positive evidence could not be established, but the nature of the cases and their history point to a most probable transmission. A farmer had a pet cat which was affected with some itching skin disease; he scratched terribly and soon his head and body were covered with sores. Supposing that heat might do him good, the owner kept him in a cow-shed. A few days after one cow showed a large surface on the right hip, hairless, with irregular borders. A little later more occurred on the back, head, etc. The itching was not very great, small papules forming, surrounded by inflammation all round and then covered with small scabs. A second cow was soon presenting similar signs of skin trouble. The cat had laid on her back a few days before. And then a third cow showed the same trouble. The cat was then destroyed. Examination of portions of its skin revealed the presence of the *sarcoptes minor*. But unfortunately no colonies of the parasites could be found in the cutaneous products and secretions of the cows, as the disease was already on the road to recovery.—(*Rec. de Med. Vet.*)

TUBERCULOUS PERICARDITIS IN DOGS [*Prof. G. Petit*].—*Pericarditis* is very common in dogs. Almost always it is tuber-

culous in nature. Sometimes it exists along with pulmonary and pleuritic lesions, at others it is primitive and exclusive. During the year 1900, out of 32 cases of tuberculosis, the author has found 15 cases of pericarditis, and taking these figures into consideration, he has found the following records, viz: 6 cases of *serous* tuberculous pericarditis, 6 cases of *hæmorrhagic*, 3 of *symphysar*, 0 of suppurative. These varieties are differentiated at post-mortem by the following lesions: The *serous* by the presence of tubercles spread on both layers of the pericardium and sometimes in irregular masses, sarcomatous in aspect, situated principally at the base of the heart. The cavity of the pericardium contains fluid in small quantity, similar to the normal exudation. The *hæmorrhagic* has fluid looking more like blood in nature. As much as three litres has often been found. After emptying the cavity, the serous membrane is found covered with anastomotic vegetations spreading over the surface of the heart. The lesions are of sub-acute nature. In the *symphysar* pericarditis the characters of chronicity are found. Cardiac symphysis is *incomplete* when there is adhesions, fibrous bands, dividing the cavity into sections; or, again, it is *complete* when the pericardial cavity has entirely disappeared by adhesions of the two layers. The heart is then enveloped with a thick fibrous covering, made of the two layers of the serous membrane thickly adherent to each other.—(*Rec. de Med. Vet.*)

Irreducible Hernia in a Slut [*Ducomon*].—A fine five-year-old fox terrier slut has an elastic tumor on the right inguinal region. Although it is irreducible, it is evidently a hernia which demands surgical interference. With all antiseptic precautions and care the animal was operated. An incision made from forwards backwards and a little from outwards inwards exposed the hernial sac, which, on account of the irreducibility of the hernia, was incised. The right horn of the uterus and a portion of the omentum are in the sac. The omentum is removed by resection after ligature. At that time a loop of intestines is found between the uterus and the abdominal opening. The intestines are pushed back, but still the hernia of the uterus cannot be reduced. Hysterectomy is resorted to. The wounds were sewed with antiseptic sutures, covered with iodoform and a dressing of iodoformed collodion. In fifteen days the cicatrix was complete.—(*Rec. de Med. Vet.*)

Tetanus Supposed Consecutive to the Absorption of Toxines through Intestinal Lesions [*M. Remond*].—The etiology of this case is only problematic. A gelding, aged

nine years, presented all the symptoms of acute tetanus, which, notwithstanding severe treatment and large doses of serum, died in 20 hours after the invasion of the disease. At the post-mortem, minute observation of the skin failed to reveal the presence of any lesions; but in the intestines, the doors of entrance of the bacillus of Nicolaier were found in great quantity. They consisted in excessive inflammation of the right sac of the stomach and of the cæcum, with a small ulceration near the pylorus. The mucous membrane of the colon and rectum was covered with large ecchymotic spots with many little reddish pus-holes. Two ulcerations existed also in the rectum. A number of parasites were found in the intestines, at the diaphragmatic curvature, adherent to the mucous membrane, or loose in the alimentary mass. The other organs were healthy. The author thinks that the lesions of the intestines were the places of entrance of the tetanic toxines. The hay, of which the horse had his share, came from a centre where tetanus is, so to speak, endemic.—(*Rec. de Med. Vet.*)

EPISTAXIS IN CARDIAC AFFECTIONS [*G. Desaubey*].—Similar cases have already been recorded by the author and Mr. Jacoulet. A recent case was observed by Mr. D., which is briefly mentioned as follows: A mare, drawing a coupé, is taken with abundant epistaxis. After simple treatment she is brought back to her stable. This epistaxis is the first observed with her. In auscultating the heart the first sound is heard weak and double, the second sound is scarcely perceptible and concealed by a whistling noise, which lasts during the entire diastole. The pulse at the temporal artery is strong, and easily felt. Its bounding character, and the presence of diastolic whistle, justifies a diagnosis of aortic insufficiency. A treatment with base of iodine was prescribed, but the mare was sold and lost sight of. The question which may be asked is whether the thoroughbreds or racing horses, which are often taken with epistaxis, are not also suffering with cardiac lesions due to the violent efforts they are submitted to while in training.—(*Rec. de Med. Vet.*)

CRICOIDECTOMY OR CRICOTOMY [*L. Blanchard*].—The author is an advocate of the operation of cricotomy in cases of laryngeal stenosis; notwithstanding the fact that the effects of this surgical treatment have been almost denied and that it has been affirmed that the opening of the cricoid cartilage could not enlarge the laryngo-tracheal orifice. Lately Mr. B. has performed 15 new operations. The result has been perfect in four,

with improvement in three. One of his colleagues and friends, Mr. Garcin, has with the same operation obtained the following results: Out of 50 operated, 9 were followed with complete success, and, whether race, track, or work horses, were perfectly able to do their duties.—(*Rec. de Med. Vet.*)

TREBLE GESTATION IN A HEIFER [*A. Friez*].—The author records the case of a heifer to which he was called because she was in labor. When he arrived he found the cow somewhat weak, with three calves about her. These were no bigger than an ordinary dog. The mother had delivered without trouble. The case is quite rare, especially with a primapara. The weight of each calf was 35, 33 and 36 pounds. They were in excellent condition and took heartily to the mother. The mother was treated only with tonics and good food.—(*Rec. de Med. Vet.*)

DOUBLE GESTATION IN A MARE [*M. Porchevel*].—These are rare in mares (1 in 1000, says Cornevin). The products are of the same or of different sexes. But they may also be of different species, if the mare has been covered by a stallion and afterwards by a jackass. A draught mare was covered by a stallion and later on the same day by a jackass. At term, she dropped two little fellows, a male mule and a filly. The twins were well formed, grew well and were well sold at the time of being weaned.—(*Journ. de Med. Vet. and Zoötech.*)

ŒSOPHAGISM IN THE CAT [*M. Rabieaux*].—Suddenly a cat cannot swallow solid food; he takes easily the liquid poured in his mouth. An œsophageal probe reaches the cardial orifice, meets with a slight resistance and then enters the stomach. Exploration of the throat and neck gives no positive result. Supposing œsophagism present, faradisation is resorted to. After three minutes of electrization of the neck, the animal succeeds in swallowing a few pieces of meat. After a second seating, the cat takes his food alone and swallows it without trouble. The cure lasted fifteen days. After that lapse of time came nervous pneumonia with titubation, walking in circle, dropping on the floor, contraction of the legs. At the post-mortem was found a sewing needle, four centimeters long, implanted in the walls of the stomach and plunging into the abdominal cavity. The cause of death, however, was purulent meningitis, which had no relation to the stomach trouble.—(*Journ. de Med. Vet. and Zoötech.*)

PERIODIC OPHTHALMIA AND TYPHOID FEVER [*M. Vanney*].—A seven-year-old horse has typhoid fever with gastro-intestinal manifestations. At the same time occur the symptoms of an at-

tack of periodic ophthalmia. The acute troubles subsided after a while, but several months later, a second attack returned with left posterior synechia. This seems to prove that the ocular manifestations of typhoid fever may assume the intermittent march of periodic ophthalmia proper; but, this similarity in the march of the disease does not prove the identity of the cause. There are probably several varieties of internal inflammation of the eye which are manifested by repeated attacks. It would be advantageous to know exactly the intimate cause of each to be able to define better the true domain of periodic ophthalmia, which is rather vague.—(*Jour. de Med. Vet. and Zoötech.*)

ITALIAN REVIEW.

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

A Case of Abnormal Retention of a Fœtus [*Dr. Pira Giovanni*].—On the 3d of March, the author was called to attend a cow in labor. The animal was in great pain, making violent efforts. Vaginal examination revealed an os uteri rigidly closed, and to stimulate its dilatation injections of tepid water were prescribed with drenches of hot wine given per mouth. The condition remained about the same for three days, when by degrees the expulsive efforts diminished, became less frequent, and then everything went normal; the cow having gained fat and improved in condition. On July 22d the cow exhibited again similar symptoms and a second vaginal exploration revealed the presence of a calf with the anterior legs passed through the os. The fœtus laid in vertebro-sacral position. Forced extirpation was resorted to and after much difficulty a dead calf, dry and of normal size, was extracted. This prolongation of gestation of nearly four months seemed to have no injurious effect on the general health of the mother.—(*Clinica Veterin.*)

Castration in Breeding Districts [*E. Bastianini*].—After enumerating the numerous methods of castration which have been recommended since Aristotle, Columel, etc., to our days, and giving full credit to the methods by clams, by cauterization, torsion, etc., the author, who practises in a breeding district and has at certain times of the year numerous castrations to perform in one place, has, after many trials, come to the conclusion that the elastic ligature is the one which can be done the quickest, the safest and with most satisfaction. Resorting

to all antiseptic cares of his hands, those of the assistants, and of his instruments (a bistoury, pair of scissors, and threads of hollow elastic ligature), he castrates his patient in the usual way, the animal being cast, and having the scrotum and flat of the thighs thoroughly disinfected with creoline. His patients get over their trouble in eight or twelve days. He has succeeded in castrating 20 colts in less than four hours and 30 in a day. The great advantages obtained are that the colts being wild, unbroken and left loose, do not require attention after the operation and can be left turned out as before.—(*Giornale della R. Soc. Vet.*)

IS THE MALIGNANT CATARRHAL FEVER OF CATTLE CONTAGIOUS? [*Dr. R. Morselli*].—Such is the conclusion of an article published by the author—not contagious to cattle, but to other animals. The answer, according to him, has been denied by some, admitted by others, but so far the question has not yet been well settled. To add to the subject he records the following: He was called to give his attention to a calf, which, presenting all the symptoms of the disease, had been isolated and placed in one stall of a barn where there were a sheep on his left and a young pig on his right. The animals were separated by a wood partition. For symptoms, the calf showed: head heavy, general adynamy, elevation of temperature, 41.5°, loss of appetite, irregular rumination, abundant nasal discharge, eyes partly closed, sunken in the orbits and abundant lachrymation; the aqueous humor was cloudy, respiration difficult, the skin covered here and there with patches of dry crust, under which was viscous dense suppuration. M. instituted a treatment which was followed up for seven or eight days, when at his next visit he found that the sheep and the pig were also affected. The sheep presented his nostrils covered with thick mucosities, striated with blood, both eyes were crying freely; corneæ were opaque, and the temperature raised to 41°. The pig was sicker than the sheep; his temperature was 42°, he had general tremors, the respiration was difficult and accompanied with groans, the eyes were injected, but yet clear. These two animals recovered in a few days; the calf took longer to get well, but remained blind.—(*Giornale della R. Soc. Vet*).

A CASE OF LETHARGY (?) IN A TURKEY [*Dr. G. Maccagni*].—The author records the following: A turkey had since its birth always been well and growing in fine condition, when one day (Nov. 26) he was found missing, not having returned to the roost. He soon was forgotten, after a few sorrows expressed,

for he was such a handsome bird and Christmas so near. A month later, just on Christmas eve, a working hand of the farm went into a dark barn, which was tightly closed, and found the turkey lying on the floor between two fagots of wood. He was alive, but, of course, after his twenty-nine days' fasting, had lost all his corpulency and was nothing but skin and bones. The first few days following he only partook of very little solid food, but ultimately improved and grew fat. But how, during the long time that he was lost, did he keep himself alive? The author believes that poultry in similar circumstances, being in perfect immobilization and in the dark, if left quiet and undisturbed, can vegetate and live from their own tissues and adipose deposits as some other animals do. His opinion is strengthened by another case in which a pair of chickens, tied together by the leg, as when such animals are carried to market, which were placed in a dark room where they were forgotten after it was closed and were not found until after forty-eight days. They were still alive. Those, however, died.—(*Il Nuovo Ercolani.*)

A CASE OF SPRINGHALT CURED WITH ACUPUNCTURE [*Dr. Ugo Viciani*].—Having already obtained several recoveries by this mode of treatment with springhalt, the author decided to resort to it in the case of a four-year-old mare which was suffering much with that trouble, and was almost useless. The animal being secured standing, seventy points of acupuncture needles were inserted on both sides, extending principally over the course of the biceps femoris and the semi-tendinosus. The needles were well disinfected as well as the parts where they were introduced. They were plunged about 4 centim. deep and 4 centimeters apart. After being left in place about four hours, they were removed and a stiff friction made over the muscles with a liniment of liq. ammonia and spirits of turpentine, of each 32 grammes, and camphorated alcohol and tincture of soap, 43. The animal was kept quiet for three days. A friction of alcohol was made now and then when the horse was to return to work, which took place in a very short time, being entirely cured of her infirmity.—(*Il Nuovo Ercolani.*)

ECLAMPSIA IN A COW [*Dr. E. Sbragia*].—This case, which recovered by the administration of a simple purgative and hot applications on the back, is interesting, by the fact that the cow showed the symptoms of her disease only 11 days after parturition.—(*Il Nuovo Ercolani.*)

CORRESPONDENCE.

SOME REMARKS IN RELATION TO PROF. KOCH'S RECENT COMMUNICATION TO THE LONDON CONGRESS.

NEW YORK CITY, Sept. 19, 1901.

Editors American Veterinary Review:

DEAR SIRS:—I have recently read the contribution of the famous Dr. Robert Koch in your columns and delivered before the British Congress on Tuberculosis for the Prevention of Consumption, and pending the report of the Commission, which I understand has been appointed to continue the investigation of the question, permit me to offer a few suggestions which may, perhaps, serve as some food for thought for those who are interested in the transmission of the disease.

In the first place, the distinguished investigator asserts that tuberculosis is sometimes hereditary; if this be true, then in the words of that classical writer, Fraenkel, "the germ theory of the disease is undermined and at once falls to the ground." In my sixth biennial report to the Michigan State Live Stock Sanitary Commission the following will be found: "To revert somewhat briefly to the word hereditary, let me say that it is derived from a Latin noun *heres*, meaning an heir, the genitive case being used and suffix added to make up the word; it then evolves when somewhat liberally translated into the phrase 'pertaining to the heir of.' Gould in his famous dictionary of Biology and Allied Sciences, says it means 'acquired by inheritance' and speaks of it as the transmission of physical or mental qualities or tendencies from parent to offspring, while the same author in quoting Darwin's Theory of Heredity supports the suggestion that each of the cells of the body gives off germinal particles; these when grouped constitute the generative cell, which in its turn is endowed with an inherent power to reproduce itself as well as the peculiarities of the original organism. But the Koch bacillus is an accidental invader of the cell of the animal, and is consequently a foreign body, just as much as a fine splinter of wood would be under certain circumstances, and has nothing whatever to do with the original constitution of that cell; therefore tuberculosis cannot be an hereditary disease—the disease, however, sometimes seems to be *congenital*, which according to the Etymological Dictionary by the Rev. W. W. Skeat, professor of Anglo-Saxon, in the University of Cambridge, England, is derived from a Latin word, *congenitus*, meaning *born with*."

During the period that I was identified with the Biological

Department of Parke, Davis & Co., Detroit, Mich., I was requested to test the efficiency of certain samples of tuberculin. In carryiug out the test a yearling heifer in good condition was selected, and to insure accuracy it was tuberculin tested, but did not react.

In the course of a few days I was given some human sputum, which I was informed was very rich in the germs of tuberculosis, and that it had been obtained from a virulent case in a man. I placed about a teaspoonful of this material beneath the skin of the heifer, just behind the shoulder blade, put the animal into comfortable quarters and awaited results. In the course of two or three weeks the animal began to fail and the appetite became capricious; in about six weeks I concluded it was a genuine case of tuberculosis, and that it would be a good time to test the efficiency of the tuberculin; the test was accordingly applied and the animal reacted in a most marked manner, indicating tuberculosis. A post-mortem was then held, but the general tuberculosis of the mesenteric glands and lungs which I expected to find was not present. I did, however, find a lymphatic gland in proximity to the point of inoculation which presented every appearance of tuberculosis, and microscopic examination verified the diagnosis first made. Having apparently produced tuberculosis in the animal which afterwards responded to the test, and thus established the efficiency of the sample of tuberculin, I seemed to have accomplished my test. The only difference which I can see between this experiment and some of those conducted by Prof. Koch, was that the sputum which I used had been examined microscopically before injection and the animal was tuberculin tested before the autopsy was made.

With regard to some of the other experiments of Prof. Koch in testing the virulence of human and bovine tuberculosis they do not seem to be parallel. To wit: In the effort to transmit human tuberculosis to the bovine, in some cases sputum was used which must have been contaminated; in others artificial cultures were used, which may or may not have been attenuated, while in transmitting tuberculosis from bovine to bovine the lung substance of a tubercular animal was used. In any work that I have conducted in this line the most pronounced effects have always been produced when the lung substance of a recently killed tubercular animal has been used for injection or feeding purposes.

Considering all that has been done in the past by way of

preventing the spread of this insidious plague, with seemingly good effect, it seems to your correspondent premature—yes, unwise—to tear down those barriers which have been so carefully placed around dairy products, simply because—what—some slight circumstantial evidence has suggested that the disease is not communicable from the bovine to man. We, however, applaud with both hands the sentiments of the renowned and great investigator, Dr. Koch, when he says: "It seems to me very desirable, however, that these experiments should be repeated elsewhere, in order that all doubt as to the correctness of my assertion may be removed."

It has been with much diffidence that I have expressed any doubt as to anything emanating from such high authority, but a keen interest in the question has goaded me to ventilate my feelings.

Trusting that those who are in a position to do so may investigate with vigor, I am, yours respectfully,

E. A. A. GRANGE,
Formerly Prof. Vet'y Science Mich. Agrl. College.

SOME DISEASES OF DOMESTIC ANIMALS IN THE PHILIPPINE ISLANDS.

BATANGAS, PROV. OF BATANGAS, P. I., July 16th, 1901.

Editors American Veterinary Review:

DEAR SIRS:—Some time since I sent a communication to you for the REVIEW relative to the prevalence of "verminous opthalmitis" among the troop horses in this part of the islands. In one case that I mentioned the muscles on one side of the vertebræ in the dorsal and lumbar regions wasted away until there appeared to be nothing only skin and bones left; there was also marked weakness in that region, although sensation was apparently unimpaired.

In another case of the same kind, where the parasite was very lively and apparent for some days, it disappeared after the horse was cast for operation and was never noticed again.

At that time I thought both occurrences of rather uncommon nature, but find on looking over Neuman's work on parasites that the weakness of the loins is of common occurrence in verminous opthalmitis, and is called *Kumree* or *Ah-drung* by the natives of India. Neuman also mentions that this particular condition has never been seen elsewhere than in India. I wish to state that two well-marked cases of Kumree have come under my observation here, and it is probably not an uncom-

mon phenomena in these islands. The actual cause of the weakness and wasting of the back muscles is not yet accounted for; it may be due to the presence of other filaria setting up an irritation of the nerves supplying the muscles, by pressure of the worms or blood clot, etc.

Neuman also mentions that sometimes the parasite dies and becomes absorbed. Perhaps that is what occurred in the second case that I have mentioned. In most cases that have been operated on in this regiment the incision has been made in the lower portion of the cornea instead of the upper, as is advised in some text-books, and we have had but very few unsatisfactory results, the wound healing in a few days and vision being completely restored. If the filaria papillosa is not removed or die the animal affected invariably loses vision of eye containing the parasite. I have on hand at the present time a number of mules suffering from bursatte; if of interest to you will report same at later date. Respectfully,

COLEMAN NOCKOLDS,
1st Class Vet. 1st Cavalry,

[We regret that the communication referred to above did not reach the REVIEW.—EDITOR.]

PROMOTIONS IN THE BUREAU OF ANIMAL INDUSTRY

FROM DECEMBER 1, 1900, TO JULY 31, 1901.

Dr. M. O. Anderson, South St. Paul, Minn., from $1200 to $1400 and placed in charge of station at Austin, Minn.

Dr. Don C. Ayer, in charge South Omaha, Nebraska, from $1600 to $1800.

Dr. Levi P. Beechy, South Omaha, Nebraska, from $1200 to $1400.

Dr. R. J. Blanche, Kansas City, Kan., from $1200 to $1400, and transferred to South St. Joseph, Mo.

Dr. Geo. A. Bond, South St. Joseph, Mo., from $1200 to $1400.

Dr. James J. Brougham, in charge National Stock Yards, Ill., from $1600 to $1800.

Dr. John S. Buckley, Washington, D. C., from $1200 to $1400.

Dr. Herman Busman, Chicago, Ill., from $1200 to $1400.

Dr. George W. Butler, placed in charge Eau Claire, Wis.

Dr. Chas. H. Canfield, Kansas City, Kan., from $1200 to $1400.

Dr. Thomas W. Carnachan, Kansas City, Kan., from $1200 to $1400.

Dr. Herbert B. Chaney, Kansas City, Kan., from $1200 to $1400.

Dr. Dean G. Cooper, South Omaha, Nebraska, from $1200 to $1400.

Dr. Robert Darling, Indianapolis, Ind., from $1200 to $1400 and placed in charge San Diego, Cal.

Dr. Frederick T. Dolan, Knoxville, Tenn., from $1200 to $1400.

Dr. Frank C. Eells, Salt Lake City, from $1200 to $1400.

Dr. John William Fink, Washington, D. C., from $1200 to $1400.

Dr. Harrison H. George, Kansas City, Kan., from $1200 to $1400.

Dr. Robert H. Harrison, Milwaukee, Wis., from $1200 to $1400.

Dr. Samuel G. Hendren, New York, N. Y., from $1200 to $1400.

Dr. James G. Hope, Chicago, Ill., from $1200 to $1400.

Dr. Ulysses G. Houck, Chicago, from $1400 to $1600.

Dr. Walter E. Howe, Denver, Colo., from $1200 to $1400.

Dr. Benjamin Howes, Island Pond, Vt., from $1200 to $1400, and tranferred to Pittsburg, Pa.

Dr. Julius Huelsen, in charge Jersey City, N. J., from $1400 to $1600.

Dr. J. Otis Jacobs, Salt Lake City, from $1200 to $1400.
Dr. George Jobson, Chicago, Ill., " " " "
Dr. John V. Laddey, New York, N. Y., " " " "
Dr. W. B. Lincoln, Nashville, Tenn., " " " "
Dr. George A. Lytle, Chicago, Ill., " " " "
Dr. Alfred F. Martins, Boston, Mass., " " " "
Dr. Chester Miller, St. Louis, Mo., " " " "

Dr. J. C. Milnes, in charge, Wichita, Kan., from $1400 to $1600.

Dr. Patrick H. Mullowney, Boston, Mass., from $1200 to $1400.

Dr. Michael T. Naughton, Chicago, Ill., from $1200 to $1400.

Dr. Albert J. Payne, in charge Cincinnati, Ohio, from $1400 to $1600.

Dr. Thomas L. Rice, Cincinnati, Ohio, from $1200 to $1400.
Dr. Albert E. Rishel, Chicago, Ill., " " " "
Dr. Willard A. Savage, " " " " " "

Dr. Chas. A. Schaufler, in charge Philadelphia, Pa., from $1600 to $1800.

Dr. E. C. Schroeder, Bethesda, Md., from $1800 to $2000.

Dr. William H. Smith, Jr., Chicago, Ill., from $1200 to $1400.

Dr. N. C. Sorensen, in charge Indianapolis, Ind., from $1400 to $1600.

Dr. R. P. Steddom, in charge Knoxville, Tenn., from $1400 to $1600.

Dr. Harry O. Thompson, Boston, Mass., from $1200 to $1400.

Dr. William Thompson, in charge Sioux City, Iowa, from $1400 to $1600.

Dr. Richard W. Tuck, Indianapolis, Ind., from $1200 to $1400.

Dr. Henry J. Washburn, Washington, D. C., from $1200 to $1400.

Dr. John B. Wright, South St. Joseph, from $1200 to $1400.

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

The thirty-eighth annual meeting of the National Association was called to order at the Hotel Rudolf, Atlantic City, N. J., on Tuesday, September 3, 1901, at 10 A. M., by President Tait Butler, the spacious assembly hall being well filled with members, visitors and ladies. The President formally declared the convention in session and introduced Hon. Franklin P. Stoy, Mayor of Atlantic City, who delivered a most cordial address of welcome, explaining the points of most interest and the government of the unique seaside resort, closing by extending the freedom of the city to his veterinary guests. Dr. D. E. Salmon, of Washington, responded in his usual happy style, giving an outline of the importance of the convention work which was about being undertaken, its scope and character.

After the formalities of the opening exercises Dr. Butler delivered the following

ANNUAL PRESIDENTIAL ADDRESS.

You have just had striking examples of the tendency to comment on the marked progress made by the veterinary profession in recent years. In a general way we have all appreciated this progress, but it is doubtful if any one here has fully

grasped its scope and magnitude during even the last ten years. We have been so engrossed with the struggle to keep in touch with modern opinions and practice that we have had little time for retrospective contemplation.

We are also referred to as a young profession, which, when applied to the profession in America, is especially true. Even so young a man as your President has, during his short life in the profession, seen every existing veterinary college in the United States, with perhaps one exception, organized and developed to their present high state of efficiency. Our great National veterinary department, the Bureau of Animal Industry, which has solved more difficult problems and done more for the live stock interests of this country than was ever done by any other similar institution in any country, came into existence about the time the speaker entered the profession. Whatever the veterinary profession in America is to-day has been the work of the last quarter of the nineteenth century. Not only is the profession, with its powerful and far-reaching influences for the good of the public health and wealth, a stalwart youth, but it is also largely the product of the efforts of youthful men. I look before me in vain to find more than an occasional head sprinkled with gray to denote long years of service in the cause. Perhaps no similar scientific association ever convened in such large numbers with so young and vigorous a *personnel.*

It is not my purpose to in any sense attempt a description of the matchless progress of the veterinary profession during the closing years of the last century. Such a task would be much more pleasant than the one I have essayed, but I see a duty in another direction. Permit me to say, however, that this progress has not always been direct and conservative, but sometimes, at least, rather meteoric and brilliantly erratic. Vigorous young manhood has its follies as well as its virility, and not in all cases has the progress of the profession been consistent and symmetrical. However, I am in no sense a pessimist. Indeed, in so far as the future of this association and the veterinary profession is concerned, I am optimistic to a degree, but it has seemed to me proper to point out certain phases of work that have been neglected and modestly criticise where, in my judgment, faults exist that may be corrected. Perhaps in no field of veterinary effort in America have better results been obtained than in veterinary college education. The three-year schools of to-day, with their longer periods for instruction and their laboratories and clinics, graduate men far superior to those

of even fifteen or twenty years ago. Their graduates are better fitted to take proper rank in society, better equipped for serving the State as sanitarians, and better advisers on questions of animal hygiene and live-stock husbandry. They are better teachers of veterinary science, as it is taught in the modern veterinary college; in fact, they are better qualified to perform very many of the duties required of them by existing conditions. They are doubtless better practitioners, judged from a purely scientific standpoint, and from the standpoint of the college professor who is accustomed to judge such matters by the artificial conditions of the college hospital and by the standards of city practice. But are they better qualified to earn their living as veterinary practitioners? I do not believe they are. I am not unaware that this statement is likely to meet with severe criticism, and before attempting to point out what seems to me the causes of this one-sided development of our veterinary education, it may be well to call your attention to two facts which should always be kept in mind when considering the nature and efficiency of veterinary college education. Regardless of the great furore which the colleges are creating over the opportunities for veterinarians as sanitarians, meat and milk inspectors, teachers of veterinary science in agricultural colleges, investigators for agricultural experiment stations, army veterinarians, and in all other similar capacities, it still remains a fact that nine out of every ten graduates must earn their living as general veterinary practitioners, and therefore fitness for general practice is the standard by which the efficiency of college education should be judged.

The other fact which may well be mentioned in this connection is that, however important it may be that the veterinary practitioner should receive the highest possible scientific training, it nevertheless remains a fact that his success in practice depends more upon his ability to properly handle the owner of the patient than upon his ability to handle the patient itself.

It therefore seems to me that the important question which the colleges should ask themselves is, are we each year turning out men better able to earn their living and serve the country as general country practitioners?

I am extremely doubtful if the graduate of to-day is able to give superior service under the conditions which, although undesirable, are nevertheless those which he must meet in ordinary country practice. The tendency of the colleges is to overlook the fact that the majority of veterinarians are not permit-

ted to practice in the city or possess well appointed hospitals. The result is that the conditions under which the undergraduate sees practice done at the colleges are very different from the conditions under which he must do practice if he is to succeed.

In no line of business is there a greater need for developing a high type of that American characteristic of adaptability than in veterinary practice as it exists in this country at the present time. But as matriculate and graduate standards have been raised there has been a greater tendency for those better educated but frequently less familiar with rural conditions, hence less practical to enter the profession. Therefore the greater reason and necessity for more attention to the practical business side of veterinary education. There are too many teachers in our veterinary colleges who never had any experience in general, unaided, independent veterinary practice of any sort, and too many others whose experience has been one-sided, although perhaps extensive.

However, I think I see a more potent cause of the inability of the graduate of the present to adapt himself to the conditions of country practice than any of those yet mentioned. There has sprung up in recent years, especially among the more prominent members of the profession, a blind, unreasoning worship of all things European, especially German; American facts and methods and American investigators and literature fail to command the interest or respect of these great men, but German literature and investigator are followed and worshipped with a blind fatuity which would be ludicrous were it not fraught with serious consequences that imperil the future progress of the profession. There are men who believe that there is culture in understanding the causes of the Trojan war, but none in learning the causes of the (recent) war in China. Just so with a large number of prominent American veterinarians. They appear to think a knowledge of German practice and literature the *sine qua non* of veterinary education and exhibit the greatest contempt for American methods adapted to American conditions and needs. In all they say or do we are constantly reminded of the fact that the Germans do this or that, or that this or that particular practice or method is wrong because the Germans don't do it that way. Many of them do not even read American literature, or if they read it, entirely discredit it, as evidenced by the fact that I read from the pen of one of these that anthrax is rare in this country but common in Europe. My friends, Drs. Dalrymple of Louisiana, and Robert

of Mississippi, and other Southern and Western veterinarians, are probably convinced that anthrax is not particularly rare in this country. Again, an experiment station veterinarian informs his readers that the literature on a certain subject is "mostly foreign." Still, I find not less than a dozen bulletins treating the subject, besides numerous articles in veterinary journals and elsewhere. In all, probably double what he could find in the foreign literature of all languages.

As a seeker after truth and a discoverer of abstract facts, the German certainly has no superior, but he is in no sense the equal of the American in his application of facts to conditions, especially American conditions.

The result is we have numerous translations, but little strictly original literature from this class of men. Of these translations, which have been quite numerous in recent years, to which would you refer the young practitioner for aid in diagnosis or treatment? They are almost without exception absolutely worthless to the American country practitioner. They were written for other readers and apply to other conditions, and business methods. When we have recovered from this mental dyscrasia and applied ourselves to a development of an American Veterinary Science, suitable to the conditions existing in this country, we will see fewer failures in veterinary practice from what is now known as lack of practical "horse sense."

This association has a written code of ethics an observance of which is required from every member. The restraining influence thus obtained has had a splendid effect in elevating the standard of veterinary ethics, not only among our members, but also throughout the whole profession. It is true that in the light of modern ideas concerning the rights of the individual and more liberal views of business enterprise, some sections of our code may seem somewhat antiquated and contracted, but it had served a good purpose and this association should now require the same high standard of moral and business integrity which it has enforced in matters strictly professional. It is needful that we look more carefully into the moral character and business standing of our applicants for membership. The strength of our organization is as much dependent upon the high moral and business integrity of our members as upon their professional and scientific attainments.

I have thus spoken of veterinary ethics in a general way, but I wish to particularly call your attention to a violation of our code, in spirit at least, by some of our veterinary colleges. This

is a matter that can only be corrected by the action of this association and I recommend that it receive careful consideration at this meeting. I refer to the practice of certain veterinary colleges in illustrating their catalogues and advertising publications in a manner that would not be tolerated for an instant if done by the individual member. The college which uses illustrations in its advertising literature for any other purpose than to show the extent and variety of its buildings and equipment has descended to the level of the practitioner who uses illuminated stationery and flaming posters. In fact, such exhibitions of bad taste are much worse on the part of the college than in the individual, for the college should be the model for its graduates. What alma mater does the alumni are not likely to think wholly bad; therefore, it would not be strange if the graduates of such schools held rather cheaply that section of our code which forbids such practice. I have here a few samples of this sort of cheap, undignified and unprofessional advertising to which I invite your attention.

We have all heard with regret of the failure of the profession in its efforts to secure proper recognition for the army veterinarian and to give to the army a veterinary service commensurate with the importance of the interests involved; but this partial failure must not cause us to relax our efforts. Your committee, although in a measure unsuccessful, has done valiant service and manufactured much public sentiment in behalf of our cause, for which it deserves the sincere thanks of the association, and I feel certain we shall all be interested in any plans for future action which it may be pleased to suggest.

There are other fields offering more fruitful harvests which should no longer be neglected. This association should appoint a committee, and through it inaugurate a campaign which should be prosecuted with the utmost vigor, and only cease when every board of health and every sanitary commission in the land has, at least, one competent veterinarian in its membership. I would most respectfully urge the appointment of such a committee.

Each succeeding year marks a distinct advance in the magnitude of the association's influence and usefulness. Our field of labor is becoming more comprehensive, comprising more diverse and special interests. From sessions lasting one day we have reached the limit in this meeting of a program covering four full days. Four days, with the time required to go to and from the meeting, consumes the entire week, and one week is

all the business veterinarian is willing to give to such a meeting. We have, therefore, reached the limit of the time at our disposal, but have we reached the limit of the requirements? The history of the last three years makes it appear quite certain that we have not.

This is the age of specialization, and veterinary science offers no exception to the rule. No man is any longer able to cover the whole field of veterinary work. It matters not whether we recognize and admit or not, the fact remains that the time has come when the veterinarian must begin to specialize if he is to attain prominence. What applies to the veterinarian, also applies to this association. We have accomplished the basis work which must always precede successful specialization, and the time is near at hand when we must be prepared to so change the machinery of the organization to meet the requirements of modern ideas and methods. In fact, in my opinion, the time has already arrived when there is a real necessity for a reorganization of our plans of work to meet the needs of the diversity of interests involved. The field being too broad for the grasp of any one mind, and too long for the time at our disposal, we are forced into the organization of special sections for special lines of work. We have for some time been trying to shut our eyes against the fact, but even the blind must see that "section work" has been going on for some time. Last year we had clinics absorbing greater interest from the general practitioner than the scientific literary program. We also have our companion organization of experiment station veterinarians. The natural divisions which have spontaneonsly shown themselves give us a clue to the sort of reorganization demanded. Accordingly it appears to me that three sections working concurrently, one considering questions of interest to the general practitioner and including the clinics, one dealing with sanitary questions, including meat and milk inspection, and general State medicine, and one comprising investigators, experiment station workers, etc. I suggest, therefore, and recommend that a committee be appointed for the purpose of considering the advisability of "section work," and formulating a plan for putting the same into operation, if deemed advisable, and report the same to the next annual meeting of the association. For several years I have thought the necessity for several of our standing committees, as their duties are now defined, was not very apparent. I refer specially to the Committee on Intelligence and Education, and the one on Diseases. The utility of the former is not

obvious, while the latter must have the duties better defined and its efforts concentrated before it can accomplish material good. During my term of office this fact has been brought to my attention quite forcibly by similar ideas suggested by various members. I believe certain members of these committees will have something to say along this line, and I need not discuss the matter further in this connection.

No feature of these annual meetings is more attractive nor more beneficial than the opportunity which they offer for the enjoyment of social intercourse between congenial spirits. The chance acquaintance of long ago has each year grown into a closer and warmer friendship, until at last, on the day preceding the meeting, we watch and long for the old familiar face which we have learned to love in the years gone by. If perchance the expected one fails to appear and we know that he is only temporarily detained but will join us at the next and perhaps many subsequent meetings, the disappointment may be sharp, but the hearty hand-clasp and warm greeting of another dissipates the sadness and cheers the heart, as only the feelings of true friendship can cheer it. But when cruel and relentless death has thrown its dark pall between us and some dear friend, and we gather to miss his genial presence and are reminded that the chief among our friends will never again join us in these councils where his wisdom is so much needed, that we shall never again enjoy that companionship which was so much prized, yea, that the brother we loved is no more forever, we are truly sad and the heartache cannot be soothed. There is a void which can never be filled. Other friendships, perhaps just as warm, may and will be made, but the place left vacant forever remains the same.

During the past year several worthy members of this association have been lost to us through the grim harvester Death. Among these were two who had been especially honored by election to the presidency. The one, ripe in years, largely devoted to the advancement of the profession, few of you here assembled knew personally, but the other, in the fullness of his vigorous manhood and the geniality of his noble presence, was known to all. And in this case it may be truly said that to know was to love. I refer to our late friend and brother Dr. Albert W. Clement. I cannot allow this fitting opportunity to pass without paying my humble tribute to his memory. I shall always fondly cherish the memory of a friendship which was one of the first made among the members of this associa-

tion. No greeting was more cordial, no hand-clasp more hearty, no friendship more true than that which he gave and won in return from all who came to know him well. His scientific mind, his conscientious investigations and his conservative yet fearless exposition of all that was best in progressive modern veterinary science won the highest respect from us all. But it was his genial personality which made him a companion to be enjoyed and loved, and his broad nobility of character that won the affection and held the hearts which now mourn his loss.

THOSE IN ATTENDANCE.

By means of registration cards at the door of the assembly hall, it was found that the following list of attendants were present during the three-days' session :

Members.

Abele, Jr., Francis, 8 Spear St., Quincy, Mass.
Ackerman, E. B., 167 Clymer St., Brooklyn, N. Y.
Anderson, F. E., Findlay, Ohio.
Annon, W. J., Goshen, Ind.
Beckett, Edward C., 547 Albany St., Boston, Mass.
Bell, Roscoe R., Seventh Ave.and Union St., Brooklyn, N. Y.
Berns, George H., 74 Adams St., Brooklyn, N. Y.
Bland, Thos., Waterbury, Conn.
Bray, T. A., El Paso, Texas.
Brenton, S., 85 Fifth St., Detroit, Mich.
Budd, T. Earle, 90 Park St., Orange, N. J.
Burr, Alexander, Old Court House, Boston, Mass.
Butler, Tait, Raleigh, N. C.
Cooley, A. S., 1184 East Madison Ave., Cleveland, Ohio.
Cotton, T. Bent, Mount Vernon, Ohio.
Cunningham, Albert E., 215 Huntington St., Cleveland, Ohio.
Curtice, Cooper, Kingston, R. I.
Dalrymple, W. H., Baton Rouge, La.
DeVine, J. F., Rhinebeck, N. Y.
Dodge, W. H., Leominster, Mass.
Dougherty, William, 1035 Cathedral St., Baltimore, Md.
Ellis, Robert W., 453 West 150th St., New York, N. Y.
Etienne, A. A., St. Hyacinthe, Quebec, Canada.
Eves, H. P., Wilmington, Del.
Farrington, A. M., 1436 Chapin St., Washington, D. C.
Fink, William P., 127 North Indiana Ave., Atlantic City, N. J.
Frothingham, Langdon, 20 Hereford St., Boston, Mass.

Gay, Carl W., Ithaca, N. Y.
Glennon, J. T., 119 Plane St., Newark, N. J.
Goentner, Charles T., Bryn Mawr, Pa.
Green, L. Kenneth, 550 Second Ave., Detroit, Mich.
Groves, John W., Hamilton, Ontario.
Hanson, H. D., 160 Eldridge St., N. Y. City, N. Y.
Harger, S. J. J., 205 North 20th St., Philadelphia, Pa.
Harrison, W. F., Bloomfield, N. J.
Hewett, R. W., West Phila. Stock Yards Hotel, Philadelphia, Pa.
Hendren, Samuel G., 30 Plane St., Newark, N. J.
Heyde, W. F., 1215 South Jefferson Ave., St. Louis, Mo.
Hillock, T. R., Columbus, Ohio.
Hoffmann, F. F., Brookville, Pa.
Hoopes, Herbert, Bynum, Md.
Horner, L. L., Woodstown, N. J.
Hoskins, W. Horace, 3452 Ludlow St., Philadelphia, Pa.
Hughes, Joseph, 2537 State St., Chicago, Ill.
Huidekoper, Rush S., 1504 Sansom St., Philadelphia, Pa.
Jacobs, N., Knoxville, Tenn.
Johnson, G. A., Exchange Bldg., Stock Yards, Sioux City, Iowa.
Kelly, Wm. Henry, 233 Western Ave., Albany, N. Y.
Kesler, G. C., Holley, N. Y.
Kille, W. B., Salem, N. J.
Knowles, M. E., Helena, Mont.
Law, James, Cornell University, Ithaca, N. Y.
Loblein, E. L., New Brunswick, N. J.
Lowe, Wm. Herbert, 180 Ellison St., Paterson, N. J.
Lowe, J. Payne, Passaic, N. J.
Lyford, Chas C., 817 Third Ave., South Minneapolis, Minn.
Lyman, Richard P., Hartford, Conn.
McLellan, F. W., Bridgeport, Conn.
McNeil, J. C., Department of Public Safety, Pittsburg, Pa.
Marshall, C. J., 2004 Pine St., Philadelphia, Pa.
Martenet, Wm. H., 1005 W. North Ave., Baltimore, Md.
Merillat, L. A., 2127 Indiana Ave., Chicago, Ill.
Meyer, J. C., 1111 Walnut St., Cincinnati, Ohio.
Mohler, John R., U. S. Inspector, Washington, D. C.
Moore, R. C., 1404 Holmes St., Kansas City, Mo.
Nesom, G. E., Clemson College, S. C.
Newcomer, E. H., Mount Joy, Penn.
Paige, Jas. B., Amherst, Mass.

Peters, Austin, 35 Congress St., Boston, Mass.
Pierce, Benj. D., Springfield, Mass.
Porter, E. C., New Castle, Pa.
Pope, Jr., Lemuel, Portsmouth, N. H.
Poucher, M. M., Oswego, N. Y.
Ranck, E. M., 422 N. 41st St., Philadelphia, Pa.
Rayner, Jas. B., 135 E. Gay St., West Chester, Pa.
Repp, John J., Ames, Iowa.
Reynolds, M. H., St. Anthony Park, Minn.
Rhoads, W. L., Lansdowne, Pa.
Ridge, W. H., Trevose, Pa.
Robert, J. C., Agricultural College, Miss.
Robertson, Jas. L., 409 9th Ave., New York City, N. Y.
Rogers, Howard P., 9 Ashford St., Allston, Boston, Mass.
Ruhl, Frederick P., Fairmont, West Virginia.
Ryder, J. E., 1634 Broadway, New York City, N. Y.
Salmon, D. E., Chief of Bureau of Animal Industry, Washington, D. C.
Smith, Thomas E., 309 Barrow St., Jersey City, N. J.
Shepard, E. H., 793 Doan St., Cleveland, Ohio.
Sherwood, T. G., 107 West 37th St., N. Y. City, N. Y.
Stewart, S., 1404 Holmes St., Kansas City, Mo.
Tomlinson, W. J., Williamsport, Pa.
Turner, J. P., 910 O St., Washington, D. C.
Van Es, L., Mobile, Ala.
Vogt, A. G., 119 Plane St., Newark, N. J.
White, Geo. R., 316 N. Front St., Nashville, Tenn.
Winchester, J. F., Lawrence, Mass.
Witte, C. R., New Britain, Conn.

Applicants.

Alaire, G., L'Epiphaine, P. Q.
Barradell, A., Pawling, N. Y.
Brimhall, S. D., 2304 Emerson St., Minneapolis, Minn.
Carter, J. M., 215 South 17th St., Philadelphia, Pa.
Gall, Wm., Matteawan, N. J.
Grogan, Jos. P., 909 Ashland Ave., Baltimore, Md.
Hill, J. G., Jacksonville, Florida.
Jewell, C. H., Dunkirk, N. Y.
Kirby, Bassett, Woodbury, N. J.
Lukes, Harry, Springfield, Mass.
Moore, V. A., Ithaca, N.Y.
Thayer, Stuart, Dunham, Quebec, Can.
Underhill, B. M., Media, Pa.

Visiting Veterinarians.

Ainsworth, C. B., Greensburg, Ind.
Adams, F. L., Jamaica Plain, Mass.
Beatty, James, Bureau of Animal Industry, Philadelphia, Pa.
Bieber, U. S. G., Kutztown, Pa.
Black, H. G., Atlantic City, N. J.
Boyd, Chas. W., 26 S. Diamond St., Allegheny, Pa.
Brenton, A. S. V., 85 Fifth St., Detroit, Mich.
Clayton, Charles E., New York City.
Conard, N. R., 1823 Filbert St., Philadelphia, Pa.
Connor, J. F., Uniontown, Ala.
Crowley, Geo. T., New Britain, Conn.
Everitt, J. M., Hackettstown, N. J.
Gardiner, W. W., Moorestown, N. J.
George, J. O., 6 South 5th St., Camden, N. J.
Hershey, S. E., Keyser, West Virginia.
Hillock, A. J., 204 East Long St., Columbus, Ohio.
Holden, W. C., Delphos, Ohio.
Hurley, L. P., Hopewell, N. J.
Jackson, H. S., Sewickley, Pa.
Jones, J. B., 1811 Atlantic Ave., Atlantic City, N. J.
Keil, Zono S., Perkesie, Pa.
Kirby, Bassett, Woodbury, N. J.
Kohler, D. R., Boyertown, Pa.
Land, L. N., Lexington, Ky.
Ludy, J. H., St. Albans, Vt.
Lushington, A. N., Lynchburg, Va.
McCully, R. W., 160 East 24th St., New York City, N. Y.
McDonnell, A. A., Nolldama, Mass.
McGuire, Geo. F., New Britain, Conn.
Magill, Charles E., Haddonfield, N. J.
MacKellar, Robt. S., Nyack, N. Y.
Mattson, W. H., Camp Ground, Pa.
Mecray, Jas. M., Maple Shade, N. J.
Michener, J. C., Colmar, Pa.
Mullaney, T. F., 1920 Locust St., Kansas City, Mo.
Noack, Otto G., 54 South 6th St., Reading, Pa.
Olcott, C. H., New Britain, Conn.
Olweiler, J. F., Elizabethtown, Pa.
Oyler, J. H., Harrisburg, Pa.
Palmer, H. F., 235 Alexandrine Ave., Detroit, Mich.
Parry, A. E., New York City, N. Y.
Perry, Charles H., 82 Park Ave., Worcester, Mass.

Piatt, D. A., 19 W. Short St., Lexington, Ky.
Rectenwald, N., 89 Washington Ave., Pittsburg, Pa.
Roberts, D., Waukesha, Wis.
Robinson, T. E., Westerly, R. I.
Schneider, F. H., 3512 North 11th St., Philadelphia, Pa.
Schrieber, Albert Fricke, 62d and Elmwood Ave., West Philadelphia.
Sherrick, F. N., 211 E. Apple St., Connellsville, Pa.
Sheedy, Jas. A., St. Albans, Vt.
Simpson, Chas. P., Somerville, Mass.
Simpson, W. H., Malden, Mass.
Simpson, William, Springfield, Mass.
Smith, W. R., West Brookfield, Mass.
Smith, D. King, Ontario Veterinary College, Toronto, Canada.
Smith, Geo. E., Frostburg, Md.
Stehle, Frederick, Ridge Ave., Philadelphia, Pa.
Thacker, Thomas, Renfrew, Ontario, Canada.
Toomey, R. A., Springfield, Mass.
Tremaine, S. C., Bridgeton, N. J.
Viles, Jesse A., 14 Coral St., Lowell, Mass.
Whitney, F., Oswego, N. Y.
Wray, A. M., Richmond, Ill.

Other Visitors.

Auebach, Charles, 262 N. 13th St., Philadelphia, Pa., representing West Disinfecting Company.
Burton, R. J., representing H. K. Mulford Company, Philadelphia, Pa.
Dye, Hon. Franklin, Secretary State Tuberculosis Commission, Trenton, N. J.
Cotter, Zar, Chicago, Ill.
Crossman, T. H., official stenographer, 1829 Park Row Bldg., New York City, N. Y.
Davison, A. R., representiug E. R. Squibb & Sons, New York City, N. Y.
Eger, Alex., veterinary and medical book publisher, 34 Van Buren St., Chicago, Ill.
Johns, J. E., M. D., Philadelphia, Pa.
McCloskey, A. J., Chestnut Hill, Philadelphia, Pa.
Mantz, Cynes, representing Cretol Chemical Company, Washington, D. C.
Stoy, Hon. Franklin P., Mayor of Atlantic City, Atlantic City, N. J.

Salmon, Hon. Joshua S., Member of Congress, Boonton, N. J.
Toufel, Geo. W., 114 South 10th St., Philadelphia, Pa.
Trumar, James, 4505 Chester Ave., Philadelphia, Pa.

Ladies.

Ackerman, Mrs. E. B., Brooklyn, N. Y.
Ainsworth, Mrs. C. B., Greensburg, Ind.
Anderson, Mrs. F. E., Findlay, Ohio.
Bell, Mrs. M. D., Philadelphia, Pa.
Bell, Mrs. Roscoe R., and children, Brooklyn, N. Y.
Berns, Mrs. Geo. H., Brooklyn, N. Y.
Berns, Miss Nellie, Brooklyn, N. Y.
Bland, Mrs. Thos., Waterbury, Conn.
Bland, Miss Ethel, Waterbury, Conn.
Butler, Mrs. Tait, Raleigh, N. C.
Bray, Mrs. T. A., El Paso, Texas.
Budd, Mrs. T. E., Orange, N. J.
Budd, Miss Helen, Orange, N. J.
Cooley, Mrs. Flora H., Cleveland, Ohio.
Clark, Mrs. C. E., New York City, N. Y.
Crossman, Mrs. T. E., New York City, N. Y.
Eger, Mrs. Alex., Chicago, Ill.
Green, Mrs. L. K., Detroit, Mich.
George, Mrs. J. O., Camden, N. J.
George, Miss, Camden, N. J.
Goentner, Mrs Chas. T., Bryn Mawr, Pa.
Hughes, Mrs. Jos., Chicago, Ill.
Hanson, Mrs. H. D., New York City, N. Y.
Hart, Mrs. Mary J., Atlantic City, N. J.
Hoskins, Mrs. W. Horace, Philadelphia, Pa.
Johnson, Mrs. G. A., Sioux City, Iowa.
Jones, Mrs. J. B., Atlantic City, N. J.
Hillock, Mrs. T. B., Columbus, Ohio.
Kelly, Mrs. Wm. Henry, Albany, N. Y.
Ludy, Mrs. J. H., St. Albans, Vt.
Lowe, Mrs. Wm. Herbert, Paterson, N. J.
Lowe, Mrs. J. Payne, Passaic, N. J.
Marshall, Mrs. C. J., Philadelphia, Pa.
Merillat, Mrs. L. A., Chicago, Ill.
Mohler, Mrs. J. R., Washington, D. C.
Newcomer, Mrs. E. H., Mt. Joy, Pa.
Nesom, Mrs. G. E., Clemson College, S. C.
Piatt, Mrs. D. A., Lexington, Ky.
Rayner, Mrs. J. B., West Chester, Pa.

Ridge, Mrs. W. H., Trevose, Pa.
Ruhl, Mrs. F. P., Fairmont, West Virginia.
Ryder, Mrs. J. E., New York, N. Y.
Ranck, Mrs. E. M., Philadelphia, Pa.
Repp, Mrs. John J., Ames, Iowa.
Runge, Mrs. W., Newark, N. J.
Sheedy, Mrs. Jas. A., St. Albans, Vt.
Simpson, Mrs. C. P., Somerville, Mass.
Stewart, Mrs. S., Kansas City, Mo.
Toomey, Mrs. R. A., Springfield, Mass.
Tremaine, Mrs. S. C., Bridgeton, N. J.
Turner, Mrs. J. P., Washington, D. C.
White, Mrs. Geo. R., Nashville, Tenn.
Wilson, Miss, Chesterville, Pa.

ASSOCIATION BUSINESS.

The recommendations of the Executive Committee at meetings held at 8 o'clock on the previous evening and at 8.30 on the morning of the 3d were then presented by the Secretary and approved by the association.

That the charge of plagiarism presented against Dr. G. B. Blackman be sustained and that he be expelled from the association.

That the resignations of Drs. Albert J. Sheldon, of Boston, Mass., and Fred Braginton, of Bloomfield, Ill., be accepted.

That the applications for reinstatement of Drs. A. Gibson, of Birmingham, Ala., and T. B. Pote, of St. Louis, Mo., be favorably considered.

That the following applications for membership be favorably considered, and they were duly elected to membership in the association :

APPLICATIONS FOR MEMBERSHIP.

J. Gannand, D.V.S. (C. V. C., '91), Minneapolis, Minn. Vouchers, C. C. Lyford and M. H. Reynolds.

W. J. Armour, V.S. (O. V. C., '90), Goshen, Ind. Voucher, J. R. Mitchell.

S. D. Brimhall, V.M.D. (U. P., '89), Minneapolis, Minn. Voucher, J. W. Gould.

D. Clifton Burnett, M.D.V. (M. C. K. V. C., '90), St. Louis, Mo. Vouchers, L. A. Merillat and M. H. McKillip.

J. L. Drexler, D.V.S. (N. Y.-A. V. C., '90), Thibodeau, La. Voucher, W. H. Dalrymple.

Adolph Eichhorn, D.V.S. (N. Y.-A. V. C., '00), Milwaukee, Wis. Vouchers, A. E. Behnke and R. H. Harrison.

Antonio Estrada, V.S. (Madrid, '74), New Orleans, La. Voucher, W. H. Dalrymple.

E. Pegram Flower, D.V.S. (U. S. C. V. S., '99), Baton Rouge, La. Voucher, W. H. Dalrymple.

Wm. Gall, V.S. (N. Y. C. V. S., '94), Mateawan, N. J. Vouchers, J. P. and W. H. Lowe.

R. J. Halliday, D.V.S. (A. V. C., '95), Bayonne, N. J. Vouchers, J. P. and W. H. Lowe.

J. B. Hart, D.V.S. (McGill, '97), Vancouver, B. C. Voucher, Johnson Gibbins.

B. F. Kaupp, D.V.S. (K. C. V. C., '91), Kansas City, Mo. Vouchers, S. L. Hunter and S. Stewart.

W. A. Knight, D.V.S. (C. V. C., '91), Houston, Texas. Vouchers, S. Stewart and R. C. Moore.

Eldon L. Loblein (A. V. C., '84), New Brunswick, N. J. Vouchers, J. P. and W. H. Lowe.

Harry Lukes, M.R.C.V.S. (R. C. V. S., '87), Springfield, Mass. Vouchers, E. H. Holden and B. D. Pierce.

James McCaffrey, D.V.S. (A. V. C., '85), Red Bank, N. J. Vouchers, J. P. and W. H. Lowe.

Robert W. McCully, V.S. (O. V. C., '90), New York City. Vouchers, J. P. Lowe and J. B. Hopper.

K. J. McKenzie, V.S. (O. V. C., '92), Northfield, Minn. Vouchers, J. W. Gould and M. H. Reynolds.

D. E. Mathews, V.S. (N. Y. C. V. S., '94), Jersey City, N. J. Vouchers, J. P. and W. H. Lowe.

R. F. Meiners, D.V.S. (N. Y.-A. V. C., '01), Rutherford, N. J. Vouchers, W. H. and J. P. Lowe.

V. A. Moore, M.D. (Col. Univ., '90), Ithaca, N. Y. Voucher, James Law.

L. L. Peirce, M.D.V. (Harvard, '98), Arlington, Mass. Voucher, Benj. D. Peirce.

H. W. Read, D.V.S. (U. S. C. V. S., '96), Freehold, N. J. Vouchers, J. P. and W. H. Lowe.

Thomas E. Robinson, V.S. (O. V. C., '92), Westerley, R. I. Voucher, R. P. Lyman.

W. A. Thomas, D.V.M. (I. S. C., '80), Lincoln, Neb. Vouchers, Don C. Ayer and H. L. Ramacciotti.

S. F. Tolmie, V.S. (O. V. C., '91), Victoria, B. C. Voucher, Johnson Gibbins.

L. E. Tuttle, M.D.V. (Harvard, '94), Bernardsville, N. J.

Vouchers, J. P. and W. H. Lowe.

C. B. Ainsworth, D.V.S. (A. V. C., '91), Greensburg, Ind. Voucher, J. R. Mitchell.

Daniel D. Lee, M.D.V. (Harvard), Boston, Mass. Vouchers, H. P. Rogers and E. C. Beckitt.

J. M. Carter, V.M.D. (U. P., '94), Philadelphia, Pa. Vouchers, E. M. Ranck and W. H. Hoskins.

E. W. Newcomer, V.M.D. (U. P., '99), Mount Joy, Pa. Vouchers, E. M. Ranck and W. H. Hoskins.

G. Alarie (Laval Univ., '90), L'Epiphanie, P. Q. Vouchers, A. A. Etienne and J. F. Winchester.

D. A. Piatt (O. V. C., '91), Lexington, Ky. Vouchers, E. C. Porter and Geo. R. White.

Joseph P. Grogan, D.V.M. (U. P., '94), Baltimore, Md. Vouchers, S. G. Hernden and Tait Butler.

C. W. Eddy, (Ohio Univ., Vet. Dpt., 1900), Cleveland, Ohio. Vouchers, A. E. Cunningham and E. H. Shepard.

A. Barradell, V.S. (O. V. C., '94), Pawling, N. Y. Vouchers, W. F. Heyde and Roscoe R. Bell.

Louis Friedham, V.S. (O. V. C., '94), Rock Hill, S. C. Voucher, G. E. Neson.

Stuart W. Thayer, D.V.S. (McGill, '93), Dunham, P. Q. Vouchers, E. C. Beckitt and C. C. Lyford.

D. King Smith, V.S., M.D. (Toronto Medical College, '97, O. V. C., '96), Toronto, Can. Vouchers, W. H. Dalrymple and T. Bent Cotton.

C. Rowland Simpson, D.V.S. (McGill, '87), Somerville, Mass. Vouchers, J. B. Paige and E. C. Beckitt.

U. S. G. Bieber, D.V.S. (A. V. C., '91), Kutztown, Pa. Vouchers, W. H. Hoskins and W. H. Ridge.

C. H. Jewell, D.V.M. (N. Y. S. V. C., '00), Dunkirk, N. Y.

REPORTS OF COMMITTEES.

The Committee on Diseases, through substituted chairman Langdon Frothingham, made a statement that it was impossible to submit an intelligent report upon so vast a subject, and thought the Committee's powers should be defined or its functions suspended. The subject was discussed by Drs. Salmon, Hoskins, Robert and Bell, and the association voted that the Committee should secure data, etc., concerning one prevalent disease each year. By concentrating all of its energy in one direction a report of value could be produced.

The report of the Committee on Army Legislation was read by Chairman Salmon, who gave a history of the triumphant progress of the bill through the two houses of Congress until it passed for revision in the Senate, where it met its overwhelming defeat. His report was very vigorous, especially where he referred to the intervention of Dr. Morris, whom he denounced amidst applause. Dr. Huidekoper, an active member and secretary of the Committee, elaborated upon the report, and both gentlemen urged continuance of the efforts of the association, which later was made practical by an appropriation of $250 for the use of the Committee.

The Resolutions Committee presented a lengthy set of resolutions, many of which produced very animated and prolonged discussion. That referring to the subject of tuberculosis occupied several hours, it being taken up by sections and very carefully considered. Certain sections were thought to be too conciliatory to the new Koch theory, and they were considerably modified before being acted upon. When finally passed they were hypothetical, the real conclusions being dependent upon the amount of credence placed upon the statements recently made by the German investigator. Entering into this discussion were Drs. Salmon, Peters, Law, Curtice, Knowles, Burr, Loblein, and Reynolds.

The sensation of the Convention occurred when the resolution to suspend the by-laws for the purpose of expelling Dr. Claude D. Morris from the association for his part in the defeat of the Army Corps Bill in the Senate last winter came up for action. The by-laws were suspended by a two-thirds vote with many vigorous shouts, but when the motion to expel was placed before the Convention for discussion, there was much opposition shown. Many there were who thought that such punishment should be inflicted upon the doctor, but they were disposed to give him the opportunity of self-defense; it seemed un-American, undignified, and unfair to thus summarily dismiss the accused without giving him an opportunity to appear and defend himself against the charges. There was great clamoring for his scalp from the Pennsylvania contingent, but calmer counsel asked that the question be placed before the Executive Committee and the accused notified to appear at the next meeting to show cause why he should not be expelled. And those taking this stand constantly grew more numerous. Dr. Bell called the action of the extremists "lynch law"; Dr. Law felt that he could hardly continue his membership in an association

which should be guilty of such an unjust act; Dr. Reynolds spoke in the same strain; Dr. Berns paid a glowing tribute to the earnest work done by Dr. Morris in building up the profession of New York State, where he had been a bulwark of strength to the State association, and was largely instrumental in obtaining the protective laws now on the statute books, while he could be always relied upon to fight the attacks which are annually made upon these laws at each session of the legislature. He acknowledged that the accused may have erred in his judgment, but he believed that he did so with honest intent, and for what he conceived to be the best interests of the profession. Many others spoke in a similar strain, but the pursuit of the accused man's scalp was so hot that his hirsute was taken amidst great applause by a narrow margin, the vote standing 36 for expulsion, 30 against.

The resolution to assist in placing veterinarians upon State and local boards of health and live stock commissions through educating the public to the importance of the subject and the special qualification of the veterinarian for such work was very earnestly discussed by Drs. Hoskins, Turner, Salmon, Stewart, Laddey, Budd, Rhoads, and Huidekoper. The Committee created to press this subject was given $100 for expenses.

The discussion drifted off upon the recent outbreak of influenza, which was so prevalent in the East during June and July, with special reference to the use of serums, and was entered into by Drs. Berns, Bell, Ranck, Lyman, Loblein, Ruhl, Dalrymple, and Kelly.

The resolutions adopted are as follows:

RESOLUTIONS ADOPTED.

Tuberculosis.

Resolved, That the interest now manifested by the general public in the subject of bovine tuberculosis is fully justified by the prevalence of the disease, and the tendency to rapid increase among cattle and extension to swine which it has shown during recent years.

Resolved, That the evidence of accidental inoculations and clinical observation apparently demonstrate that bovine tuberculosis may be communicated to man, and that in the opinion of this association the British Congress did well in finding that "medical officers of health should continue to use all the powers at their disposal, and relax no efforts to prevent the spread of tuberculosis by milk and meat."

Resolved, That experiments showing the difficulty or the impossibility of transmitting human tuberculosis to cattle in a fatal form, cannot be accepted as evidence that the bovine bacillus, which is far more virulent and fatal for many animals, cannot infect man. On the contrary, the greater disease producing power of the bovine bacillus would appear to make it more dangerous for human beings as well as for lower animals.

Resolved, That if it is admitted that human tuberculosis is not communicable to cattle under ordinary conditions, this should be a great encouragement for the eradication of bovine tuberculosis, since it would prove that the danger so often feared, that cattle if freed from the disease would be immediately reinfected from mankind, does not exist in fact, and need not be considered.

Resolved. That even if it were true that bovine tuberculosis is not communicable to man, it would nevertheless be to the interest of cattle and swine growers to have the disease eradicated as an economic measure; and such eradication would also be to the interest of the public, since it would have great effect as a means of preserving the food supply of the nation, and of protecting consumers from the unwholesome products of diseased animals.

Claude D. Morris.

WHEREAS, Dr. Claude D. Morris, a member of this association, wrote a letter to the Secretary of War against the passage of the Army Veterinary Bill, which was widely quoted, at the time it was written, in the press of the country, and

WHEREAS, It misrepresented the views of nearly all the members of our profession and may have produced harmful results, which may even have an effect in the future, if this association does not take a strong stand against such behavior; be it

Resolved, That this Committee recommend the immediate expulsion of Dr. Claude D. Morris from this association; and be it further

Resolved, That the by-laws of this association are hereby suspended in order that the said Dr. Claude D. Morris can be immediately expelled, and that he is hereby expelled from membership in this association; and be it further

Resolved, That a copy of these resolutions be hereby entered on the records of this association.

Thanking Dr. Reynolds.

WHEREAS, Dr. M. H. Reynolds has taken much pains and

trouble to bring a very interesting display of photographs of pathological specimens, an example that others might emulate another year; therefore be it

Resolved, That this association thank him for the interesting exhibition he has made.

Thanking the Committee of Arrangements.

WHEREAS, the excellent work done by the local committee of arrangements, the cordial reception of the chief magistrate of the city, the courtesies of the Atlantic City press, and the intense interest of the members of the Veterinary Medical Association of New Jersey, have all contributed much to the pleasure and profit of our meeting; therefore be it

Resolved, that this association tender their sincere thanks and express their appreciation of the courtesies extended us, and trust that our meeting in this city may contribute much to the welfare and advancement of the profession.

On the Death of Members.

WHEREAS, It has pleased Almighty God to remove, during the past year, J. L. THAYER, M. D., of Newton, Massachusetts, an honorary member of this association, son of Dr. E. F. Thayer, President of the United States Veterinary Medical Association, 1869-1871; therefore be it

Resolved, That this association regrets his loss, and extends its sympathy to his family in their bereavement; and be it further

Resolved, That these resolutions be entered upon the record of this association and a copy be sent to his family.

WHEREAS, It has pleased Almighty God to remove, during the past year, Prof. WILLIAM WILLIAMS, of Edinburgh, Scotland, an honorary member of this association, Principal of the New Veterinary College at Edinburgh, and author of text-books, who was honored by the profession as an educator and writer; therefore be it

Resolved, That this association regrets his loss, and extends to his family its sympathy in their bereavement; and be it further

Resolved, That these resolutions be entered on the records of this association and a copy be sent to his family.

WHEREAS, It has pleased Almighty God to remove, during the past year, Dr. P. D. COFFEE, of Svenson, Oregon, a member of this association; therefore be it

Resolved, That this association regrets his loss, and extends

its sympathy to his bereaved family; and be it further

Resolved, That these resolutions be entered upon the records of this association, and a copy be sent to his family.

WHEREAS, It has pleased Almighty God to remove from our midst, during the past year, Dr. CHARLES BURDEN of New York City, Secretary of the United States Veterinary Medical Association, 1865-67, and later its Treasurer. One of the early members of this organization, to whom the profession owes so much, we regret to hear of his decease; therefore be it

Resolved, That this association sincerely mourns his loss, and extends to his family its sympathy in their affliction, and be it further

Resolved, That these resolutions be entered on the records of this association, and a copy be sent to his bereaved family.

WHEREAS, It pleased Almighty God to remove during the past year Dr. GEO. FLEMING, of England, an honorary member of this association. A man of marked literary and scientific attainments, he was a living example of what energy, intelligence and perseverance will do for an ambitious young man, rising from forge boy to the position of chief veterinarian of the British army; therefore, be it

Resolved, That this association regrets his decease, and extends to his family its sympathy in their bereavement, and be it further

Resolved, That these resolutions be entered on the records of this association, and a copy be sent to his family.

WHEREAS, It has pleased Almighty God to remove from our midst, during the past year, Dr. A. W. CLEMENT, of Baltimore, Md., President of this association in 1898 and 1899. A man in the prime of life, who apparently had many years of usefulness before him, but who was cut off at the age of forty-four. We deplore his loss to his country, his State, and to this association. Therefore, be it

Resolved, That this association sincerely regrets his decease so early in his useful career, and extends to his widow its sympathy in her affliction, and be it further

Resolved, That these resolutions be entered on the records of this association, and a copy be sent to his widow.

WHEREAS, It has pleased the Almighty God to remove from our midst, during the past year, Dr. J. H. STICKNEY, of Boston, Massachusetts, the first President of the United States Veterinary Medical Association in 1863 and 1864. He saw it grow from the time of its incorporation to its present size and strength and

ever took an active interest in its advancement and the welfare of its members, from the time of his first connection with it until the day of his death, at the ripe age of seventy-five years. It is due to the efforts of him and his associates in the early days of the organization that it has reached its present influence and membership. May we endeavor to do as much for the generation to come. Therefore be it

Resolved, That this association sincerely mourns his loss, and extends to his family its sympathy in their bereavement; and be it further

Resolved, That these resolutions be entered on the records of this association, and a copy be sent to his family.

The Veterinarians' Pharmacopœia.

WHEREAS, There is a necessity for an American Veterinary Pharmacopœia; therefore be it

Resolved, That a committee be appointed, consisting of seven members, for the purpose of compiling a Pharmacopœia of Veterinary Medicine. Be it further

Resolved, That on the completion of said pharmacopœia, it shall be submitted for examination and discussion, and if found satisfactory proper arrangements shall be taken by the association for its publication.

Upon the New Montana Law.

WHEREAS, The State of Montana has during the past year enacted an efficient meat and milk inspection law; and

WHEREAS, The success of this measure was to a great extent due to the influence of the press of Montana, especially Dr. W. G. Eggelson, editor of the Helena *Independent*, and to the personal efforts of Senator Geo. Stanton, and Representatives W. A. Hedges, J. F. Patterson and Joseph Dixon; therefore be it

Resolved, That this association expresses its appreciation to the above named gentlemen and to the members of the Montana Legislature who supported the bill, and of their efforts in behalf of improved sanitary laws; and be it further

Resolved, that these resolutions be entered upon the records of this association, and that a copy be sent to each of the gentlemen named above.

Sympathy for a Sick Brother.

WHEREAS, Dr. A. Youngberg, of Lake Park, Minnesota, a

member of this association, is confined to his home by a serious illness, be it

Resolved, That this association extends to him the sincere sympathy of its members in his affliction, and their hopes for his speedy recovery; and be it further

Resolved, That these resolutions be entered upon the records of this association, and that a copy be sent to Dr. Youngberg.

Army Veterinary Department.

WHEREAS, The bill providing for the establishment of a suitable Army Veterinary Department, giving its members the rank of commissioned officers, was defeated in the Senate, after having once passed in the Senate and House; be it therefore

Resolved, That this association deplores the defeat of a measure that would have placed the military veterinarian in this country on the same basis as his professional colleague in the armies of the old world, and guaranteed efficient veterinary care for the animals in the United States Army, representing the investment of millions of dollars of the people's money; and be it further

Resolved, That the thanks of this association be extended to our friends in the Congress of the United States, who supported the bill; and be it further

Resolved, That this association continues its endeavors and work until there is an efficient and proper veterinary service in the United States Army.

Resolved, That a copy of these resolutions be entered upon the records of this association.

Veterinarians on Boards of Health.

WHEREAS, The scientific training of graduated veterinarians especially qualified them for the duties of sanitarians and veterinarians to State and Municipal Boards of Health.

WHEREAS, We note with regret the fact that at present proper recognition is not given to the importance of veterinary training in the *personnel* of State Boards of Health, Sanitary Commissions and other united bodies. Therefore, be it

Resolved, That the President of this association is hereby instructed to appoint a committee of five whose duty it shall be to wage a campaign of education, and endeavor to secure proper recognition for the profession in the matter referred to above, and be it further

Resolved, That the sum of $100 is hereby appropriated out of the funds of the association for the use of this committee.

Advertising Colleges.

WHEREAS, This association notes with regret the fact that certain recognized veterinary colleges of America use illustrations in their catalogues and other advertising literature that are undignified and offensive to good taste; therefore, be it

Resolved, That it is the sense of this association that the college has no greater license in the matter of display advertising than is legitimately enjoyed by the individual, and be it further

Resolved, That the college which uses illustrations in its advertising literature for any other purpose than to show the character of its buildings and equipment is acting in violation of the spirit of our code of ethics.

Thanks for Free Typewriters.

Resolved, That the members of this association express their heartfelt thanks for the kindness shown to them by the editors of the *Journal of Comparative Medicine and Veterinary Archives*, in furnishing free for their use the services of two stenographers and typewriters.

PROPOSED AMENDMENT TO CONSTITUTION.

To amend Art. 11 of Chap. 5, to read as follows: "The Committee on Intelligence and Education shall collect and distribute among the members of this association, on request, literature calculated to develop public interest in veterinary sanitary work and in veterinary legislation, municipal, State and national, as to them seem best and in so far as the fund appropriated will admit, and also to report recent veterinary facts and intelligence.

REPORTS OF STATE SECRETARIES.

The roll of the States was called, many of the Secretaries being absent, but forwarded their reports to Secretary Stewart, who turned them over to the Publication Committee, and they will appear in the "Proceedings." Those having representatives present were Alabama, Dr. Van Es; Connecticut, Dr. Lyman; Delaware, Dr. Eves; Louisiana, Dr. Dalrymple; New Jersey, Dr. J. P. Lowe; New York, Dr. Kelly; Ohio. Dr. Cotton; Pennsylvania, Dr. Ranck; Tennessee, Dr. White; West Virginia, Dr. Ruhl.

REPORT OF SECRETARY STEWART.

During the entire association year culminating in this meeting, the Secretary's office has been one of activity and continuous application to the interests of the association. Earnest ef-

fort has been made to carry out all the instructions given by the association at its meeting held in Detroit, and to promptly conduct the correspondence, giving each member of the several committees appointed official notice of his appointment, and perfecting the membership of the large number of applicants elected at the last meeting. An unusually large number of letters have been sent and received during the year, and throughout most cordial relations have been maintained.

Under direction of President Dr. Tait Butler, letters credential were issued to Prof. A. Liautard and Dr. W. H. Wray, as delegates to the British Congress on Tuberculosis, held in London, July last. Prof. A. Liautard, of Paris, France, and Prof. Dr. Theodore Kitt, of Bavaria, were notified of their election to honorary membership in this association, and letters of acknowledgment of the courtesy duly received and placed on file.

Resident Secretaries have been unusually active during the year, have taken more interest than formerly, which indicates a more wide-spread and general interest in the affairs of our association, and from the large number of applications for membership on file, coming from various parts of the United States and Canada, it is believed that the influence of the A. V. M. A. is recognized as being good and helpful in all parts of the continent. The fact that printed reports of the proceedings of each meeting are promptly placed in the hands of the membership, makes each member to feel that he has received something of value directly from the association.

Several letters have been received from veterinarians relative to the possibility of a change of date of meeting. Several States hold State fairs in the first week in September and the obligations of State veterinarians, and also local veterinarians, are such that they cannot leave the State at this time, and the question is presented as to whether or not this association might not profitably advance the date of meeting to some time in the month of August. I would specifically mention that the States of Iowa and Nebraska hold their annual fairs on the same date fixed for our meetings. The State Veterinarians and Experiment Station men find it impracticable to leave their States on this date. True it is that no date could be fixed upon which would not inconvenience some, but it is doubtless worth the association's while to consider the feasibility of a change of date.

Notwithstanding the large expenditures incurred during the past year, the funds of the association will permit of the prompt

DR. STEWART, Missouri,
Secretary AMERICAN VETERINARY MEDICAL ASSOCIATION.

payment of all bills, including the reporting, publication and distribution of the reports of this meeting.

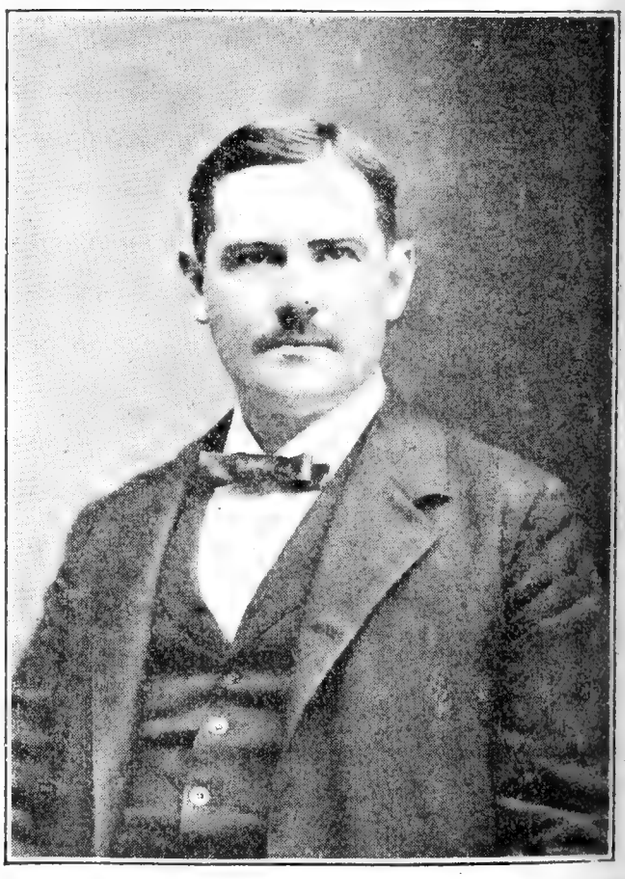
I cannot close this report without expressing my gratitude to the Resident Secretaries and all other officials of the association for their cordial assistance throughout the year; it is by this coöperation that the present grand meeting has been made possible.

Very respectfully submitted,

S. STEWART, *Sec'y.*

ELECTION OF OFFICERS.

Following the Executive Committee report (consisting of applications for membership) on the morning of the second day of the session, Sept. 4, the election of officers took place. Three candidates were placed in nomination for the office of President. Drs. J. F. Winchester, of Massachusetts; Wm. Herbert Lowe, of New Jersey, and Roscoe R. Bell, of New York. The two latter nominees withdrew their names in favor of the "old war-horse," and Dr. Winchester was unanimously elected. It was regularly moved, seconded and carried that the three largest men in the room should be appointed to conduct the new President to the rostrum and request him to make a speech. In obedience to this motion, President Butler appointed Drs. Berns, Hoskins, and Knowles, who



DR. WM. HERBERT LOWE, New Jersey,
Treasurer AMERICAN VETERINARY MEDICAL ASSOCIATION.

performed the function creditably, while the President-elect delivered himself of a very neat little address, full of appreciation of the honor he had received, and of promises of what he hoped to accomplish.

The names of five gentlemen were placed in nomination for the five Vice-Presidencies, and in order to ascertain who should be senior in office each member was requested to vote for but three, with the following result: Roscoe R. Bell, 47; M. E. Knowles, 42; W. H. Dalrymple, 35; C. C. Lyford, 27; Wm. Dougherty, 24.

Secretary Stewart was the only nominee for the position which he has so satisfactorily filled for the past six years, and Treasurer Lowe was returned to his well-filled post. The officers for the ensuing year are therefore as follows:

President—J. F. Winchester, of Massachusetts.
Vice Presidents—Roscoe R. Bell, of New York.
M. E. Knowles, of Montana.
W. H. Dalrymple, of Louisiana.
C. C. Lyford, of Minnesota.
Wm. Dougherty, of Maryland.
Secretary—S. Stewart, of Missouri.
Treasurer—Wm. Herbert Lowe, of New Jersey.

PRESENTATION OF PAPERS.

Possibly the most practically interesting paper presented to the meeting was that of Dr. V. A. Moore, of New York, on "Skin Disinfection and Wound Infection," which went into a subject upon which very little investigation has been made, especially in relation to the action of modern antiseptics. It was well discussed by Drs. Frothingham, Lowe, Beckitt, Knowles, R. G. Moore, Berns, and Curtice. This valuable contribution to our literature will be found elsewhere in this number of the REVIEW.

Dr. George R. White, of Tennessee, brought forth the subject of "Municipal Meat Inspection Legislation, with Special Reference to the Law and the Rules and Regulations of the Board of Health of the City of Nashville," in which he showed the wonderful progress possible where directed by intelligent veterinary advice, backed by determined pluck and persistency.

It has never occurred that the scholarly Dalrymple, of Louisiana, has presented a dull or uninteresting contribution to any programme which his name adorned, but this year he surpassed even himself, and the members were all attention dur-

ing its reading, applauding vigorously when it was concluded. His subject was "Anthrax and Preventive Inoculation in Louisiana," and the discussion which followed was very instructive, and was participated in by Drs. Law, Ranck, Robert, Curtice, Salmon, and others. The REVIEW will present it in an early issue.

Another very valuable paper was upon "Colleges aud Associations as Guards of Our Standing as a Profession," contributed by that earnest veterinarian, L. Van Es, of Alabama. The doctor handled his subject in a clear and practical manner, and its dissemination cannot but be of much benefit to the profession in general.

The discussion of anthrax and tuberculosis having consumed so much of the time allotted for papers, it was decided to hold a night session, and so the lengthy paper, with stereopticon views, by Dr. James B. Paige, of Massachusetts, entitled "Stable Hygiene," was assigned to Wednesday evening, at which time the hall was well filled, and for more than an hour the doctor held his audience while he gave a very practical discussion, especially upon ventilation, illustrating it by numerous views of actual conditions in stables under his observation, showing the direction of currents of air introduced into a stable by all manner of ventilators, located at all points of the room. At its conclusion Dr. Cooper Curtice gave some amusing and interesting remarks.

On Thursday morning two papers on "The Texas Fever Problem in the South" were read by Dr. J. C. Robert, of the Mississippi Agricultural College, and Dr. G. E. Nesom, of Clemson College, S. C., and a long discussion followed. The greatest progress was shown in dealing with this "romance of pathology," and a thorough understanding was shown to exist between the Federal authorities and the intelligent veterinarians now struggling with the scourge in the South. In the discussion the remarks of Dr. Salmon were particularly forcible, showing how the subject had been pursued from a malady of the greatest mystery to a clear knowledge of its etiology and pathology, and, while the disease is existent in other lands, the investigators of our Bureau of Animal Industry were the first to isolate its peculiar germ in the blood and in the tick, and to point out its prophylaxy. Other interesting speakers on the subject were Drs. Van Es, Curtice, Butler, Robert, White, Nesom, Law, and Dalrymple.

Dr. Carl W. Gay, of New York, gave "The Attitude of the

Farmer toward the Tuberculin Test," which attitude had become somewhat perverse by the dishonest practices of some of those entrusted with such duties, a number of instances being shown of certification where no test had been made. This brought forth a vigorous denunciation of such scoundrels by Dr. Salmon, who thought any case proven against such men should be followed by adequate punishment and ostracism by all good veterinarians.

Out of the West came the rising young surgeon, Dr. L. A. Merillat, of Chicago, who placed his estimate upon "The Value of the More Common Surgical Operations of the Horse." The doctor has very decided opinions upon the various procedures enumerated, but found many non-acquiescents when he condemned the use of the actual cautery for the purposes of counter-irritation. However, his paper was well received, and elicited much discussion.

Dr. Lyford's "Radical Operation for Bursal Enlargements" was considered rather too radical, since he advocates the introduction of a seton and the injection of iodine into such diseased structures. He was to have illustrated his methods at the clinic, but could only give a demonstration, since an available subject was not procurable. It was thought that such severe treatment might be possible in the rarefied atmosphere of the Northwest, but that it would be a dangerous operation in the moist climate of the East.

Dr. Langdon Frothingham, of Boston, read a very carefully prepared paper upon "The Diagnosis of Glanders by the Strauss Method," which could not be discussed at any length on account of the hour of adjournment being at hand.

Most of the other papers on the programme were received by the Secretary, read by title and referred to the Publication Committee.

THE SURGICAL CLINIC.

While the arrangements for the clinic were far from ideal, they were a great improvement over any that have preceded it, and gave the operators and spectators equal opportunity to see and be seen. A large tent had been erected in an open space behind the Rudolf; seats were arranged in circus fashion along the sides, while rough stocks and a head-rack were placed at either end, leaving an open arena for casting. The clinic was inaugurated on Thursday afternoon by Dr. J. C. Michener, of Colmar, Pa., who gave a unique and valuable exhibition of manipulations and positions to relieve dystokia in the cow, as well

as to overcome certain accidental conditions frequently met in practice. The doctor kept up a running talk in explanation of the various positions as he proceeded, and all felt that they had learned many practical points from a man who has had great experience and the ingenuity to take advantage of his opportunities.

On Friday morning the clinic began in earnest, and for five hours it was continuous, there being frequently three subjects under the knife at one time.

First came "caudal myotomy," being an exhibition of rapid practical tail-straightening as occurring around the large sale marts, and was neatly performed by Dr. Robt. W. McCully, of New York, who is certainly a past-master with a knife and a tail. Later he performed myotomy for "setting up" the tail by a single introduction of the blade on the median line of the inferior surface of the tail, cutting the muscles subcutaneously on one side, and then turning it to the other, severing both sides before removing the blade.

Following this Dr. C. H. Jewell, of Dunkirk, N. Y., performed ovarectomy upon a mare through the vagina, following the methods described in the REVIEW by Prof. W. L. Williams. The operation was without an error, and the young surgeon received generous applause for his dexterity and close observance of antisepsis.

Dr. C. C. Lyford, of Minneapolis, Minn., gave a demonstration of his "radical operation for bursal enlargements," and very patiently answered the many questions put to him concerning the same. Our readers will find a full description of the technique in the "Proceedings" of the association. The doctor and his Minneapolis colleagues claim much success from the method described, but most Eastern veterinarians with whom we spoke thought the method too bold and too apt to result in danger to the life of the patient.

Following this Dr. S. J. J. Harger gave a demonstration and the operation for spavin by resection of the peroneal and sciatic nerves. While the first section of the operation was quickly through with considerable difficulty was experienced in locating the deep-seated nerve on the outside, the surgical field becoming complicated by profuse hæmorrhage.

While Dr. Harger's more tedious operation was being accomplished, Dr. Jewell performed ovarectomy upon a bitch by the side method, and Dr. Tremaine, of Bridgeton, N. J., did the same through the linea alba.

Dr. R. P. Lyman, of Hartford, Conn., performed vaginal ovariotomy upon a cow, using the same methods as those adopted by Dr. Jewell for the mare.

Dr. L. A. Merillat, of Chicago, demonstrated cunean tenotomy for the relief of spavin on two subjects, each in the standing position, using cocaine and ethyl chloride as local anæsthetics. In the course of his remarks he spoke of the solutions employed by him in general operations—1:500 bichloride solution for disinfecting the skin, another similar solution for the hands, a very weak solution or simply sterile water for baling out the blood, and a 5 per cent. carbolic solution for the instruments, which are previously boiled. The doctor's easy and careful method of operating was much admired.

During Dr. Merillat's work Dr. Lyman demonstrated canine ovariotomy under anæsthesia.

A black gelding very lame from ringbone was cast for the operation of median neurectomy by Dr. Charles E. Clayton, of New York City, and it was completed in eight minutes without a hitch. The animal being allowed to rise, was trotted in the street, free from lameness.

To furnish material for those who could not witness the steps of Dr. Clayton's neurectomy, Dr. Tremaine spayed one bitch, while Dr. Lyman did the same operation on another.

Dr. George H. Berns, of Brooklyn, N. Y., had a subject for tenotomy of the flexors of the hind legs, intending to sever the deep flexor in each, but when this was accomplished he found that the superficial would also have to be cut, and accordingly both flexors of both hind legs were tenotomized, leaving the suspensory ligament as the only support. When allowed to arise the subject walked off with the heels on the ground—the first time for a long while. The doctor explained that he had not often been obliged to do so radical an operation, and was not sure of the result. It will be interesting to note the outcome of this case.

The clinic was brought to a close by the complicated myoneurectomy for the cure of crib-biting, performed by Dr. Harger.

THE BANQUET.

The banquet, spread in the Assembly Hall of the Hotel Rudolf, on Thursday evening, was a great success. Eighty-one covers were tastefully arranged around the beautiful room, and the repast was all that could be wished for. The Rev. David Stuart Hamilton, of Paterson, asked divine blessing on the repast, at the termination of which Toastmaster Huidekoper

called upon Congressman Loudenslager for a response to the toast, "New Jersey in the National Legislature," and he did so in a very pleasing and practical manner, stating that he could read in the faces of the earnest veterinarians about him that what they wanted most was legislation, and he pledged them that if ever in his power he would gladly do what he could in that direction.

Congressman Salmon spoke on "Perils of Veterinary Legislation in Congress," and judging from his remarks he had much to do with the subject at the last session; and his admonition to try again was received with great applause, which said as plainly as words that they meant to do it.

The Rev. Mr. Hamilton was very happy in responding to the sentiment, "The Veterinary Profession in its Relation to the Community," and he won the esteem of all by his kindly and sensible address.

"Veterinary Trusts" called Dr. Wm. Herbert Lowe to his feet, and he championed the cause of veterinary medicine in New Jersey with a pride which could only come to one who has its interests close to his heart. He showed very plainly that he thoroughly appreciated this record-breaking meeting, which could not have been possible save for his untiring zeal and energy. It is true that he had the best of colleagues, who worked in unison with him, but it was Lowe's soul and his enthusiasm which had made the great gathering an accomplished fact. The applause which greeted and followed him was a sure indication that his efforts were thoroughly appreciated.

Never did a son of the "American Veterinary Medical Association" pay a more graceful tribute to her glorious career than did Tait Butler. He warmed to his subject with the fire of an orator, and the hall resounded with applause at his perorations.

But the address of the evening was that by Chief Salmon, of the Bureau of Animal Industry, on "National Sanitary Work," which he treated of in that pleasing manner which has made for him an extreme popularity with veterinary audiences. But he soon left the printed theme, and took up the cause of the veterinarian in the army, and he seemed to throw his whole enthusiastic nature into the subject, making such an argument that the pity is it was extemporaneous, for if reduced to cold type and placed in the hands of the law-makers of the country it would do more to lift the army veterinarian to his proper position than all the lobbying of committees that could be sent

to Washington. We doubt much if he could do it over again, for he seemed to grow more eloquent and convincing as he plunged into his subject. But if he can duplicate his work of that evening he owes it to the profession he loves so well to do it, and we wish he would send the advance sheets to the REVIEW for immediate publication.

"Veterinary Associations" fell to the lot of Dr. Roscoe R. Bell, who dwelt briefly upon the good which they accomplish and the lack of it where they do not exist, or do not thrive. He spoke regretfully of the great opportunities which New York City possessed for having the best association in the land, and deplored the fact that so little interest was manifested in the subject by the profession of the metropolitan district.

Dr. W. Horace Hoskins, who has become a veritable orator since his political proclivities became a realization, was happy in his response to "Veterinary Journalism," which he characterized as one of the greatest factors in scientific progress.

"Southern Advancement" was treated of in the masterly manner which distinguishes all the works of that man who has done so much in that direction, and Dr. Dalrymple gave the guests a good idea of the great work which he and his Southern colleagues are accomplishing.

"Our New President" was personified by J. F. Winchester, and he dropped his characteristic drollery for the dignity of his new office, pledging his best efforts for the success of his administration, which was really unnecessary, since all who know anything of the A. V. M. A. know that in her glory lies the heart of the Massachusetts boy.

The set themes having been exhausted, *impromptu* addresses were delivered by Drs. Stewart, Robertson, Lyman, Smith and others.

At 1 o'clock the lights were extinguished and all departed feeling that a pleasant and profitable evening had been enjoyed.

Letters of regret were received by Dr. Wm. Herbert Lowe, Chairman Committee of Arrangements, from the following prominent citizens of New Jersey: Ex-President Grover Cleveland, Princeton, N. J.; Hon. John W. Griggs, former Attorney-General of the United States, Paterson; State Senator Herbert W. Johnson, Merchantville; Judge J. Franklin Fort, Supreme Court of New Jersey, East Orange; ex-Governor David O. Watkins, Woodbury; United States Senator William J. Sewell, Camden; United States Senator John Kean, Elizabeth; Hon. Franklin Murphy, Newark; Congressman James F. Stewart,

Paterson; Congressman Benj. F. Howell, New Brunswick; Congressman Allen L. McDermott, Jersey City; Congressman Chas. N. Fowler, Elizabeth; Hon. Vivian M. Lewis, Member of the House of Assembly, Paterson; Dr. Henry Mitchel, Secretary of the New Jersey State Board of Health, Trenton; Hon. George Wurts, Secretary of State of New Jersey, Paterson; President Patton, Princeton University, Princeton, and Congressman John J. Gardner, Atlantic City.

NOTES OF A. V. M. A. MEETING.

By far the largest and most glorious meeting ever held by the A. V. M. A. took place at Atlantic City last month.

The extreme points of attendance were Canada, Texas, Montana and Louisiana.

The attendance included 98 members, 64 visiting veterinarians, 53 ladies, 14 applicants, and 14 laymen (besides a number who failed to register).

Dr. W. B. E. Miller, of Camden, N. J., was prevented from attendance by a severe trolley accident, which rendered him temporarily *hors-de-combat.*

One of the members of the local committee of arrangements was so unfortunate as to lose his purse containing $90. Although he advertised to give $25 for its return, evidently the finder could not see the profit in such a calculation.

Dr. Leonard Pearson's pleasant face was greatly missed, he being in Europe on an inspection tour of the colleges, seeking ideas to be utilized in the rebuilding of the Veterinary Department of the University of Pennsylvania.

The news of the attempted assassination of the President of the United States came like a thunderbolt after the Convention had adjourned, and those who still lingered about the corridors of the Rudolf were dazed by the sad intelligence.

An inspection of the Atlantic City Artificial Ice Company's plant, through the courtesy of its President, Dr. W. Horace Hoskins, was very interesting and instructive. It has a capacity of 70 tons per day, and the facilities will be increased to 100 tons by next summer.

Fifty-three ladies—wives, daughters and mothers of members and visitors—added much pleasure to the occasion, and if one might judge by appearances they fully enjoyed every hour of their stay. Not a few brought small children with them to the delightful seaside resort.

Two gentlemen were elected to membership upon their de-

gree of M.D., which was acknowledged by those with whom we conversed as quite a test upon the elasticity of our requirements, particularly as there is no reciprocity on the part of medical associations.

There was no monopoly of the art of photography in Atlantic City, for when the members and visitors were arranged for their pictures no less than four cameras were directed at them, each claiming that he was the only original. As most of the ladies were in the surf at that hour, a separate group of ladies was made later in the afternoon.

The Experiment Station Veterinary Medical Association held a brief meeting, there being very few members present, while the Association of Veterinary Faculties and Examining Boards of North America was not thought of. There seems to be no doubt that the comatose condition in which this body has been for several years has resulted in death.

For a number of years Dr. and Mrs. E. H. Shepard, of Cleveland, Ohio, have been among the pleasant faces at the annual conventions. This year Mrs. Shepard was attacked by auricular abscess while *en route* and was compelled to go to a Philadelphia hospital, while the Doctor made short trips to and from the meeting. Great sympathy was expressed by the membership, as Mrs. Shepard is a general favorite among those who have had the privilege of her acquaintance.

The regret was expressed by all who attended the banquet that a stenographer had not been engaged to reproduce the wonderful address of Dr. Salmon, who made a most convincing argument in favor of an improved army veterinary department. If that speech had been delivered before Congress just prior to the vote taken in the Senate last winter our military brethren would now be in possession of the coveted rank and the country would be enjoying the fruits of an intelligent veterinary service—the Secretary of War, the Military Committee and meddlesome veterinarians to the contrary notwithstanding.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The eleventh annual meeting of this society convened in the lecture amphitheatre of the New York State Veterinary College, on the Campus of Cornell University, Ithaca, on Tuesday morning, September 10th, at 11 o'clock, with President Roscoe R. Bell in the Chair. He at once introduced Prof. James Law, director of the college, who bid the guests a hearty welcome to

the city and University, which was responded to in fitting terms by the President of the society. The reading of the minutes and roll-call were dispensed with, but the attendance was ascertained by means of a registration book passed among those in the hall. While many may have failed to register by reason of not being present at the time, the following is a copy of the names appearing upon its pages:

LIST OF THOSE IN ATTENDANCE.

C. H. Jewell, Dunkirk; J. W. Corrigan, Batavia; E. F. Vorhis, Owego; H. D. Stebbins, West Winfield; J. L. Robertson, New York City; C. E. Clayton, New York City; J. A. Genung, Ithaca; A. G. Weeks, Schenectady; H. D. Hanson, New York City; W. J. Hallock, Auburn; Wilson Huff, Rome; F. L. Kilborne, Kellogsville; P. A. Fish, Ithaca; G. C. Kesler, Holley; R. Perkins, Warsaw; J. L. Wilder, Akron; H. S. Wende, Tonawanda; Harry Sutterby, Batavia; S. H. Gage, Ithaca; James Law, Ithaca; Wm. N. D. Bird, Buffalo; T. G. Sherwood, New York City; Benj. D. Pierce, Springfield, Mass.; S. D. Brimhall, Minneapolis, Minn.; E. B. Ackerman, Brooklyn; Roscoe R. Bell, Brooklyn; Alex. Findley, Camden; R. S. Huidekoper, Philadelphia, Pa.; Thomas F. O'Dea, Saugerties; Wm. Henry Kelly, Albany; Joseph Hughes, Chicago; L. A. Merillat, Chicago; A. J. Tuxill, Auburn; A. W. Baker, Oneonto; Wm. Herbert Lowe, Paterson, N. J.; W. N. Babcock, Scott; Samuel Atcheson, Brooklyn; W. H. Phyfe, Delhi; A. W. Baker, Brasher Falls; E. F. Bettinger, Chittenango; W. H. Salisbury, Clifton Springs; E. H. Nodyne, Sodus; W. J. Johnston, Geneva; W. G. Dodds, Canandaigua; T. S. Rich, Avon; J. H. Youngs, Belvidere; J. W. Turner, Lyons; W. B. Switzer, Oswego; E. B. Ingalls, Mohawk; R. W. McCully, New York City; E. M. Casey, Oxford; J. M. Currie, Rome; W. L. Williams, Ithaca; George H. Berns, Brooklyn; S. Brenton, Detroit, Mich.; G. S. Hopkins, Ithaca; J. B. Sheaver, Pittsford; Wm. F. Woolston, Fishers; E. O. Kingsman, Courtland; S. Stewart, Kansas City, Mo.; V. A. Moore, Ithaca; A. H. Ide, Lowville; E. Hanshew, Brooklyn; E. B. Ackerman, Brooklyn; H. D. Gill, New York City; Charles Cowie, Ogdensburg; C. D. Morris, Binghamton; L. R. Webber, Rochester.

THE PRESIDENT'S ADDRESS.

President Roscoe R. Bell then delivered the following annual address:

When as your President I undertook the important function

of preparing an address to be delivered at the opening of our last annual convention, I found that I was compelled to do so in somewhat of an apologetic strain. I had to frame it more in the nature of an appeal, pointing to the great possibilities of a State association, like ours, without having one great meeting to point to as a justification of the faith which was in me. Glancing over it a few days ago, I find that I recounted the various cities in which our meetings were held, but through a sense of chagrin I omitted to say that at some of them there were very few members in attendance, scarcely a new member added to the roll, while at one point I remember the local veterinarians did not even call in at our deliberations, and to all appearances did not care that we were in town. When I say that in that address I took a position of faith in the future rather than pride in the past, I do not wish to speak in a disparaging way or underestimate the great work accomplished by this society, for under adverse conditions it has been stupendous; and we who are present to-day at this large and representative gathering of the veterinarians of the Empire State should feel under everlasting gratitude to the handful of earnest men who struggled to build up the society when their fellow workers in the same field held out but little assistance and encouragement to them. Work as they might, their efforts were rewarded by the presence at each annual meeting of the same few familiar faces, with members gradually growing fewer.

In one short year we have sprung from this state into a great live, enthusiastic association, with a large attendance at our meetings, a deep interest in everything pertaining to its deliberations, and with a long list of applications for membership. Instead of a programme presented with apologies for its meagreness, every minute of our time is engrossed with important papers or instructive surgical clinics, and when the meeting is ended each member records a silent promise to be back the next year, and to bring a fellow-veterinarian with him.

What is the cause of this wonderful change which has taken place? This is a question not hard to answer. We have been so fortunate in securing a Committee of Arrangements who have worked so hard and made the programme so attractive and valuable that something is to be learned at these meetings, some recompense for the time and money spent in attendance, so that a member feels that he cannot afford to stay away; that he will by so doing lose something which he cannot afford to lose. He has here the opportunity to listen to and participate in the dis-

cussion of topics of interest and value to him, to actually see and assist in surgical demonstrations—things which will enable him to be of more service to his clients and to add to his reputation in consequence. Or in the matter of a simple minor operation, which he is frequently called upon to perform in daily practice, he may learn a simpler and a better way to do it. The same man might sit up all night reading the technique of such a procedure and learn less of it than by a five-minute demonstration. In science there is no such thing as a monopoly of knowledge, and we are probably secure against the organization of a veterinary trust. We each know a little; some have gained more knowledge than others through greater adaptability or greater opportunities; some are superior to others upon theoretical points; others excel in practical wisdom, while we have those among us who are equally proficient in both. To one the art of surgery is to his liking, and he sees its benefits in conditions where another would overlook them. The less surgical veterinarian will hesitate to recommend an operation unless its indications are imperative, and then his effort may fail to add anything to his reputation. This is the man who will be most benefited by attendance at association meetings, especially where surgical clinics are a feature. It is my impression, based upon my own judgment and the assurances of many others, that no association ever presented a better clinic than this one did last year, and our worthy Chairman of Arrangements has promised that it will be of as equally a high order this year. We have been especially fortunate in the *personnel* of our workers, in our environments, in the gracious hospitality of our hosts, and in the enthusiasm of our membership; and if the same spirit prevails during the next few years this society must of necessity become the largest and most influential of any State in this union of States. Let us work to that end, earnestly and persistently.

The past year has been one of unprecedented prosperity among veterinary practitioners, for whenever commerce, agriculture and finance are free from depression, the live stock industry must flourish, which incidentally implies that the veterinarian will participate in the common weal. I believe that the past year has been the most prosperous in a veterinary sense of any in its history in this country, but by no means the best that is in store for us, for the field of the veterinarian is constantly enlarging, and the services of the worthy practitioner is being sought along new lines, in channels which were formerly not open to him. The field of canine medicine and surgery

in the cities is constantly developing, many veterinarians finding it the most profitable part of their business. People who keep dogs and other animal pets avail themselves of intelligent veterinary advice now as readily as though the patient were a member of their families. Eczemas and other common ills are now treated in their incipiency with good results, where formerly the veterinarian was sought only when the case was beyond the possibility of recovery, and the indifferent success achieved was charged to the account of ignorance. Now, the early correction of deranged functions permits of better results and greater confidence in the veterinarian. Equine practice will permit of similar remarks. Horses are commanding exceptionally high prices, and their owners are willing to pay fair fees in an effort to save the life of a sick one, or to bring a disabled one back to a condition of usefulness. The cessation of breeding during the 90's renders good horses scarce at this time, and consequently the supply is inadequate to the demand, with values relatively high. It is but natural to look forward to a reaction and a rearrangement of conditions, now that active breeding has been resumed. So that about the year 1906 there will be a full supply, with prices correspondingly lower.

One of the special functions of this society is to secure and maintain legislation safeguarding the live-stock interests and the profession which we represent. An outline of the working of our legislative battery was given you last year, and I can here but add that our methods have worked satisfactorily during the past year. To strengthen our lines you were pleased to instruct your President by resolution to appoint County Secretaries to work in conjunction with the Judiciary Committee, when necessity required; and I beg to report that in obedience to that resolution, Secretaries have been appointed in every county of the State where we have a representative, and it is confidently believed that they can be relied upon at all times to do their full duty when needed to further important legislation, or to combat pernicious attacks upon the laws which have already been secured. I refer you to the report of the Judiciary Committee for details of legislation affecting the profession of the State during the past session, at the same time congratulating you that the figure-head Tuberculosis Committee has been abolished, and the diseases which it was created to look after placed where they rightfully belong, the Department of Agriculture. In this connection, I beg to call your attention to the fact that the Empire State remains without a State veterinarian,

the most notable exception among the great agricultural States of the Union. This society is the proper tribunal for the consideration of the question of how such an office should be created, and to decide if the time and conditions are right for such an effort to be made.

The announcement made by Prof. Robert Koch at the International Tuberculosis Congress of London in July, of his conviction that the bacilli of human and bovine tuberculosis were not identical, and that, therefore, the disease could not be transmitted to the human family by eating the meat or drinking the milk of affected cattle, startled the medical world, as it was a shoulder-strike at the most sacred tenets of accepted scientific conclusions. In all civilized countries the health authorities have vied with each other in a praiseworthy rivalry as to which shall have the most perfect system of inspection to guard the human family from contamination from this source, and while all communicable diseases are sought for, by far the one of most importance and most frequent occurrence is tuberculosis. A majority of the States of this country have laws governing the control of the disease and looking toward its ultimate eradication, with appropriated money to pay for condemned animals, the flesh of which is reduced to the condition of fertilizer. To be told that all this labor and expense which has been brought upon the governments largely through the agitation and persistency of the veterinary profession ; that all the investigations, experimentation, and data which have been indulged in and the conclusions placed in our archives as accepted truths —all pointing to the common origin of the bacillus tuberculosis —was worse than useless, was a blow sufficient to take our breaths. It was a grave assertion to be based solely upon theoretical grounds. The unique position of the distinguished scientist who made this declaration, as the discoverer of the germ of this disease, and therefore an acknowledged authority upon the subject, gave to his utterances great weight, and the respectful attention of the world. Probably the most baneful effect of his communication will be that it places a powerful weapon in the hands of those laymen who have for some time opposed the vested authorities in their efforts to carry out the laws against the spread of the disease, and to block legislation looking to an extension of the system of inspection of animals and their products. But, after all, it will prove a good thing, for medical science will not long rest content until the facts in the case are definitely determined, so far as such a proposition can be.

I trust that the deliberations of this Convention may be of such a character as to greatly increase the usefulness, value, and influence of our society, and that year by year its membership may magnify in proportion to the good we shall do to our country, our science, and ourselves.

BUSINESS OF THE SOCIETY.

Secretary Morris presented his report for the year, which was replete with information concerning the affairs of the society, dealing with legislative and financial matters, particularly calling attention to the large amount of money due by delinquents, and advising either peremptory action by the society or greater vigilance in collecting by the new Secretary.

The Executive Committee presented a report of two meetings held, as follows:

Meeting of the Executive Committee of the New York State Veterinary Medical Society, convened at 10.30 A.M., in Dr. Law's Study.

Roll-call:—Drs. Bell (President), Berns, Williams, Ackerman, and Morris.

President Bell offered a communication signed by Dr. Rush S. Huidekoper, purporting to be charges against Claude D. Morris. Dr. Bell submitted the matter to the committee. Dr. Williams moved that such charges were out of order, and therefore ought not to be received by reason of the fact that Dr. Huidekoper is not a resident of the State, and therefore not a member of the society, under the Constitution. Carried.

Supplementary Meeting of the Executive Committee.

Called to order by Dr. Bell. Present: Berns, Williams, Bell, Ackerman and Morris.

The President presented charges against Secretary Morris, signed by Dr. T. G. Sherwood. Said charges were read in the presence of Dr. Morris, who was asked to withdraw during their discussion.

Dr. Ackerman was elected Secretary *pro tem.*

After consideration of the charges it was moved by Dr. Williams, seconded by Dr. Berns, that we recommend to the society that the incoming Secretary notify Dr. Morris of the charges pending and cite him to appear before the association at the next regular meeting and show cause why the charges should not be sustained. Motion carried. Adjourned.

E. B. ACKERMAN, *Secretary pro tem.*

NEW MEMBERS ELECTED.

The Board of Censors reported favorably upon the applications of the following gentlemen, and they were unanimously elected to membership in the society:

A. Barradell (O. V. C., '94), Pawling; vouchers, George H. Berns and Roscoe R. Bell.

J. F. DeVine (A. V. C., '98), Rhinebeck; vouchers, Roscoe R. Bell and H. D. Hanson.

Wm. N. D. Bird (K. C. V. C., '98), Buffalo; vouchers, James Law and Roscoe R. Bell.

Joseph L. Wilder (N. Y. S. V. C., '01), Ithaca; vouchers, James Law and W. L. Williams.

Elishu Hanshew (A. V. C., '80), Brooklyn; vouchers, H. D. Hanson and R. S. Huidekoper.

Charles E. Clayton (A. V. C., '93), New York City; vouchers, Roscoe R. Bell and H. D. Hanson.

G. S. Hopkins (N. Y. S. V. C., '01), Ithaca; vouchers, James Law and W. L. Williams.

J. L. Robertson (A. V. C., '76), New York City; vouchers, H. D. Hanson and James Law.

Robert W. McCully (O. V. C., '90), New York City; vouchers, Roscoe R. Bell and H. D. Hanson.

Alfred James Tuxill (N. Y. C. V. S., '94), Auburn; vouchers, H. D. Gill and T. G. Sherwood.

W. J. Johnston (O. V. C., '89), Geneva; vouchers, W. L. Williams, H. D. Gill, and W. H. Salisbury.

Joseph W. Turner (O. V. C., '92), Lyons; vouchers, W. H. Salisbury and W. G. Dodds.

PAPERS AND DISCUSSIONS.

Dr. J. W. Corrigan, of Batavia, presented a short paper on "The Importance of Rectal Exploration and Manipulation," dealing with a number of practical points which present themselves during the course of every-day practice. Considerable discussion was created, especially in relation to the exhibition of enemas, and particularly cold enemata for systemic effects in febrile cases, some holding that they were of great benefit, others that their excessive indulgence were irritative and detrimental—among the latter Dr. Merillat, of Chicago, was decided in his objections. Drs. Berns, Kelly, and others gave their opinions and experiences. Dr. Corrigan's paper will be found elsewhere in this number.

"The Tuberculin Test as a City Health Ordinance" was the theme of Dr. C. H. Jewell, of Dunkirk, who gave his interesting experience in connection with it. It will find space in the November REVIEW.

"The Influence of Altitude on the Results of Surgical Operations," was read by Dr. R. C. Reed, in the absence of the author, Dr. J. A. McCrank, of Plattsburgh, and was one of the most interesting and instructive of the meeting, showing conclusively that surgical procedures which are attended by good success at

high altitudes are failures in the low countries. This conception of the facts will give to the surgeons about Gotham great comfort when they contemplate some of the results which they obtain. Dr. Lyford's radical operation for bursal enlargements, for instance, may be all right in Minneapolis, while along the Eastern seashore it would probably always be a fatal undertaking. This paper will also be published in the REVIEW a little later.

Dr. Wm. Henry Kelly, of Albany, did not prepare a paper, but gave an interesting talk on "bob veal," with some instructions as to how it may be detected.

Dr. C. J. Mulvey was unable to be present, but forwarded his paper, "Some Azoturia Experiences," to the Secretary, who read it before the society. The formation of lumbar abscesses, when not occasioned by bed sores, is, so far as we know, unknown as a complication or sequel to azoturia, and the opinion was generally expressed that the doctor was not in the presence of that disease at all.

"An Abnormal Oviduct in a Chick," was the theme of Prof. G. S. Hopkins, who exhibited drawings of the peculiarity, and was an appreciated contribution to the anatomical study of birds.

Dr. A. H. Ide, of Lowville, contributed a paper on the subject of "Spaying as a Remedy for Vice in Mares," being a recital of his experience with the operation, he narrating a number of instances of its performance. We gathered from his remarks that the cures slightly exceeded the failures; but in the discussion which followed he was robbed of two of his best cases. For instance, the mare belonging to Dr. Wilson Huff, operated at the 1900 meeting, and classed among the cured, brought the latter gentleman to his feet with the declaration that the cure had only lasted four months, when she became worse than ever. He had since tried "flogging," but this also failed. Dr. Williams being appealed to at this point as to the next thing to be tried, suggested "selling." All of which goes to show that the practitioner must not recommend the operation as a certain cure in all cases.

The subject of "Anthrax" formed a most interesting theme for discussion. It was opened by Dr. Claude D. Morris, who delivered a splendid didactic lecture on the disease, beginning with a discussion upon its definition from a lay and from a scientific standpoint, going deeply into its history and into the causes and preventive treatment, bringing the subject right

down to the present time and to outbreaks in our midst. Dr. V. A. Moore took up more fully the bacteriological aspect of the disease and dwelt upon the difficulty in making a diagnosis, even by aid of the microscope. He exhibited the spleen of a cow certainly dead of the disease which failed to show the almost constant lesion of splenic enlargement and softening. Drs. Kelly, Corrigan and others took part in the discussion, and it proved to be of great interest and value.

Prof. Simon H. Gage showed well executed charts illustrating the "Development of the Metacarpus and Metatarsus of the Sheep," accompanied by a descriptive paper elucidating the drawings.

Dr. Pierre A. Fish gave "A Reliable Test for the Determination of Phosphates in the Urine of the Horse," besides making a case report of the "Treatment of Goitre in Dogs."

Some interesting case reports were as follows: "A Peculiar Disease of Cattle," by Dr. W. H. Phyfe; "Parturient Apoplexy Cases," by Dr. C. J. Mulvey; "Severing of the Rib with Protrusion of the Omentum," by Dr. W. H. Salisbury; "Supplementary Digits in a Foal," with the amputated digit on exhibition, by Dr. J. L. Wilder; "Exhibition of Pathological Specimens, with Remarks," by Drs. V. A. Moore and S. H. Burnett.

A treat which should be added to the literary programme was the "Illustrated Lecture on Specific Etiology and Some of its Problems," given on the evening of the first day by Dr. V. A. Moore. The stereopticon was manipulated by Prof. Gage, the views thrown very clearly upon a sheet back of the rostrum, in splendid view of an audience numbering more than one hundred. The specific microörganisms were shown in full relief and the speaker's description of them and their life history was very instructive. As many of his audience were ladies, whose familiarity with the terms employed was somewhat meagre, Dr. Moore explained that these organisms were called by various names according to the country where found. For instance, in Germany, they are called "germs," in Paris, "parasites," while in Ireland they are spoken of as "microbes."

Following this intellectual treat the guests repaired to upper rooms, where a light but very luscious repast was served, which was enjoyed to the strains of sweet music, some of the guests with terpsichorean proclivities indulging in dancing, but none seeming to enjoy it with the zest of Drs. Ackerman and Hanson, who did some rather creditable "cake walking."

RESOLUTIONS ADOPTED.

On the Assassination of the President (who was then thought to be out of danger).

Resolved, That the New York State Veterinary Medical Society assembled in annual meeting at Ithaca, N. Y., expresses its sense of horror of the murderous assault made on Wm. McKinley, the honored President of the United States, its warm sympathy with the sufferer, and its profound gratitude that the object of the assassin has failed to be accomplished, and that there is every reason to hope for a speedy and complete recovery of the chief ruler of the Nation.

Army Veterinary Department.

WHEREAS, The United States Army is the only army in the civilized world which has not an organized veterinary service giving rank to the veterinarian; and,

WHEREAS, Notwithstanding the endeavors and labors of many years on the part of the veterinary profession throughout the country, to obtain suitable recognition and adequate graded rank in the United States Army; and

WHEREAS, The American Veterinary Medical Association in its recent meeting resolved to continue its endeavors and labor until we meet with success; therefore be it

Resolved, That we the New York State Veterinary Medical Society as a body and as individuals promise our hearty coöperation and assistance to the Committee on Army Legislation of the A. V. M. A. until we do obtain from Congress the establishment of an efficient veterinary service in the Army, and adequate graded rank for the veterinarian, recognizing his position as an educated professional man.

The Creation of State Veterinarian.

Resolved, That this association urge upon the Commissioner of the Department of Agriculture of this State the advisability of the appointment of a State Veterinarian who would be the chief of the Veterinary Bureau of the said Department; or, if this is impossible under the present laws, that this association would request his aid in the passage of a law which would create such a bureau with a Veterinary Chief. It is further

Resolved, That the Secretary be empowered to communicate with the Commissioner of the Department of Agriculture with this end in view.

ELECTION OF OFFICERS.

The following officers were elected for the ensuing two years:

President—James Law, of Tompkins.

Vice-President—James L. Robertson, of New York.

Secretary-Treasurer—Wm. Henry Kelly, of Albany.

Censors—Harry Sutterby, E. B. Ingalls, E. B. Ackerman, and H. D. Gill.

The selection of two names to be furnished to the Board of Regents to fill the vacancy caused by the resignation of Dr. John A. Bell from the Board of Veterinary Examiners, resulted in favor of Drs. E. B. Ackerman and H. D. Stebbins.

SELECTION OF PLACE OF NEXT MEETING.

The two candidates were Ithaca and Brooklyn, and in the voting the latter place was selected.

THE SURGICAL CLINICS.

These were held from 9 to 11 A. M. and from 4 to 6 P. M. on Tuesday; and from 8.30 to 11 A. M. on Wednesday.

The operations performed were as follows:

Sciatic and Anterior Tibial Neurectomy, Dr. C. H. Jewell, Dunkirk.

Trifacial Neurectomy, Dr. J. L. Wilder.

Caudal Myectomy, Dr. W. H. Salisbury, Clifton Springs.

Cunean Tenotomy (spavin operation), Dr. L. A. Merillat, Chicago, Ill.

Peroneal Tenotomy (stringhalt operation), Dr. L. A. Merillat, Chicago, Ill.

Operation for Cribbing, Dr. W. L. Williams, Ithaca.

Median Neurectomy, Dr. C. E. Clayton, New York City.

Median Neurectomy, Dr. A. H. Ide, Lowville.

Spaying Bitch (linea alba), Dr. A. H. Ide, Lowville.

Spaying Bitch (flank), Dr. C. H. Jewell, Dunkirk.

Spaying Cow (vaginal), Dr. C. H. Jewell, Dunkirk.

Spaying Mare (vaginal), Dr. J. W. Corrigan, Batavia.

Sciatic and Anterior Tibial Neurectomy, Dr. C. H. Jewell, Dunkirk.

Arytenoideraphy, Dr. L. A. Merillat, Chicago.

Aseptic Castration, R. C. Reed, Ithaca.

Intra-tracheal Injection, Dr. J. W. Corrigan, Batavia.

Intra-venous Injection, Dr. A. W. Baker.

Intubation of Œsophagus, Dr. A. H. Ide, Lowville.

NOTES N. Y. S. V. M. S. MEETING.

The REVIEW'S prediction that the State meeting would exceed in importance and attendance all former meetings was more than fulfilled.

Dr. Wm. Herbert Lowe came over from Paterson, N. J., and was an attentive guest, expressing himself as well repaid for his trip. Oh, that we had more Lowes.

Dr. Huidekoper was early on the grounds in search of Morris' scalp, incidentally doing some missionary work in behalf of army legislation.

The magnificent scenery around Ithaca was a joy and an inspiration, and the atmospheric conditions were very beneficial to those from near the seashore.

Twelve new members is a goodly number for any association meeting; but when the acquisitions are of the character that were elected at Ithaca it is doubly gratifying. New York City and Brooklyn contributed four of its best men—James L. Robertson, Elishu Hanshew, Charles E. Clayton and Robert W. McCully, all men of ripe experience and earnest in their love and devotion to their calling.

Brooklyn has set for herself a high undertaking in agreeing to succeed Ithaca as a place of meeting, since the peculiar facilities of the latter city rendered it an ideal spot for holding a modern meeting, with its clinical features. But Brooklyn's enthusiastic veterinarians, in conjunction with the society's splendid representatives in Gotham, will make sure that next year's event will be lacking in very little to make up a meeting in keeping with those of the past two years.

When the meeting had adjourned Dr. Claude D. Morris made a statement regarding the letter which he wrote to Secretary Root anent the army veterinary bill. It was a personal explanation, and had nothing to do with the official action of the society. He claimed to have written to the Secretary through a request from a senator, asking him to state the position of the society.

Hotel accommodations in Ithaca were rather poor. There was only one hotel, the rival hostelry having been burned recently. Consequently beds were scarce, and many of the members had to put up with "shake-downs." At one o'clock in the morning we found our good friend Brenton, of Detroit, sitting in the office in perfect resignment to pass the night in a chair. A young man came into the house to get one of the clerks to pass the night with him, and the latter very kindly substituted the bedless veterinarian.

For the first time in the history of the society the ladies became a factor in the annual gatherings. There were ten visitors who, with those living in Ithaca, made a score and a half in at-

tendance. Three were from the West—Mesdames Stewart, Merillat and Hughes; four from New York and Brooklyn—Mesdames Berns, Hanson and Bell, and Miss Berns; and from the State Mrs. Kelly, Mrs. Phyfe, and Miss Huff. Entertaining these visitors were Mrs. Law, Mrs. Williams, Mrs. Gage, Mrs. Moore, Mrs. Fish, and the Misses Law. The best of it is that they all had a most delightful time--boating, trolleying, sight-seeing, and other pleasant diversions. This feature of the meetings is bound to increase.

ILLINOIS VETERINARY MEDICAL AND SURGICAL ASSOCIATION.

Semi-annual session held at the St. Nicholas Hotel in Decatur, Illinois, August 8 and 9, 1901.

The meeting was called to order by the President of the association, Dr. V. G. Hunt, of Arcola, Illinois, the roll-call showing a goodly number of the members in attendance, when the opening address of President Hunt was delivered in a masterly manner and was replete with interest to the association.

An application was presented to the association for membership by Dr. W. J. Martin, of Kankakee, which was favorably acted upon by the committee on membership; Dr. Martin was introduced to the members of the association.

Upon proper motion to that effect, the President instructed the Secretary to draft resolutions of condolence on the death of Dr. P. M. Holburg, of Atlanta, Illinois, a member of the association, and that a copy thereof be sent to the widow of the deceased, and also one be spread upon the minutes of this meeting, which resolutions are as follows:

WHEREAS, by the death of Dr. P. M. Holburg, the association has been deprived of one of its brightest and most faithful members, therefore be it

Resolved, That in the late Dr. P. M. Holburg, we recognize a man of learning and character, and an able practitioner of his profession; that we shall remember him as a man of noble impulses, of genuine and kindly sympathy with his fellowmen; of a warm heart and an honest mind.

Resolved, That we tender our sympathy and condolence to the bereaved wife and family of the deceased in their hour of affliction.

Resolved further, That a copy of these resolutions be sent to

the family of the deceased, and a copy be spread upon the minutes of this meeting.

The Secretary was also instructed to prepare resolutions of sympathy and forward the same to Dr. N. P. Whitmore, of Gardner, on the death of his baby girl, who died July 30th, 1901.

The Committee on Membership reported on the application of Dr. A. D. Balsley for membership in the association, and reported the applicant for lack of evidence not sufficiently qualified to become a member, and recommended that the application be deferred until the next meeting.

A very excellent paper was read by Dr. W. J. Martin, of Kankakee, on the subject of "Fistula," who brought out some very interesting as well as instructive points with reference to this disease; he was responded to by Drs. V. G. Hunt and S. H. Swain.

Under "reports of cases," many interesting subjects were introduced and discussed in an able and intelligent manner by Drs. W. J. Martin and S. H. Swain.

An able and instructive paper by Dr. S. D. Brown on "Laminitis" was well received, and was responded to by Drs. S. H. Swain and John Osborne.

August 9th.—The second day's session of the association was called to order by President Hunt.

Much discussion was indulged in over an able article which was read by Dr. S. H. Swain on the subject of "Osteoporosis"; much that was both interesting and instructive was said upon the subject.

The association was honored with the presence of Dr. W. L. Williams, of Cornell University, who contributed some valuable points on the subject of "Osteoporosis."

The subject of "Anthrax" was well calculated to bring forth very interesting discussions, and a paper on the subject by President Hunt was well prepared and very favorably received; responded to by Drs. W. J. Martin and John Osborne.

On motion the date and location of the next meeting was fixed for January 9th and 10th, 1902, at Decatur, Illinois.

W. A. SWAIN, *Secretary.*

NEWS AND ITEMS.

DR. CARL W. GAY, graduate of New York State Veterinary College, has accepted a position on the faculty of the Iowa State College, at Ames, his duties at the beginning being chiefly

to assist Dr. Repp, who has for some time been overworked.

DR. NELSON S. MAYO, late professor of anatomy, physiology and veterinary science at the Connecticut Agricultural College, has been elected professor of veterinary science in the Kansas State Agricultural College, at Manhattan, which was the scene of his labors before going to Storrs.

DR. A. W. BITTING, State veterinarian of Indiana, was formerly a student of Prof. Beery, the famous horse-handler (whose book on the subject is advertised elsewhere in the REVIEW), and says that Beery is simply a phenomenon in his profession, and a thoroughly honorable man.

MR. ARTHUR M. LEEK, of Highwood, Conn., a second year student of the N. Y.-A. V. C., reports that a horse-trainer recently had the following mixture rubbed all over a horse: Aconite, ℥iv, mixed with several ounces each of witch hazel and alcohol, which resulted in a severe case of aconite poisoning.

THE ONTARIO VETERINARY COLLEGE, LIMITED, TORONTO, CANADA.—The annual announcement of this well-known institution has just been handed out. The session will commence this year October 16, and it is understood that from the number of applications received for entrance there are excellent prospects for a successful session.

DR. W. L. WILLIAMS, of Ithaca, N. Y., who was absent from the Atlantic City meeting through attendance upon the fiftieth anniversary of his aged parents' wedding, at Argenta, Ill., was saddened in less than a fortnight after his return to the East by the intelligence that his father was so ill that his death was but a matter of a few days.

IT is stated that Senator W. A. Clark has bought the Bitter Root farm from the estate of the late Marcus Daly. Included in the sale are 125,000 acres, of which about 25,000 may be said to be improved. Mr. Clark has announced his intention of erecting a refinery and growing sugar beet on the suitable lands in the tract.

MANY of the readers of the REVIEW, and more especially those of the Ontario Veterinary College, of the class of 1900, will be pleased to learn of the appointment of Dr. Frank Erwin and Dr. John Macdonald Smith as veterinarians in the U. S. Army. They both sailed on Sept. 16th, on the U. S. transport *Warren* from San Francisco for Manila, where they will enter upon their new duties.

AGAINST ILLINOIS ANTHRAX.—The Illinois Board of Live

Stock Commissioners at its meeting on Sept. 3 discussed the advisability of quarantining the county of Lake and part of Cook against anthrax. In the end it was decided not to order a formal quarantine, but to use the strongest efforts to stamp out the disease, which is alleged to have caused the death of over 100 head of stock and one man. Another man is said to be very ill with this disease, and in both cases the infection took place during the skinning of dead cattle.

McKillip Opening.—The opening of the classes on Oct. 2 finds the collegiate staff of the McKillip Veterinary College replete in all its branches. Additions to the faculty have been made and any vacancies filled by gentlemen of national reputation, both as teachers and practitioners. The following names are too well known to require any comment or further introduction: F. S. Schoenleber, M. D., M. S. A., D. V. S. (Dean), anatomy; W. S. Harpole, M. D., pathology; T. B. Newby, V. S., materia medica and therapeutics; J. J. Millar, V. S. (Secretary), bovine medicine, obstetrics and contagious diseases.

A Troublous Year for Horses.—This seems to have been rather an unlucky year for horses in the United States. First of all, in the spring came news of outbreaks of glanders in the western part of the corn-belt, but those seemed to pass without material damage. Kentucky and Tennessee in part complained in early summer of diseases that carried off quite a number of horses, and then came the great scourge of influenza in New York. The authorities are not agreed as to the number of horses that died in Gotham this summer, but it is well known that the percentage was larger than during the visitation of any other epizoötic disease. From New York this low form of influenza moved to Chicago and, though not so fatal there in its effects, carried off a great number of horses, especially of those not thoroughly inured to life in the city and work on the stones. Next came the news that "maladie du coit" was so prevalent in parts of Nebrasda that both State and Nation had to take a hand in the effort to suppress it, and finally this last week comes the report that glanders has been introduced by range horses into Southern Wisconsin to an extent that necessitates the prompt action of the State authorities. In the last named instance State Veterinarian E. D. Roberts has caused a most vigorous quarantine to be instituted and a number of diseased horses have been shot by his order. The prolonged drouth, according to some authorities, is the basic cause of all this trouble. —(*Breeder's Gazette, Sept. 21.*)

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As an evidence of the favor in which Zenoleum is held among practical veterinarians, the following letter is published as a sample of many more which the Zenner Company have on file in their office:

A. S. ALEXANDER, F. H. A. S., M. D. C.
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AMERICAN VETERINARY REVIEW.

NOVEMBER, 1901.

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EDITORIAL.

EUROPEAN CHRONICLES.

DOG DISTEMPER—SUCCESSFUL VACCINATION IN EXPERIMENTAL INFECTION.—This news will be received by all who are lovers of dogs, as well as by veterinarians and bacteriologists, if instead of its successes with animals experimentally infected, it should prove as advantageous in protecting dogs from natural infection, from contagion.

This is what Dr. Physalix, of the Museum d'Histiore Naturelle, has proposed to demonstrate to the Société Pratique de Médecine Vétérinaire, by making a number of experiments before a commission elected from its members. The experiments are now going on.

The researches made by Dr. Physalix are, so to speak, secondary to a work of Director Lignières, the *hæmorrhagic septicæmias*, where he described the microbe which he found in the organism of dogs affected with distemper. This microbe is a bacillus, quite long, which grows in peptone bouillon without clouding it, and forms small masses which collect at the bottom of the tube.

Mr. Physalix has taken up the same subject and has succeeded in isolating this specific microbe described by Lignières. Inoculated in the veins, according to the dose and virulency, it kills rapidly in a length of time between five and ten hours, with symptoms of bulbar toxication, or again gives rise to an

infection which develops slowly and may assume various forms. In the cases of rapid death, the symptoms and lesions are due to the solubility of the virus; the microbe has not proliferated and blood cultures remain often sterile.

In peptone cultures the virus becomes gradually attenuated with age. To get back its original virulency it must pass again through the organism of the guinea-pig or of the dog.

Attenuated cultures have been used by Dr. Physalix to vaccinate young dogs against the disease, in inoculating them, under the skin of the thigh, with two or three cc. of culture. He first began by a very weak culture, whose local action is insignificant; this is the first vaccine. The following inoculations are made with cultures of increasing virulency and are renewed three or four times. Thus prepared, dogs can be tested with intravenous injections of a virulent culture or by *cohabitation with infected dogs.* Dr. Physalix has had vaccinated dogs which have lived three months in daily contact with sick animals, several even in the same kennel. Others have had their nasal mucous membrane covered with pathological mucosities from sick dogs and were not contaminated. Finally, vaccinated dogs have been tested by intravenous injections and have resisted, while witnesses died or became very sick.

For Dr. P. the problem of the vaccination against dog distemper is resolved, and yet there seems to be some hesitation on the part of the profession to accept his views.

Of course the method is new. Several injections are required to give immunity, etc., etc.; but if the principle is true, it is worth while to work at it, and it is for that reason that a committee of practical men has been appointed. The experiments are already under way; they were interrupted by the summer vacation, but as soon as they are resumed and the results are known, the readers of the REVIEW will know it.

* * *

HUMAN TUBERCULOSIS IS TRANSMISSIBLE TO BOVINES.—We must not be surprised if the subject of tuberculosis, under all forms, for some time to come, is found to fill the pages of

scientific papers. The bomb delivered by Prof. Koch, although not loaded with dynamite, has exploded, and with such loud detonation that it has awakened all medical scientists for and against the subject. Experiments have been started all over, and before a long time has elapsed crushing evidences will be forthcoming to show that Prof. Koch has made a mistake—or, rather, that he has misinterpreted the results of his own experiments.

It has been my good luck lately to see cattle which are now subjects of experiments, and also to examine lesions taken from animals killed experimentally. So far the evidences are very satisfactory. Healthy young animals have in a comparatively short time shown unmistakable symptoms of tuberculosis; others at their post-mortem revealed positive lesions, whose tuberculous nature were readily demonstrated by the microscope and by cultures. That human and bovine tuberculosis are identical seems to have still numerous advocates, and it certainly will be difficult to ignore and deny the experiments of Chauveau, Klebs, Kitt, Bollinger, Crookshank, and many others, even by taking into consideration the interesting results obtained by Theobald Smith, of Washington, and Frothingham, although they were different from those obtained by Prof. Thomassen, of Utrecht, and which he has related in the paper he read at the Congress of London, where he made the important conclusions that from his own experiments it is *difficult* but not impossible to give bovines a generalized tuberculosis with pure cultures of bacilli from human source; but nevertheless the identity of tuberculosis in the two species remains an unshaken truth.

* * *

PYÆMIA OF COLTS.—We are not aware that this affection is common in the States, and, yet, although governmental breeding stations do not exist with us, there are private farms where the conditions for the development of pyæmic arthritis or paresia of colts may exist. The subject has received in Germany closer attention and given occasions for researches, among which I find those of the chief veterinarian of the haras of Wurtem-

berg, Mr. Schule. For him all the various forms of the affection are of one morbid nature. It is a specific disease given by the dams to the offsprings before delivery; after birth, by contagion of the umbilical cord, the soiled litters; stallions can also propagate by successive coition from one mare to another. This idea, which is not new, explains the epizoötic and enzoötic character of the disease, and specially the injurious part played by some mares. The disease is due to a specific microbe which is found in the articular and tendinous synovial bursæ, in the blood of the colts, and also the uterine discharges of the infected mothers.

Under the microscope it appears under the shape of an immobile micrococcus, provided with a clear translucid capsule. Disposed as diplococcus most frequently, it is not rare to see them in groups of three or four.

From the series of observations and experiments that are described by Mr. Schule he concludes that four principal indications present themselves: (1) Treatment of the suspicious or infected mares, by minute hygiene of the dam, disinfection of the place where delivery has taken place, intra-uterine injections of lysol after parturition. This treatment lasts more or less whether it is applied on mares which have delivered normally or have aborted. (2) Special care of the stables, in the shape of thorough cleanliness and disinfection. (3) Antiseptic care of the umbilical cord of the new born—sterilized ligature to the cord, sublimated solution washing, with sterilized wadding over the umbilical region, the whole renewed as the case may be. (4) Disinfection of the penis of stallions after every suspicious mounting, a condition which can always be admitted when in regions where the disease exists.

* * *

A Fund for Scientific Researches.—A very interesting law has just been passed in France creating a sinking fund for scientific researches, divided in two sections, with the object of promoting the investigations relating to (1) the discovery of new methods of treatment of diseases affecting mankind, domes-

tic animal and cultivated plants, and (2) to the discovery (outside of medical science) of the laws which rule the phenomena of nature (mathematics, mechanics, natural history, physics, and chemistry).

The resources of the fund are to consist: (1) In grants from the state, the department, cities and other public establishments, (2) in private donations and legacies, (3) individual or collective subscriptions, (4) on premiums from the funds of the racing institutions (pari mutual) fixed by the Secretary of Agriculture. The object of the law is to promote private individual investigations, to assist them and at the same time to allay the enormous expenses which official researches might impose on the public. The board of administration of the fund is to consist of a commission composed of members well known for their special interest in the various scientific directions.

Much advantage is expected to be derived from the new law and the assistance it may offer to all investigators. A. L.

FINDING ITS LEVEL.

The automobile seems to be fast terminating its short but tempestuous career as a passing fancy in America. In New York City it is becoming a rare sight to observe one of the hundreds which used to bubble along upper Broadway, ringing bells, and frightening horses and pedestrians. The company which operated so many electric cabs is in the hands of a receiver, who has withdrawn most all of the vehicles from the streets, and the only ones which may now be seen are a few operated at great expense by business houses for the purpose of advertisement, and those run by individuals as a fad, either for alleged pleasure riding or for sport. For the purpose of affording enjoyment as a pleasure vehicle we fancy that their life is doomed to early curtailment, as the record of accidents is becoming so long that many have lost faith in them. The distressing accident by which Mr. Frederic H. Benedict lost his life near West Point, N. Y., on October 19, and Mr. Grenville Kane made so narrow an escape from the same fate, shocked every one who read of it.

A similar accident, with less fatality, occured at Yonkers the day following that at West Point, whereby William Walters and family were thrown violently in all directions from their runaway machine, which clashed into a fence, and then tumbled over on its side, and on the next day a gasmobile blew up, the chauffeur being found an hour afterward in a mangled condition with the *débris* of his machine in promiscuous disorder around him. In the meantime, the horse advances in value and in esteem.

WE are pleased to note that the San Francisco Veterinary College, which maintains a summer course of six months, has raised its requirements for graduation to three such terms.

THE prices obtained by Tichener & Co., of Chicago, at their first New York autumn sale, last month, broke all records for heavy harness horses. Forty-four head averaged about $1300 each.

THE logical reasoning by which Dr. Robert W. Ellis, in his contribution to this month's "Reports of Cases," arrives at the cause of the accidental tenotomy in his patient, stamps him as the Sherlock Holmes of veterinary medicine.

THE American veterinary schools opened their sessions last month with greatly enlarged classes. The Chicago colleges have a veritable boom in the matter of attendance, while the New York schools, with their high matriculant standards, have a large increase in the number of students.

IT is stated by a South African correspondent that the British Army horses in that country are dying at the rate of 10,000 a month—by disease, privation, and accident. In the meantime, America is supplying this terrible decimation almost entirely, about 9000 animals embarking from New Orleans monthly for the dark continent.

WHILE no criticism will be forthcoming from the veterinary profession upon the marked discrepancies between the ante- and post-mortem statements of the injuries caused by the assassin's bullet as it ploughed through the body of our beloved President, as well as the prognoses which the bulletins uttered up to a day or two prior to death, we cannot help thinking how the veterinarian would have been treated by the press had he similarly erred in a case of national moment.

IT now appears that the action of the American Veterinary Medical Association, in expelling a member without giving him the opportunity of defending himself against the charges, was illegal. What is the value of hasty, passionate action? American laws would have been shorn of their dignity and the Constitution would have been outraged if the President's assassin had been condemned to death without a trial by jury. If the object of the association's vengeance did that which it considered wrong, the situation was not improved by duplicating his act.

THE October issue of the *Journal of Comparative Medicine and Veterinary Archives* characterizes the action of the New York State V. M. Society, in the matter of the charges against its late Secretary, as "*contemptible.*" We wonder if our contemporary isn't allowing its wishes to run away with its judgment. The association took deliberate action after thorough discussion, and we fancy its sense of justice will bear closer legal scrutiny than that of the A. V. M. A., which permitted some of its impulsive members to sway its action from its usual conservative course. The same spirit, and many of the same men, caused the U. S. V. M. A. to go on record at the Buffalo meeting in 1896 in a ridiculous set of resolutions upon the subject of tuberculosis, while at Atlantic City the same subject was treated with gloves on. Nothing can be gained by precipitation. When a stand is taken let there be such a foundation of principle and proof that nothing can shake it.

ORIGINAL ARTICLES.

TRANSMISSION OF TUBERCULOSIS THROUGH MEAT AND MILK.

By John J. Repp, V.M.D., Ames, Iowa.

Professor of Pathology and Therapeutics, and Veterinarian to the Experiment Station, Iowa State College.

With the classical experiments of Villemin and Chauveau, made over thirty years ago, the belief arose among the leading students of the subject of tuberculosis that this disease of the various species of mammalian animals is the same as tuberculosis of the human species and that it is capable of transmission among all of these species. The discovery of the germ of tuberculosis caused many more, including the discoverer, Koch, to adopt this belief, although Koch tells us he did so with reserve; and, moreover, to refer the causation of the disease in all the species above mentioned to the same tubercle bacillus. This opinion met with ready and almost universal acceptance up to the last three or four years. During this time the question of the identity of the tubercle bacillus as found in animals and in man and the transmissibility of tuberculosis among these species has been brought under considerable debate, not only by the laity but by scientists as well, and work has been done by investigators with a view to arriving at some definite and thoroughly defensible conclusion.

A few scientific men have recently expressed themselves in such a way as to lead one to infer that they incline to the opinion that the tubercle bacillus as found in man is radically different from that found in cattle and that tuberculosis is not transmissible from cattle to man. None, however, have by their statements attracted so much attention as did Professor Robert Koch of Berlin at the British Congress on Tuberculosis held recently in London, England. Professor Koch there expressed the belief that tuberculosis in man is different from tuberculosis in cattle and cannot be transferred to cattle; and, from another considera

tion, that cattle tuberculosis is most likely not transferable to man to any appreciable extent. More will be said in regard to Professor Koch's view of this subject later in this article.

On account of the revival of this important consideration and the bearing it has upon sanitation, it is highly desirable that a careful statement of the facts of the case should be made and that any warrantable conclusions be adduced therefrom. This discussion will be confined to the limits indicated by the title set forth, and only the meat and the milk of the bovine species will be considered.

For the sake of clearness the subject may be treated under two general subdivisions, viz.: (1) Transmission to Animals, and (2) Transmission to Man.

I.—TRANSMISSION TO ANIMALS.

A. By Meat.

The portions of the body not commonly used for food, such as the brain, large lymphatic glands, spleen, bladder, uterus, lungs, testicles, mammary gland, skin, shall be excluded. The tongue, muscles, small intermuscular lymphatic glands, digestive tube, heart, liver and kidneys are included.

No reference will be made to experiments in which the material inoculated or fed is not such as we have chosen to consider, or in which the character of material is not stated, of which classes there are a great many experiments which by their positive results demonstrate that tuberculosis can be transmitted from animal to animal of the same or of a different species.

1. By Artificial Methods.

Arloing[1] inoculated the muscle juice of ten tuberculous cows into guinea-pigs, and the result showed that the muscle juice of two of the cows was infective, 3 out of 10 guinea-pigs, 30 per cent., inoculated from these two cows becoming tuberculous.

Galtier[2] infected two rabbits with the juice of the flesh of a tuberculous cow.

Nocard[3] produced tuberculosis in 1 case out of 21, 5 per

cent., by injecting juice of the flesh of 21 cows condemned at the abattoirs on account of tuberculosis.

Woodhead[4] produced tuberculosis by injecting into the peritoneal cavity of two rabbits the raw juice from the intercostal muscles of a tuberculous cow, after the tuberculous pleura had been stripped off.

Veyssière and Humbert[5] inoculated two rabbits with 1 cc. of flesh juice from a tuberculous cow in very good condition, and both became tuberculous, 100 per cent.

2. By Natural Methods.

Johne[6] fed 35 animals with the raw flesh from animals attacked with tuberculosis, and 8, or 22.5 per cent., became tuberculous.

Gerlach[7] fed 46 subjects in the same manner, and 6, or 13.1 per cent., contracted the disease.

Peuch[8] caused 2 young pigs to consume 5 pounds of raw flesh, without bone, in 10 days, and in 2 and 3 months, respectively, these animals presented discrete glandular tuberculosis, 100 per cent.

Nocard[9] failed to produce tuberculosis in any of several litters of kittens, which he fed with meat of cattle condemned on account of tuberculosis.

Perroncito[10] had like negative results in case of 18 young pigs, fed from three to five months on the flesh of condemned cattle.

Galtier[11] reports that a calf, aged six weeks, ate in one month, four kilograms of raw meat taken from cows which had been seized on account of generalized tuberculosis; another calf, aged four or five months, also ate at three different times large quantities of raw tuberculous meat; two pigs, aged five to six months, ate considerable quantities of condemned meat. None of these animals developed tuberculosis. It is noteworthy that the presence of tubercle bacilli in some of this meat had been proven by inoculation of rabbits with its juice.

In speaking of the transmission of tuberculosis to animals through meat, we must not lose sight of the fact that, in the

process of removal of the tubercular organs not ordinarily used as food, and which are for this reason not considered here, and in the cutting up of the carcass, some of the food parts of the carcass may be smeared with material rich in tubercle bacilli. Such contaminated meat would, of course, be much more highly infectious. It is also to be noted that the muscles of swine and their intermuscular lymph glands are more apt to be tuberculous than is the case with similar bovine structures. An examination of the literature to which I have had access, indicates that but very little experimentation has been done to determine the infectiousness of those organs and tissues of tuberculous animals which are used for food. Much experimentation has been done with tissues other than food tissues, but chiefly for the purpose of determining the general infectiousness of the disease. If these experiments with the food tissues should be extended, there is no reason to doubt that they would indicate that this is a more extensive source of infection than is at present apparent. Also, none of the experiments cited, nor any other, so far as I can learn, have been made with the liver as the object fed. German slaughter house statistics[1 2] collected during 1888 and 1889, show that in all tuberculous cattle examined the liver showed the disease in 28 per cent. of cases. If a series of experiments were made by feeding this organ, a much higher rate of infection would be observed. It will be noted that this is classed as a food organ.

The experiments referred to nearly all have to do with the meat of *highly* tuberculous cattle. In these cases it is quite probable that the tubercle bacillus was carried into the muscular system through the blood vascular system, it being a well-recognized fact that in generalized tuberculosis the blood contains the microörganisms of the disease. It is quite unlikely that the food organs and tissues in mild, localized cases would contain the bacillus, unless it might be the liver, with a possible rare occurrence in some of the other organs or tissues under consideration. The food organs or tissues of these mild cases ought not to be found infectious unless contaminated from non-

food organs or tissues in slaughtering or dressing. We have no evidence to show that the food parts of these mild, localized cases would be unsafe for food purposes if the non-food organs and tissues and all tuberculous food tissues were removed at the time of slaughter, provided that no contamination by smearing would take place.

It is well known that heating to a temperature of 158° F. and maintaining the temperature at this point for 15 minutes will devitalize the tubercle bacillus. With this in view we are led to say that thorough cooking will render inert any tubercle bacilli which may be in any way connected with a piece of meat. But the cooking must be so thorough as to subject the interior of the piece of meat to this heat for this length of time. Toussaint [3] found broiled steak infected after heating its interior to 176° F. It is presumed that he did not maintain this heat long enough. Woodhead [14] found that rolls of meat weighing over 4 pounds which he had smeared with tuberculous matter were not sterilized by ordinary roasting and boiling.

Johne [15] in 62 experiments administered notoriously tuberculous flesh after it had been submitted to cooking in boiling water for ten to fifteen minutes, and 35.5 per cent. of the animals became affected.

B. By Milk.

This will be understood to mean milk and all of its products, as: skim milk, buttermilk, cream, butter and cheese. The right is reserved to refer to any of these products as milk. The number of experiments and observations showing that tuberculosis may be transmitted from animal to animal of the same or different species through the medium of the milk of tuberculous cows is very great. In order to reinforce the assertion by the facts in the case a number of experiments and observations will be presented.

1. By Artificial Methods.

There is no attempt made in the following presentation to separate the experiments made with milk of cows with healthy udders from those made with the milk of cows with diseased

udders, but attention is invited to the fact that the milk of cows with healthy udders is in a large number of cases infectious for animals.

Ernst[16] reports that out of 88 guinea-pigs inoculated from 15 cows, 12, 13.6 per cent. became tuberculous; of 90 rabbits, 6, 6.6 per cent. became tuberculous.

Hirshberger[17] produced tuberculosis in 14 out of a number of rabbits inoculated with the milk of 29 tuberculous cows with sound udders.

Bang[18] by inoculation of guinea-pigs and rabbits found the milk of 9 out of 63 cows with apparently healthy udders infectious. On microscopic examination post-mortem 3 of these cows showed slight udder lesions.

Peuch[19] produced tuberculosis in all four rabbits inoculated from the milk of a cow with tuberculous udder. A two-month-old pig fed five days with 4½ quarts of milk from the same udder did not show any lesions of tuberculosis when killed 56 days later.

Ravenel[20] experimented as follows: Five grade cows which did not show udder infection were selected and 10 cc. of the milk of each was at different times inoculated into the peritoneal cavity of 88 guinea-pigs, of which 11, 12.5 per cent., became tuberculous. No preparation of the milk was made, but it was taken just as it came from the cow. In another series of 52 guinea-pigs given the whole unprepared milk of the entire herd of 5 cows no tuberculosis developed.

Russell[21] inoculated 17 guinea-pigs with 0.5 cc. to 4.0 cc. of milk of 7 different tuberculous cows, only 1 of which showed tuberculosis of the udder. The 2, 11.8 per cent., of these 17 guinea-pigs which were inoculated with the milk of the cow with tuberculous udder developed well-marked tuberculosis, although only 2.0 cc. and 1.0 cc., respectively, of milk was used.

Delepine[22] injected the sediment obtained by centrifugation of samples of country and town dairies into the subcutaneous tissues or the peritoneal cavity of 65 guinea-pigs and produced tuberculosis in 1 of them, 0.15 per cent.

Schroeder[23] inoculated 40 guinea-pigs with the sediment resulting from centrifugalizing 19 samples of dairy and dealers' milk. Four died of intercurrent disease, and out of the 36 remaining 1 developed tuberculosis, 0.28 per cent. Nothing is known of the cows from which the milk was obtained. In another series 32 guinea-pigs were inoculated intraperitoneally with centrifugalized milk of 15 cows either known to be tuberculous or which gave a tuberculin reaction. Of these 1 developed tuberculosis, 0.3 per cent. In still another series the centrifugalized or untreated milk of 4 cows whose udders were not diseased was injected into 16 guinea-pigs, each receiving intraperitoneally 5 doses on as many different dates. None of them developed tuberculosis.

Bollinger[24] produced tuberculosis in experimental animals with the milk of a cow with non-tuberculous udder.

May[25] injected the milk of 6 cows, 1 of which had a tuberculous udder, and found the milk of the tuberculous udder infectious.

Stein[26] obtained by the same method 4 positive results out of 14 injections with milk from sound udders, 28.57 per cent.

Nocard[27] inoculated the milk of 54 cows and obtained infection with 3 which had diseased udders.

Kanthack and Sladen,[28] in examining 16 sources of the milk supply to the colleges in Cambridge, England, inoculated 90 guinea-pigs with the result that 23, or 25.55 per cent., died of tuberculosis. Of these 23, 13 were inoculated from the creamy layer and 10 from the sediment. Of the 16 dairies examined 9 were infectious, 56.25 per cent.

The Director of the Jenner Institute of Preventive Medicine[29] found by animal inoculation that the milk of 17 out of 100 samples was able to produce tuberculosis, 17 per cent.

Adami[30] reports that he and Martin, in inoculating the milk from 10 tuberculous cows whose udders were free from tuberculosis, produced tuberculosis in 2 guinea-pigs out of 29 guinea-pigs and 26 rabbits inoculated intraperitoneally, 3.6 per cent. A calf fed 5 months with the milk of the cow that pro-

duced the disease in these 2 guinea-pigs did not develop the disease.

The work of Rabinowitch and Kempner[31] is very interesting as adding strong evidence to that already obtained of infectiousness of milk of tuberculous cows, even though the udder be sound. The experimenters used the milk of 15 cows which had reacted to the tuberculin test, in 10 of which the milk was found by inoculation of guinea-pigs to be infectious, 66⅔ per cent. Of the 10 cows 1 showed clinical evidence of udder tuberculosis and another showed it on microscopic examination post-mortem. Two other cows were only slightly affected as determined by clinical examination, and still two others showed no symptoms of the disease. The inoculations were made into the peritoneal cavity with a combination of the sediment, obtained by centrifuging, and the fat layer. Butter was made from the milk of 1 of these 10 cows, and by inoculating guinea-pigs with it tuberculosis was set up in 3 out of 4 guinea-pigs inoculated, 75 per cent.

Obermüller[32] reports that Brusaferro has obtained positive results with 9 samples of butter; Bang from 1 specimen from a tuberculous cow; Roth from 2 out of 20 samples from diseased cows and from the market. He also reports that as a result of his own experiments he succeeded in producing tuberculosis in 4 out of 41 guinea-pigs inoculated from 10 different samples of butter.

Hormann and Morgenroth[33] examined 10 samples of butter, using the method of intraperitoneal inoculation of guinea-pigs. The samples contained true tubercle bacilli as proven both by lesions produced and by cultures.

2. By Natural Methods.

Gerlach[34] fed young animals, calves, pigs, rabbits, etc., with milk taken from tuberculous cows, and found that some of them grew thin and died at the end of a few months, showing at the autopsy an intense tubercular infection of the organs of the abdominal cavity.

Bang[35] reports autopsy on 34 milk-fed calves, 24, 70.6 per

cent. of which showed lesions of tuberculosis evidently produced by the ingestion of milk containing tubercle bacilli. Since then this author has made numerous similar observations.[36]

Law[37] fed 3 calves of healthy parents on the milk of 3 tuberculous cows with apparently sound udders with the result of producing tuberculosis in all 3 calves, 100 per cent.

Ernst[38] fed 21 healthy calves on milk of tuberculous cows with healthy udders and 8, 38 per cent., of them became tuberculous.

Ernst[39] fed 48 rabbits from one to three months on the milk of healthy udders, and 2, 4.1 per cent., were infected with tuberculosis.

Freudenreich[40] examined 28 samples of mixed milk, and of this number found 4 which proved to be virulent when inoculated into guinea-pigs.

Bang[41] says: "In Denmark, the swine are almost always fed with skim milk, buttermilk, and whey, in addition to grain, and formerly it was noticed that when these milk foods were given raw the swine almost always suffered from tuberculosis, where this disease was prevalent among cows. Since attention has been directed to this danger tuberculosis in swine has greatly diminished in my country."

Hills and Rich[42] record the observation made by one of them that 5 swine, born of apparently healthy parents, and fed on skim milk from a creamery partly supplied by tuberculous cows, were found tuberculous on autopsy. Also that many of the pigs fed on the milk of a herd of 91 cattle, 78 of which were tuberculous, were found tuberculous on post-mortem examination.

Russell[43] fed 2 pigs, beginning at six weeks of age, from August 23 to November 10, on separator slime received from the college creamery. None of them became tuberculous.

Bang[44] says: "In Denmark milk is often given to young or to sick horses, and in those parts of the country where this custom is frequent, tuberculosis is not rare in the horse."

McFadyean[45] says: "In a considerable proportion of cases there was a distinct history of the animal's having been fed with tuberculous milk. Now when one reflects that certainly not one horse in several hundreds is at any period of its life fed on cow's milk, the frequency with which tuberculosis has been met with in horses that had been so fed becomes very striking."

The foregoing states briefly most of what has been carefully done and recorded by way of experimentation and observation to prove that tuberculosis is communicable to other animals through the medium of the milk and the food tissues and organs of tuberculous neat cattle. In addition there might be added other observations of less definite shape, but no less true and convincing, as, for example, the great lessening of tuberculosis among calves of tuberculous dams which are separated at birth and fed on sterilized milk or the milk of sound cows, as has been so abundantly shown by Bang in the prosecution of his suppressive measures in Denmark. Reference might also be made to numerous observations of veterinarians pointing to the transmission of tuberculosis from tuberculous cows through their milk to calves and swine. Enough has been done to prove beyond the peradventure of a doubt that tuberculosis may be transmitted through the milk and the food structures of tuberculous animals to the animals that consume these products or are inoculated with them. Upon this all students of the subject agree. This much has been proven. But these facts do not decide the important question at issue, viz.: whether or not tuberculosis is transmissible from animal to man, nor would they if they were multiplied *ad infinitum*. They only furnish a basis from which we may reason. For this purpose they are invaluable, as they establish the premise that the meat and milk of animals do at times contain living, virulent tubercle bacilli, capable of producing disease in other animals.

II.—TRANSMISSION TO MAN.

A. By Meat.

1. By Artificial Methods.

There is no evidence of any sort on this point.

2. By Natural Methods.

The evidence on this score is only presumptive. However, it is well known that since ancient times legislation and sanitary regulations have been moulded around the presumption that the meat of highly tuberculous animals is dangerous as human food on account of the risk of conveying the disease to man through this medium. At this time every civilized nation that has any legislation or sanitary regulations in regard to the meat of tuberculous animals provides that such meat shall either be condemned or that it shall be sold under declaration. These laws and regulations are based upon the analogy between tuberculosis in animals and the same disease in man and the fact of the intertransmissibility of this disease among the various species of animals. Whether this evidence warrants such restriction on the use of meat or not, has not yet been positively demonstrated, and on account of the impracticability of direct experiment with human beings we will almost certainly never be able to make such demonstration. The question must be decided upon the evidence we already have, and upon the additional evidence of the same character which from time to time may be added.

Of course, cooking of meats as it is usually practiced effectually disposes of most of such danger as would exist if meat were eaten raw and without any attempt at sterilization. On the other hand, there is not one whit of evidence that tuberculosis is not to some extent transmitted from animal to man through ingestion of meat. All the evidence we have indicates that such transmission occurs to a limited extent.

(*To be continued.*)

THE LEGISLATURE OF TEXAS has just appropriated $51,000 to erect a chemical and veterinary laboratory at the State Agricultural and Mechanical College. Dr. M. Francis is in charge of the Department of Veterinary Science. We have every reason to feel satisfied with the progress being made at the beginning of the twentieth century, especially in the Western section of this continent.

MYOTIC DERMATITIS.

By Coleman Nockolds, 1st Class Vet., 1st Cavalry, Batangas, Philippines.

One of the bugbears of the life of American army horses and mules, as well as soldiers in the Philippines, is a troublesome complaint known throughout the width and breadth of the land as "adobe itch." Everything that is not of the same quality and value as its analogy in the United States is spoken of out here as "adobe;" for instance, the Mexican dollar, the mud-like stones and brick of which some of the houses are built; in fact, anything that is not the real material, and which takes the place of the genuine article, is "adobe." In the case of this troublesome skin lesion "adobe," in one sense of the word, is a misnomer, as we find out by experience, both amongst animals and ourselves, for once "adobe" lays claim to its victim, whether person or animal, it amounts to the same thing, viz., that they have run up against the real thing, and there is not the slightest doubt about it. "Adobe itch" is really a demonstration of the amount of torture and the changes which can take place in the skin of either man or animal as a result of the workings of a vegetable parasite in a country where atmospheric conditions and the nature of the soil all tend towards its full development, and allows it to live and thrive to the fullest extent of its parasitic existence.

"Adobe itch" is a contagious cutaneous affection caused by one or more species of fungi belonging to the genus *Trichophyton*, and most probably also one of the genus *Sepidophyton*, so it is really "adobe," and not true "itch," which, as is well known, is caused by various tribes of the Acarina, the most prominent of which is the *Sarcoptinæ*, which causes most of the itches of man and animals.

These fungi consist of filaments and spores; the filaments are tubular, one tube being made up of several sections joined end to end, some of which contain oval-shaped spores. These spores eventually become changed into tubes. The tubes are

found chiefly beneath the crusts which are seen at the site affected, whilst the spores are generally found on the surface of the integument and in the hairs.

This very intense form of ringworm seems to be confined to tropical regions, especially those of the Eastern Hemisphere, and east of Africa, in countries where the air is moist and humid. It does not exist to any great extent in countries where the air is dry.

Every veterinarian is familiar with the appearance of the common form of ringworm, as it is seen in the States, and the symptoms are very similar here, with the exception that instead of being confined to one or two isolated patches, the skin of the animal becomes literally covered ; there is present various little circular bare patches, surrounded by elevated zones, which is so characteristic of the raids of tinea ; large portions of the skin of the affected horse are completely denuded of hair, and covered with scabby and scaly centres. If it were not for the occasional appearance of the characteristic circles, one might be led to suspect some other kind of skin lesion. Usually the side of the face, behind the ears and the neck are attacked first ; later the shoulder and flanks become involved. As the disease advances the animal becomes a pitiful sight. The circles become confluent ; often there is a discharge of a dirty colored fluid from the elevations, and ulcerations occur. The characteristic circles vary in size from that of a quarter to a dollar ; the hair within them is erect and broken ; their centres are slightly elevated, due to a purulent exudation under the integument. Most of the affected area is covered with little elevations, on which are dull, dead looking hairs, with a gummy substance at their base and which later discharge a small quantity of sticky material, which dries and forms scales. The skin thickens, giving it a peculiar appearance ; sometimes large ulcerated patches occur. The animal bites and rubs itself. Occasionally the lesions are confined entirely to the heels and coronet, in which case the skin covering those parts becomes thickened and scabby and raw. A horse may become covered with " adobe " in a few hours or as

many days; its tendency is to spread indefinitely ; there is no inclination to heal spontaneously, as it is said to be the case in ordinary *tinea tonsurans.* There are no constitutional symptoms as a rule, except that an animal loses flesh, and in rare cases there is a slight rise of temperature. The disease is transmitted from one animal to another by actual contact, through the agency of families, rubbing against posts, grooming utensils, etc. Once in a troop or other bunches of horses it spreads very rapidly from one animal to another.

The correct method of diagnosticating the disease is, of course, the microscope. The only trouble it is liable to be confounded with is favus, in which disease the circles are concave in the centre, whilst in "adobe" the circles are convex in their centres, due to the accumulation of fluid under the integument. The appearance of the hair is rougher and more broken in "adobe" than in favus.

In man "adobe" is generally first noticed in the inguinal region or on the scrotum in the form of an erythema, with well marked raised rings; under the raised portions is a watery fluid. There is always an intense itching present, which is worse at night; those parts of the body covered by hair are generally avoided by the parasite. The soles of the feet are often attacked, especially in those that go barefooted, as is often the case whilst bathing. After man, the animals most commonly attacked are the ox, horse, monkey, dog, cat, mice, rats, sheep and pigs. Goats, which are plentiful everywhere in these islands, are apparently immune. Of course the ideal victim is the Filipino, no doubt because of the exceedingly filthy conditions under which he exists.

The fungi, which are the cause of "adobe," like the *Muscounæ*, to which they are related, live on decomposing animal and vegetable matter, and exist wherever such matter is found, provided the climatic conditions are favorable. Horses come in contact with it whilst lying on the ground or rolling, or even walking, especially when the ground is muddy; they also become infected whilst crossing streams, travelling in districts

where long grass, weeds and brush are plentiful; it is most prevalent during rainy months, but exists to a more or less extent during all of the year. The most common way in which man becomes infected is said to be through clothes which the natives wash in water which has not been boiled. Often it is transmitted from horses to man and *vice versa*. It can be transmitted from one species of animal to another by actual contact of families. There is nothing of importance to be noticed as predisposing causes except rainy weather, and animals at all ages and under all conditions are liable to be attacked. Although this disease was mentioned by the older veterinary writers as a vice, developed under the influence of physiological misery and uncleanliness of the body and filthy dwellings and stables (it is quite possible that it originated amongst Filipino natives), the parasitic nature of ringworm was demonstrated in 1820 by Ernst, a veterinary surgeon of Zurich, Switzerland.

The medicinal treatment that has been most beneficial is the external application of a saturated solution of salicylic acid and alcohol, applied directly to the affected zones by means of a piece of sponge or other material tied on the end of a stick or with a hard rubber syringe. This remedy is very well where there is only a small portion of the skin attacked, but because of the intense pain the application causes it should not be applied to more surface than would measure three decimetres each way at one time. Two or three applications of this remedy will destroy the fungus, thus staying the extension of the trouble. A small quantity of collodion added to the solution increases its efficiency. Preparations containing sulphur can be used when there is a large surface of the skin to be covered at one time. The sulphuretted calcium made by boiling quicklime and sulphur together has been highly recommended. An ointment made up of sulphur, oil of tar, and sodium borate, is very useful, but must be applied many times. Creolin preparations are valueless in the treatment of this affection. Iodine preparations, especially the aqueous solutions, often effect a cure.

When once "adobe" has started in a troop or other organiza-

tion, affected animals should be isolated without loss of time, as also should their halters, grooming utensils, etc. The remainder of the horses should be scrubbed with water in which about eight ounces of bicarbonate of soda to the ordinary United States stable pail of water has been dissolved, and with the free use of soap. The picket line and posts near which the sick animals had been should also be scrubbed with the same solution. This has generally prevented the further spread of the disease. No doubt there are a great many more efficient antiseptics which might be used with advantage, but the veterinarian in the United States army is laboring under the great disadvantage of having at his command only a few drugs which have been considered obsolete by practising veterinarians for many years. It is to be regretted that there has not been an intelligent issue of drugs to the different organizations which are serving in the Philippines, so far away from any place where the veterinarian could obtain necessary articles from some store. In the whole list of drugs that are allowed the different troops in the army there is not one that is an absolute necessity or one that would be of any decided advantage in case of a serious outbreak of contagious disease. There is no doubt but what those lists were made out at a time when there was little or no sickness amongst troop horses, and for the benefit of that class of persons that delighted to empty all kinds of nasty messes of bulky medicines down a suffering creature's throat, said medicines to cause as much pain by burning, scalding, choking, etc., as possible, and not intended in any way to alleviate the sufferings of the helpless dumb brute.

THERE are 20 students in the freshmen class at the New York-American Veterinary College this session, making an entire class of 50.

THE department of "Reports of Cases" is always one of the most valuable in a medical journal. It has been especially so in the REVIEW recently—this month is a good example of what it should always be. Every subscriber is cordially invited to use it as freely as he may wish in "building up the solid edifice of pathological science."

ANTHRAX: PREVENTIVE INOCULATION IN LOUISIANA.

By W. H. Dalrymple, M.R.C.V.S., Baton Rouge, La.

A Paper read before the American Veterinary Medical Association, Sept. 5, 1901.

I had expected to be omitted from the programme on this occasion, but our worthy Secretary seemed to experience the usual difficulty in getting some of the younger members "roped in" to present papers, and being anxious that the subject of anthrax and preventive inoculation should be brought up, on account of its apparently wider prevalence and distribution throughout the country, I felt constrained, though somewhat reluctantly, to accede to his urgent appeal—and we all know the inimitable way Dr. Stewart has of placing a fellow *hors-de-combat* when it comes to work connected with the interests of the A.V.M.A. I say reluctantly, not from waning interest, by any means, in the welfare of the association, but simply from lack of time at my disposal to prepare a paper that would be at all creditable for presentation at the representative assemblage of the veterinary profession of America, or do justice to a subject of such immense importance, when viewed from the standpoint of the vast livestock interests of the country, and more particularly, perhaps, our Gulf group of States. I will have to crave your indulgence, therefore, if my hurriedly prepared production should not approach the standard for an occasion such as this.

I think I can truthfully say that the control of anthrax, and the possible eradication of the infection, is one of the most profound problems that confronts the agriculturist and stockowner, as well as the veterinary profession, in Louisiana and the contiguous States. Such an unfortunate condition as has existed, and as at present exists, with us, is to my mind solely due, up to within recent years, to ignorance of the true nature of the disease, and of the most effective sanitary measures for its control.

It is unnecessary to go into the ancient history of anthrax. All of you who keep up with our fatal animal plagues must be

perfectly familiar with the historic division of the subject. We may say, however, that anthrax, or charbon, as the French term it, is one of the oldest diseases known to medical science, and is almost universal; that it is exceedingly dangerous and fatal, both to humanity and the lower animals (past records showing frightful devastation through its ravages); and that it is brought about by the introduction into the economy of the spore-bearing organism, the *bacillus-anthracis*, the specificity of which was, I believe, first recognized by Davaine in 1863.

I will not occupy your time with the bacteriology of the disease. Suffice it to say, that the organism belongs to the spore-bearing variety; that it is ærobic; that the bacilli, only, are found in the blood, where they multiply by fission, *i. e.*: elongation, and division into segments; that sporulation takes place outside of the body when bacilli-laden blood is exposed to the atmospheric oxygen; that the spores are the more resistant to external, germicidal, and other influences; and that they will remain for a great length of time in ordinary external surroundings—and possibly vegetate there—and be capable of causing infection in man and animals when introduced into the system by different channels, and through the intermediation of various agencies.

The channels by which the organism gains entrance to the circulation are generally recognized as three, viz.: The alimentary tract, the skin, and the lungs. I have seen it recently stated that "authorities, without exception, were agreed that the almost exclusive method of infection in cattle was by taking the germs in adhering to food, or in drinking water." This may hold good in some countries, but the opinion does not altogether agree with my own experience in Louisiana.

True, I believe that first cases result from infection in this way, especially where no precautions had been taken to properly dispose of anthrax carcasses in previous years, which, unfortunately, has been the case in my State. But I think there can be no question that the different varieties of horse-flies (tabanidæ), and other blood-sucking insects, are more responsi-

ble than any or all other agencies combined, in spreading the disease in the Lower Mississippi Valley. Of course, the first cases are responsible in providing the source from which these hordes of insects obtain the virulent material for inoculation.

Let us devote a few seconds to the consideration of a case that is an early victim of the disease, and which has been left exposed on the surface of the ground, and see how we can charge responsibility of spread to such a source: At, and immediately after death, the blood is simply swarming with anthrax bacilli. It is a common occurrence in Louisiana to witness thousands of blood-sucking flies loading up on the virulent blood at this time, and it is almost immediately succeeding such occurrence that we begin to find numerous cases of anthrax of the external or carbuncular form, and at points widely separated, the tabanidæ, as you are no doubt aware, being exceedingly strong on the wing, and capable of flying immense distances.

On account of rapid decomposition of the body, and the evolution of gases after death, we have bloody discharges issuing, probably by pressure from within, from the natural openings. This virulent material exposed to the air permits of the bacilli contained within it undergoing the process of sporulation, contaminates the surroundings with which it comes in contact, besides becoming a source from which other varieties of fly-scavengers, which do not puncture the skin, can obtain the virus on their mouth-parts and feet, and are then capable of transmitting the infection to susceptible animals having abrasions of the skin. Grass, herbage, and other food materials grown upon the soil contaminated by the charbonous discharges from the dead animal may, and often do, as has been proved in many instances, become infected by the adherence of spores to these materials, and cause outbreaks, not only in the vicinity of the victim, but wherever such food-stuffs may be transported. Virulent discharges from the carcasses that have been washed by rains into running water or streams may not only contami-

nate the water supply of livestock in the immediate neighborhood, but by receding, after a freshet, infect the grazing along the banks of such water courses. Our valuable scavengers, the buzzard and the carrion crow, are no doubt responsible for spreading anthrax infection from the dead animals, for, after soiling their feet by walking over the blood and offal, as well as by other means, they are capable of producing fresh centres of the disease on the grass of fields and other places on which they alight. Hogs, or swine, many of which, with us, are not under the immediate control of their owners, spread the infection by first of all contracting the disease themselves, as well as carrying infection on their feet and snouts, then dying at some distance away, and creating new foci, and sources from which more virulent blood may be obtained. Similar allusion may also be made to the wandering cur-dog.

These are some of the commoner agencies with us, by which infection is spread from the early victims or first cases left unburned or uninterred, which, however, does not include the skinning of carcasses through ignorance of the danger to the operator, or of distributing the infection by such procedure. But in addition to the carcasses of the domestic animals as sources of the virus, we occasionally have, in extensive epizoötics, some of the wild animals, such as deer and others, in our swamps and woods, becoming affected, and thus enlarging the infected areas.

Such, I may say, has been the condition of affairs with regard to anthrax in Louisiana. For how long, no one knows; but, at all events, from a time antedating the recollection of our oldest inhabitants.

Fortunately, I am pleased to be able to say, the situation is beginning to show marked evidences of improvement, as the result, I presume, of a persistent effort to inform our people concerning the true nature of the disease, how it may reasonably be prevented, and the great importance to be attached to strict sanitary measures for its control and possible eradication, although the latter is improbable in the near future, owing to

permanently infected areas and other unfavorable existing conditions.

The internal form of anthrax is, of course, produced by the ingestion of food or water infected with the specific organisms of the disease.

External or carbuncular anthrax can be brought about through any medium by which the infective germ is brought in contact with the superficial circulation or absorbent vessels. Many of these may be readily imagined, but there are one or two recorded cases in man that may be of special interest. Some year or two ago a case of death from malignant pustule was reported, in which an employé of the London general post-office became infected through an abrasion, or sore, on his hand while handling a piece of leather out of which he was making box-hinges. And the fact has been established, I believe, that even the ordinary tanning process now in vogue is not sufficient to destroy the virulence of the anthrax spore. I have observed, also, in an English medical journal or magazine, where one or two boys in one of the manufacturing towns succumbed to this disease as the result of cleaning the parts of a carding mill, they at the time having cuts or wounds on their hands. Evidently the mill must have had wool from charbonous sheep previously passed through it.

It is to the horse- or gad-fly, however, that I desire to make special allusion, as being, in my opinion, the most potent factor in the spread of carbuncular anthrax in Louisiana.

No one, who has not been an eye-witness, can have the most meagre conception of the appalling numbers of these tabanidæ, during certain seasons, in what might be termed the anthrax districts of our State. I understand there are something like 300 species of this family of flies, and that about 150 of them occur in North America. Porchinski, a Russian entomologist, who has made some study of the life-history and habits of this hitherto somewhat neglected order of insects, states that "water and arboreal plants are the chief conditions of the existence and multiplication of the family to which horse- or gad-flies belong

and where these conditions are absent no tabanidæ are observed." All such favorable conditions we possess in abundance in the sections of Louisiana which suffer most from anthrax. For instance, at the back of many of our plantations are woods and moist places, such as swampy lands, and it is to those uncultivated portions of the properties that the remains of all animals have been committed. All carcasses have been treated alike, whether charbonous or otherwise, viz.:—dragged or hauled out to the "bone yard," and there left, exposed on the surface of the ground. This practice has been in operation almost from time immemorial (although it is now changed for the better in most places), with the result that infection has been yearly added to the surroundings. *Now*, we find that first cases usually occur amongst animals, frequently cattle, in the neighborhood of these infected areas. With the development and multiplication of the *flies*, and the blood of the first victim at hand to feed upon, it may readily be inferred how the infection is scattered broadcast.

It has generally been observed that outbreaks of anthrax, in epizoötic form, in Louisiana, usually succeed protracted seasons of drought in summer, and, after the breaking of such drought by the first few showers of rain. On the other hand, the disease rarely occurs over an extended area, and if at all, in only sporadic or enzoötic form, during seasons in which we have frequent and copious precipitation. This may be accounted for, first of all, by the fact that a lengthened dry spell of weather favors the development and multiplication of greater numbers of horse-flies, many of which would be destroyed in the oval or larval stages by incessant heavy rains during these more delicate stages of the insect's life.

Then, again, the moisture from the showers, following the dry weather, combined with the natural heat of our summers, brings about conditions favorable to the development of latent bacterial life already in existence in infected localities.

When heavy and frequent rains continue during our summers, we seem to have fewer of these flies, for the reasons, no

doubt, just stated, and, it is reasonable to presume that a great deal of the infection is washed from off the surface of the ground, and of the vegetation, and carried away by running water, as streams, rivers, etc. This, of course, creates a menace to territory below, and through which such water passes. As an instance of this, we got infection on the pasture of our State Experiment Station, through the discharges of a charbon victim, belonging to a neighbor immediately above us, being washed into a branch which runs through it. And, the lands of our State, bordering on the Mississippi River, might easily be infected from the State of Mississippi to the north of us, as I understand numbers of the victims of the recent terrible epizoötic there, before the authorities took action in the matter, were thrown into the river to float down.

The third mode of infection is by way of the lungs or respiratory tract; but, although the human subject contracts anthrax as "wool-sorters' disease," by inhaling the desiccated spores from the wool of sheep that has been soiled with infected blood, I do not think that animals often receive infection in this way, and if so, it is of somewhat rare occurrence. At all events, I should consider this mode quite infrequent as compared to the others mentioned.

PREVENTIVE INOCULATIONS

were first made by Toussaint, but were apparently unsuccessful in obtaining the desired results. Pasteur, however, demonstrating that immunity was produced by weakened virulence on the part of the organism, obtained an attenuated virus by cultivating the bacterium at a temperature of 42 to 43 degs. C. in the presence of oxygen. There are other processes of preparation of the virus, but the lymph that I am most familiar with, and the one which has been put into practice in almost all Continental European countries, is that prepared by the Pasteur method. The dose of this virus comprises two inoculations. The first lymph, or first half of the dose, is that which has been cultivated, under the conditions above mentioned, for about 24 days; the second lymph, for about 12 days. The first dose is, there-

fore, the more attenuated, and seems to be somewhat preparatory to the second, which is more powerful. An immunizing dose requires one-quarter of a cubic centimetre of each strength given from 10 to 14 days apart.

The records of preventive inoculation by the use of the attenuated virus, especially in European countries, seem to be extremely gratifying. And I think I can confidently assert that excellent results have been obtained in Louisiana, when all the conditions were favorable, such as good material, strict antiseptic care observed in its use, and the operation performed early in the season, so as to secure immunity before the advent of the hot months during which the disease usually makes its appearance.

With the exception, perhaps, of a very few individual planters, who imported virus direct from France, preventive inoculation against anthrax was but little known or practiced in Louisiana previous to 1896.

In that year we had an extensive outbreak in the northern portion of the State, but in a section containing all the conditions favorable for the propagation of horse-flies to carry abroad the infection, and I certainly never before witnessed such a "fly-plague." It was at this time that I suggested the use of the anthrax virus, and the doses used that season throughout the State amounted up to some thousands. Since then the use of the lymph has been fairly general, especially in the localities in which anthrax had been prevalent, as well as in those contiguous, until, during the past summer, the large number of about 30,000 doses of the Pasteur lymph alone have been used.

It is difficult to obtain accurate data with regard to the positive results of preventive inoculation in Louisiana, the work of vaccinating having fallen, to quite a large extent, into the hands of those with a very limited knowledge, if any, of the importance of strict antisepsis. Some of the untoward results arising in consequence may here be noted: Extensive septic infection from dirty instruments, etc., and in some cases from infection of the virus through careless handling, such as frequently open-

ing the vial before its contents were all used up. Using wrong virus. I have it on good authority that black-leg vaccine has been used on several occasions for anthrax lymph ; the reason for the error being, I presume, due to the fact that black-leg vaccine is frequently labelled for symptomatic charbon or anthrax, and the operators being ignorant of the difference. Quite recently I have observed, through our daily press, that a number of cases of tetanus had followed vaccination for anthrax. It is difficult to account for this except through the proper precautions being neglected during the operation, through after-infection of the inoculation punctures, or through virus infected with tetanus organisms. If the latter, it shows how completely the veterinarian is dependent upon the reliability of the manufacturer and vender of these products. Want of due protection and care of inoculated animals before complete immunity is established, in the midst of an epizoötic of anthrax, has also brought about indifferent results, etc.

The best season to vaccinate in our climate is almost any time before the heated term, so as to permit of complete immunity before the climatic conditions appear that are favorable to the development of bacterial and insect life.

Personally, I have vaccinated only a few hundred head of stock, the most of the work in recent years being done by practising veterinarians, managers and owners of plantation and farm stock, a few physicians, and a number of "quack vaccinators." Although I wrote to several practitioners in the State for the results of their experience with preventive vaccine, I failed to get a response in the majority of instances.

I have a record from a physician who assisted in inoculating stock in the 1896 epizoötic in North Louisiana. During the height of the outbreak he vaccinated some 250 head of horses and mules with the Pasteur lymph. After the first inoculation about 3 per cent. showed symptoms of the disease, but not more than 50 per cent. of the 3 per cent. died. After the administration of the second lymph there were no more deaths, with only a few animals exhibiting symptoms. At the same time,

however, unvaccinated animals in the neighborhood were dying with great rapidity. During this same outbreak there were other somewhat similar records, but I have not the exact data. In the spring of 1897 I vaccinated over 200 horses and mules in one locality without a single case, so far as I know, of œdema at the point of inoculation larger than a pigeon's egg. Vaccination has been carried on since in this vicinity, but I have not heard of a single death, although the disease was in the neighborhood this summer.

In 1899, the owner of five large sugar plantations, with an aggregate of 368 mules, furnished me with detailed statistical results of vaccination that summer, a summary of which is as follows, viz. : 39 cases and 14 deaths ; or,

Average number of animals taken sick . . .	10.6
Average number died	3.8
Average number of deaths of sick animals . .	35.9

During the 1899 outbreak, and while making some investigations into the history of anthrax in different portions of the State, the owner of a large plantation in a charbonous district below the city of New Orleans informed me that he had vaccinated about 100 mules for the previous 5 years, and had lost only two animals during that time, one not inoculated, the other permitted to graze on a headland over which anthrax carcasses had previously been dragged. In the summer of 1899 the disease was epizoötic all round the neighborhood of this plantation, with flies excessively numerous ; such being always the case during the years in which we have the most widespread outbreaks.

In my own parish of East Baton Rouge we had that same summer a few cases transmitted from a neighboring parish, in which a large number of all kinds of animals were lost. Precautions were at once taken, through the local authorities of both parish and city, to cremate all victims known to have died of anthrax, and to inoculate extensively. This put a check to the spread ; but early in the spring of 1900 a bull, which had been roaming over the locality where the disease had appeared

the previous summer, died near our Experiment Station (to which case I have already alluded), and was the means of causing the death of a cow, a horse, and a mule belonging to the station. Every precaution was taken to prevent further disaster, such as cremation, thorough disinfection, and the inoculation of some 15 or 20 head of the remaining stock. And although the animals were turned back on the pasture about two weeks after immunity was established where the first case occurred, there has not been a suspicious case on the place since, a period of about sixteen months.

The past summer the disease broke out in two wards of our parish. Strict attention was at once given to cremation or deep burial of the cadavers, as well as inoculation, and the disease was checked in each instance, one ward losing probably ten animals before proper measures were adopted, the other ward losing one mule.

An extensive land-owner and merchant of my acquaintance vaccinated this summer 127 head of mules after anthrax had broken out close to his property. I saw the animals about ten days after they had had the second lymph, and up to that time he hadn't lost a single one.

Dr. E. Pegram Flower, a graduate practising in the city of Baton Rouge, inoculated about 2400 animals, chiefly mules, the past summer in our State, and about 500 in the Mississippi Delta, all being exposed to infection, *i. e.*, the disease was prevalent all around the vicinity. His losses in Louisiana amounted to not more than one-quarter of 1 per cent., while in Mississippi only 7 animals out of the 500 died after inoculation was commenced, notwithstanding the fact that over 100 died in the neighborhood previous to inoculation, the infection being of such a virulent character.

In the summer of 1899 this same gentleman inoculated some 1800 head of stock in our State, and with a loss of not over 1 per cent., which seems to me to be a very satisfactory showing in favor of the use of the preventive vaccine.

Perhaps the most convincing evidence of the beneficial effect

of this method of prevention in Louisiana is the fact that in those localities which suffered most from yearly, or at least periodic, epizoötics of anthrax before vaccination became so generally adopted, experienced the past summer a wonderful degree of immunity from the disease, which I think we must attribute to the fact that the use of the lymph is now almost general in those sections, and that greater attention is being directed to the more careful disposal of the dead animal, our people more fully appreciating *its* being the chief source from which this most deadly disease is spread.

I believe we are gradually solving the anthrax problem in the Pelican State, and the progress we have already made is, I think, considerable and fairly satisfactory, when we take into account the amount of ignorance, superstition, and the erroneous and visionary ideas which prevailed up to 10 or 12 years ago regarding the true nature of the disease and the most potent factors in causing its spread. What we have accomplished has in great measure, I think, been due to a persistent endeavor to educate our people; for we have no sanitary laws of much importance, and no live-stock sanitary board or commission vested with authority to properly execute those we have. This condition of affairs, however, we hope to see changed in the near future. I question very much if ten years ago a single dose of preventive vaccine was used or an anthrax carcass destroyed as a sanitary precaution against the spread of the disease in our State. To-day there are probably 40,000 or 50,000 doses of vaccine used, and carcasses are being much more carefully looked after, which I feel indicates *some* progress, at least.

With years of added infection in our anthrax localities, and with such favorable climatic conditions for bacterial and insect development as we possess, complete extermination of the infection cannot be looked for in the immediate future. So we must endeavor to live amongst it by rendering ourselves immune against it until such conditions arise by which we can stamp it out. Our measures must be preventive and strictly sanitary, the importance of both of which we have been trying to impress

upon our authorities and people. First of all, preventive inoculation in the hands of competent individuals; the careful and proper disposal of all anthrax carcasses, so as to limit and deprive of the source of future spread of infection, and thorough disinfection.

The question of the destruction or extermination of the horse-fly in the swampy or moist sections of our State is a monstrous one and should be taken up and thoroughly investigated by the entomologist, either State or national. But, so far as I am able to see, there are only two methods by which the problem might be solved. One is to thoroughly drain and reclaim such localities, which I expect will be accomplished some day; and the other, although rather more unlikely, is to turn on one of our now famous "oil-gushers," and destroy the flies in their watery haunts with mineral oil, as Porchinski succeeded in doing in the forest pools in Russia.

THE COMPARATIVE VIRULENCE OF THE TUBERCLE BACILLUS FROM HUMAN AND BOVINE SOURCES.—Dr. Mazyck P. Ravenel (*University of Pennsylvania Medical Bulletin*, September) sums up an exhaustive article on his experimental investigations into this subject as follows: In view of the foregoing experiments and of the evidence quoted, it seems justifiable to conclude: 1. That the tubercle bacillus from bovine sources has, in culture, fairly constant and persistent peculiarities of growth and morphology, by which it may tentatively be differentiated from that ordinarily found in man. 2. That cultures from the two sources differ markedly in pathogenic power, affording further means of differentiation, the bovine bacillus being very much more active than the human for all species of experimental animals tested, with the possible exception of swine, which are highly susceptible to both. 3. That tuberculous material from cattle and from man corresponds closely in comparative pathogenic power to pure cultures of the tubercle bacillus from the two sources for all animals tested. 4. That it is a fair assumption from the evidence at hand, and in the absence of evidence to the contrary, that the bovine tubercle bacillus has a high degree of pathogenic power for man also, which is especially manifest in the early years of life.

TUBERCULAR INVASION IN SWINE.

By B. F. Kaupp, D. V. S., Kansas City, Mo.

Read before the Missouri Valley Veterinary Medical Association at Kansas City, Mo., May 25, 1901.

About a week or ten days ago I was asked by the Secretary of the association to prepare an article on tuberculosis, but informed him I was very busy and that that was too short notice. It was left for me to make an attempt, so will only try to bring out some practical points as they have presented themselves to me in post-mortem work during the past few years. It is needless to say that tuberculosis affects every species of animal, including man, cattle, hogs, not so common in the horse, dog and sheep, frequently found in wild animals kept in confinement, whether they be meat-eating animals or not, and also found in birds and fish. It is an infectious disease produced by the bacillus tuberculosis. The disease has probably existed for ages, but not until 1882 was the microörganism producing it discovered by the noted scientist, Dr. Koch. It is a fine rod-shaped bacillus of an average length of 2-5 m. or nearly two-thirds the diameter of a red blood cell. It is easily cultivated in agar agar and other media at body temperature and is easily colored by aniline dyes. The reproduction of the bacillus is brought about by transverse segmentation; they generate spores, which have a great resisting power to destructive influences. These spores may again produce the bacillus. I will not enter into a discussion of the structure of the tubercle, as that has been gone over so often, but will confine my paper more to the modes of infection. We may see the disease manifest itself locally in the skin (lupus). It may invade the lungs (phthisis pulmonalis). In the serous membranes, as the pleura or peritoneum (pearly disease). In the intestines and adjacent lymph ganglions (tabes mesenterica), etc.

In man infection is understood to take place principally through the respiratory tract, although it may take place by ingestion of tubercular flesh and milk.

In cattle infection principally takes place through the respiratory track; the lungs and adjacent lymph glands being most often primarily affected; but it is not uncommon to find milk cows with the peritoneum and other organs of the abdominal cavity affected and find no visible lesions in the thoracic cavity.

In swine it appears to be quite different; the infection seems to be through the digestive tract. We may find it invading the lymphatics, in some instances, in all parts of the body. In others confined to the lungs and other organs of the thoracic cavity, while other times to organs of the abdominal cavity, and rarely in bone alone. I have seen two cases of tubercular arthritis, one of the carpal joint, the other of the tarsal. It has been thought by some investigators that the primary lesions of tuberculosis in swine was in the abdominal cavity, principally in the spleen and liver, with adjacent glands. It had also been noticed that in hogs where the abdominal or thoracic lesions were present the submaxillary or other lymph glands of the head were almost invariably invaded. Further investigation has shown that in the hogs of the central States the primary lesions are most always in the glands of the head, the submaxillary being the gland most often affected, very rarely the salivary glands. Of 200 cases 55 were found to be localized principally in the submaxillary lymph ganglions, no other visible lesions present; 45 per cent. were generalized, but the per cent. may vary in different herds; of those that were generalized the organs most affected were the spleen and liver and adjacent lymph glands, next the bronchial and mediastinal lymph ganglions and lungs, pleura and intestines less frequent. Occasionally there may be found a case of generalized tuberculosis affecting the principal lymph ganglions of the body.

In one case I call to mind was found the submaxillary, prepectoral, bronchial, portal, colic, ileocæcal, mesenteric and other lymph glands, with no visible lesions in the organs. While, on the other hand, there has been found lesions in the liver and spleen or lymph glands of the abdominal cavity, with no lesions in the head or thoracic cavity, and also infection in the lungs

and adjacent lymph structures with no head lesions, but these cases form a very small per cent. In some instances where there has been found abdominal lesions there was also observed upon close examination minute tubercles in the intestinal wall, some located between the mucous and muscular coat, others between the muscular and serous. Then, again, we find a peculiar condition affecting the submaxillary, bronchial, and portal glands and the liver, with no other visible lesions. We often find the pleura invaded with no lesions in the lung substance, and it has been noted that the tubercle appears to push out from the under side of the serous membrane.

This being the fact, that the lesions in the larger per cent. of the cases are primarily found in the glands of the head, what conclusion must we deduce? That infection takes place through ingestion, and that the microörganism gains entrance through the buccal mucous membrane, but how, is the question. In fact, the bacillus being non-motile has caused much time to be spent by writers in elaborating on theories as to how this end is brought about.

We know that hogs eat rough substances, such as stone, coal, glass, and I have found, besides these, nails, staples, hair and other objects in stomachs examined. These sharp and rough or pointed bodies may lacerate the buccal mucous membrane, and another thing to be taken into consideration is the teething period in young hogs, at which time there may be abraded surfaces; any catarrhal or inflammatory condition which would cause an exfoliation of epithelia or abrasion or to so weaken the cells as to make entrance possible. Again, it has been demonstrated that the bacillus, which we know to be vegetable, sometimes throws out prolongations (see Friedberger and Fröhner's "Pathology and Therapeutics of the Domestic Animals"); might not the bacillus become lodged in a fold of the buccal mucous membrane and under favorable conditions, which would be afforded in the mouth, that is, heat and moisture, etc., develop or throw out a prolongation, gradually entering between the epithelial cells as it grows, and in this way gain entrance? Again, the

theory has been advanced that the bacillus has the power of secreting a substance which weakens the cells and thus makes its entrance possible. After gaining entrance through the buccal mucous membrane, the bacillus is probably seized by a leucocyte, or at least gains entrance to the lymph vessels, which drain the mouth cavity and which empty into the ganglious of the head. The submaxillary receiving the most of the lymph from the buccal cavity would lead us to suspect them to be most often affected, which has been found to be true. The same causes which so alter the mucous membrane of the mouth as to make the entrance of the bacillus possible, may also cause such alterations in the intestines. Tuberculosis in swine appears to be of a virulent type. It is not uncommon to see shoats five or six months old in advanced stages, in some instances every organ in the body, including the pleura, invaded.

Another interesting point is the source of infection. It appears from post-mortem lesions found, that a very small per cent. become infected through the respiratory apparatus, but that infection most often occurs through the digestive tract, and apparently primarily through the buccal mucous membrane. Milk from cows having tuberculous udders is probably one of the principal sources of infection, but in tuberculous cattle we find a very small per cent. of the udders affected, but the bacillus has been found in the milk when the udder showed no visible lesions. It is the habit of feeders to allow hogs to follow the cattle for the purpose of picking up grain not digested, and in this way save feed that would otherwise be wasted. Would it not be fair to suppose that probably these cattle, if tuberculous, may have tuberculous ulcers in the digestive tract, or if of the pulmonary type, the sputa swallowed after coughing instead of expectorating, and thus pass through the digestive tract to the ground. I believe another source of infection is through swill. It is a common habit with many people to keep a slop pail in the kitchen for the purpose of throwing dish water and waste matter, which is afterwards fed to the swine. This is a convenient receptacle for persons affected with pulmonary tuberculosis

to expectorate, in which case the virulent material would be continually fed to the herd. It is hardly probable that much infection is brought about by eating tuberculous flesh. Although it is the habit in the country by some people, when an animal dies, to drag it out to the woods and let the hogs devour it; and should it be a tuberculous one, would probably be the cause of infecting many individuals of the herd. I know one instance in a city on the sea-coast which had a meat inspection system. The inspector, different from most city inspectors, had scientific training, and informed me that he found considerable tuberculosis among the cattle. Upon inquiring as to what disposition was made of the condemned carcasses, was informed that the only thing he could do was to load them up and send them to the "dump," but, says I, "you will infect the fish and get the tubercle at last by eating the fish." And from the beach they were seining fish by the bushel. I have often thought that the refuse from the large packing establishments which is drained from the slaughter-houses through the sewers to the rivers might contain some infection which would be carried to the river and possibly devoured by the fish.

THE COLORADO ANTI-DOCKING LAW has received a body blow. Last week Judge Lindsey decided that this law was unconstitutional in that it interfered with inter-State commerce by forbidding the importation of docked horses into the State. Col. J. W. Springer, President of the National Live Stock Association, was therefore fully sustained in his inter-State commerce rights to bring into Colorado horses with docked tails. It will be remembered that the suit to test the validity of the law was brought against Col. Springer in Denver in a more or less friendly spirit, but the defendant had determined to carry the matter to the United States Supreme Court had he been defeated. He contended that he was perfectly within his rights under the inter-State commerce law to bring into Colorado horses docked or undocked as he saw fit, and the court took his view of the matter. The case was ably conducted on both sides and hotly contested, the object of both parties being to get a decision that would really decide one way or another.—(*Breeder's Gazette, Sept. 11.*)

THE INFLUENCE OF ALTITUDE ON THE RESULTS OF SURGICAL OPERATIONS.

By J. A. McCrank, D.V.S., Plattsburgh, N. Y.

Read before the 11th Annual Meeting of the New York State Veterinary Medical Society, at Ithaca, Sept. 11, 1901.

Located on the shores of Lake Champlain and at same time at the base of the mountains of the Adirondack range, my field of practice is varied in altitude, and, like every other practitioner in a country district, I meet with various classes of cases. There is just one class of cases I will deal with in this paper and that is the case where surgery is the only treatment. Often on such calls I have attempted feats which I often thought I should not have attempted, but the results have afforded me material to make up this paper. Thus you will understand that this thesis is but the recorded observations of the writer, and if I were capable of arranging the reports of a few cases with the respective results in the style of an artist—or clothe my expressions with fitting explicitness, possibly this paper would be a treat.

When I first located in my present field, about ten years ago, my attention was drawn to a number of cases of "umbilical hernia" in colts from one to four years old, and scattered over the country. I was frequently asked if those cases could be operated upon successfully, for the animals were useless as they were; my reply was "Yes," if the right man undertook the work. I was very anxious to try one, but despaired of success. I did not want to fail in my first attempt and a stranger in the place and wanting to gain a foothold in the estimation of my people. I considered the venture too great. I finally undertook to operate on Mr. Arnold's colt, which was two years old. I had never seen such an operation, but read reports.) The colt was on the farm, about 10 miles from my office, and at an altitude of about 950 feet above the lake. I used the ordinary means of restraint, no anæsthetics were used, for I had no one to help me on whom I could depend, but all instruments, etc., were antiseptic; my assistants were of poorest quality, as you will soon see. When all was in readiness I made my incision, which sev-

ered all integuments, peritoneum, etc. The beast made a struggle at this moment, all my assistants scampered off and left me alone. The beast rolled on her side, a great amount of intestines gushed out and fell among the grass. It was some little time before I could right things. I washed the exposed intestines, returned them. I next scarified the edges of the umbilical opening, stitched the skin, muscles, etc., dressed the outer wound with iodoform, absorbent cotton, oiled silk, etc., then applied the strong bandage, and allowed the beast to rise. I gave orders to feed sparingly with soft feed for five days, thinking at the same time the beast would be attacked with peritonitis and possibly die after such bungling work. At the end of five days I visited the patient, removed the bandages and found a wound healed by first intention, a perfectly clean surface without a particle of pus. The beast recovered quickly and a strong smooth surface remained where at first there was a bunch as large as my two fists. Two weeks afterward I operated on two other colts on the same farm with similar success. Next colt I operated on was a filly for Dr. F. on the low lands. I used all antiseptic precautions, for I had an M. D. to assist me; I had more confidence in myself and in my assistants. At the expiration of five days I removed the dressing to find a mass of pus and the wound was not healed; on the ninth day pus was yet to be found and on the fifteenth day the wound was healed and dry—that is, free from pus. Since then I have operated several times on both low and high lands and have had the same results every time.

There is another class of cases which we meet with in our routine work and that is the case of "poll-evil" and "fistulous withers." Cases which I never wish to meet, but we must take the bitter with the sweet, and do the best we can.

About June, 1895, Mr. Lyon bought a four-year-old colt for $15. The beast never was harnessed. It was strong and large, but he had fistulous withers of two years' standing. Every quack in the country had tried his specifics or caustics. Turpentine, the skin of a frog and various other sure cures, but the beast got worse, and the owner sold it for $15. Mr. L. sent for me

when he got the horse. I did not like the looks of the case, but I must try. I cast my patient, and after exposing the diseased tissues, I found five of the dorsal spines diseased, black and porous. It was necessary to remove from one-half to one inch and a half of them, after which I washed the cavity out thoroughly, gave good drainage and let the animal arise. I now gave directions how to feed and to report to me if any unfavorable changes took place. I supplied the man with a considerable quantity of washes and came away. I will tell you in confidence that I was not at all proud of my work, for both the wound and the horse looked horrible when I was done. In eleven weeks from that date Mr. Lyon sold this young horse for a round price, $95 I believe, and he never was troubled with a sore in that region afterwards. Mr. Lyon's home is about 1000 feet above the level of the lake.

During September of 1898 Mr. Legare, of Rand Hill, about 1900 feet above the lake, brought to me a young horse with "poll-evil," and as near as I could ascertain from the history of the case it was of over a year's standing. I did not cast the beast, I got good drainage by passing two setons, gave him a large quantity of wash and sent him to his home. He did not pay me, neither did I think I merited much pay, for my success in the low lands was so poor that I thought the man would be out of pocket what he would pay me. During the next May this man drove to my office to have me operate on a calk boil, and sure here was my patient of last September sound as ever. The owner paid me well for the work, for I had heart to ask a good fee, and he informed me that the wound healed up in three weeks.

When I meet with such cases on the low lands I seldom have success the first time I operate and often I fail the second time, and sometimes I never succeed.

Many of my readers have no doubt been called upon to reduce a fracture, and when it is a fracture of a limb, sometimes, like myself, you object to operate because the beast is old, or because there are external injuries, as a bone protruding through the skin, bruises, etc.

In 1894 Mr. A. had a well-bred filly, about nine months old, which suffered a fracture of the metacarpal bone (great) about the distal third; the skin was broken and the ends of the bone protruded and were exposed to the air for hours. I was called, when I found the bone severed and exposed. I advised destruction of the filly. The owner wished me to make an effort, as he wished her for a brood mare, even if she could not be driven. I used the saw to remove the blackened ends of bone and thus make a fresh surface, stitched the wound, put the limb in plaster bandages, leaving the stitched wound uncovered; after this a second set of splints with bandages without plaster were used; those were removed at various intervals to cleanse the wound. At the end of the eighth week I removed the plaster cast to find a good union; the leg was short but almost straight, and to-day she drives fairly well. This farm is located about 1000 feet above the lake.

Buoyed up with this success I tried the next such case for Mr. H. on the low lands. I was on the ground in less than forty-five minutes after the accident, reduced the fracture and treated the case similarly, but I was often called to watch my patient being dressed, where I did not visit my first patient but once. I will just tell the story shortly. I was obliged to destroy the animal in two weeks; putrefaction got ahead of me. Since then I have attempted three cases in the mountainous country with one failure, for I had a comminuted and a compound fracture where the particles were not displaced until time ate away the periosteum, and then destruction was my final treatment. In the low lands if the skin is the least injured I have serious troubles with fractured limbs.

Some time ago while in conversation with Dr. Ransom, hospital physician at Dannemora State Prison, I related to him some of those facts. He told me that in the hospital he thought as little of amputating a leg as if it were but a finger or simple operation. He can operate on a patient to-day, and go for a fishing tour the next day. Dannemora hospital is just 1500 feet above the lake.

Now, brother members, my paper is done. It is but the record of observations of the writer, and has been hurriedly thrown together, with one object in view. There are many clever veterinarians in this land, who possibly despair of success, and think that they are failures in their chosen profession, when the locality is at fault. This paper is written so that they may take heart and plod onward and upward. Keep up with the times, for others will fail in your locality.

ANTHRAX IN HIDES.—The importation of hides of cattle into the United States will hereafter be subjected to strict inspection. The Treasury Department at Washington was informed by various consular officials that foot-and-mouth disease, anthrax and other infectious and contagious ailments prevail in various countries from which hides of one kind and another are shipped to this country and that dealers did not take pains in all cases to properly disinfect the skins. Now a consular certificate will be required by the United States Customs Department with all imports of hides, showing that they are either dry-salted, arsenic or lime-cured and thoroughly disinfected according to the sulphur formula prescribed by the Secretary of the Treasury. Exceptions will be made in the case of hides shipped from Great Britain, Norway and Sweden abattoirs, for in these three countries only cattle absolutely free from all disease may be slaughtered.—(*Breeder's Gazette.*)

TO INVESTIGATE THE TRANSMISSIBILITY OF TUBERCULOSIS.—Dr. Koch's communication to the recent Congress of Tuberculosis has resulted in the appointment of a Royal Commission in England to inquire and report with regard to tuberculosis: (1) Whether the disease in animals and man is one and the same. (2) Whether animals and man can be reciprocally infected with it. (3) Under what conditions, if at all, the transmission of the disease from animals to man takes place, and what are the circumstances favorable or unfavorable to such transmission. The commissioners are invested with full powers to call before them any witnesses whom they desire to question, to have access to all documents and inspect any places they deem expedient for their purpose, and while they are at liberty to report from time to time as they may think fit, it is the royal will and pleasure that they shall publish their full conclusions with as little delay as possible.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

"BURSATTE" (?) IN THE PHILIPPINES, WITH INTERESTING CLINICAL SYMPTOMS AND POST-MORTEM LESIONS.

By COLEMAN NOCKOLDS, 1st Class Vet., 1st U. S. Cavalry, Batangas, P. I.

An extra large sized mule attached to the 1st Cavalry wagon train was placed upon sick report on May 20, 1901, because of some spongy reddish looking growths which appeared upon various portions of the body. Through the courtesy of Dr. Root, depot veterinarian, the mule was placed in his sick corral, and remained there all through the various kinds of treatments which the doctor was kind enough to assist in carrying out. The location and size of some of the more prominent growths were as follows: One, elliptical in shape, with a circumference of about 18 centimeters, was situated on the external part of the superior portion of the canon of the fore member; one, circular in shape, with a circumference of about 11 centimeters, was situated on the off temple; one of the same size and shape upon the extremity of the nose; one large irregular shaped mass, measuring at its broadest part 10 centimeters, filled in anterior part of the tibio-tarsal angle. Besides these there were several of smaller dimensions in other portions of the trunk and limbs. With the exception of a considerable swelling of the anterior of the carpal joint and the above mentioned manifestations, the mule was apparently in good health. Appetite unimpaired, and pulse, respirations and temperature normal, but always inclined to be sleepy, and increased in weight from the time of admittance into the corral. The general symptoms very much simulated a condition known in India as "bursatte," and which is not uncommon out here.

Various methods were used to get rid of these peculiar neoformations, both medicinal and surgical.

At first arsenic was given internally and nitric acid, alternated with chromic acid, externally. Later, mercuric chloride internally, alternated with potassium iodide. The growths were removed with the knife, curreted and cauterized in some instances with the actual cautery, others with solutions of nitrate of silver or formaldehyde, but within a day or two of the re-

moval of these turbulent sores they would reappear like a blood-red fungus. On more than one occasion the skin of the ailing mule was abraded either during casting or by a nail or other foreign body, and within a few hours a mushroom-like growth would appear at the seat of injury. Finally, after exhausting all available resources with no beneficial results, the mule was destroyed on August 12, 1901.

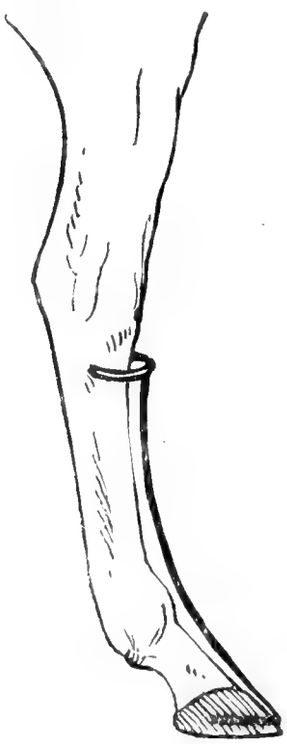
Post-mortem.—Six-year-old gelding mule, weight 1200 pounds, very fat (no doubt partially due to a fatty metamorphosis resulting from imperfect oxidation of tissues); external appearance, with the exception of above mentioned lesions, healthy. In removing the skin the swelling at the knee was accidently punctured and a fluid resembling synovia, but darker, gushed out; the opening was made larger and about a double handful of various shaped bodies were removed, ranging in size from a small pea to a hazel-nut, of a pinkish red color, and mostly filled with fluid, all distinctly separate, the whole being enclosed in one large fibrous sac, which was prematurely punctured during skinning. Each external ulcer when removed with the integument left a cavity, which contained more or less cysts of various dimensions, which resembled very closely the pulp contained in a pomegranate. In various locations in the fascia of the subcutaneous muscles were found cavities containing these cysts, the muscle surrounding them showing evidence of localized inflammation. Beside the muscles and the carpal joint, the lungs and pancreas were the only other portions of the body that showed evidence of disease. Both lungs were very much enlarged, weighing 50 pounds; they were normal in color except for a slightly mottled appearance of a pale yellowish hue. In passing the hand over the outside of the lung it felt as if the organ were filled with shot of various sizes. Upon section a large number of calcareous bodies peeled out; there were many cavities containing fluid and caseous material, and no doubt portions of parasites which were not visible upon a microscopical examination. All lobes of the lungs were affected; the bronchial lymphatics were slightly enlarged, but the bronchial tubes, trachea and lining of the nasal cavities were normal. Wherever these cysts appeared there were signs of the results of inflammation, formation of white fibrous tissues, and myxomatous changes. The cyst formations in the pancreas varied in size from a pea to an orange, and in appearance the tissues did not differ from that of the lungs in any of the essentials.

ACCIDENTAL TENOTOMY, WITH LACERATION OF THE SUSPENSORY LIGAMENT AS A COMPLICATION.

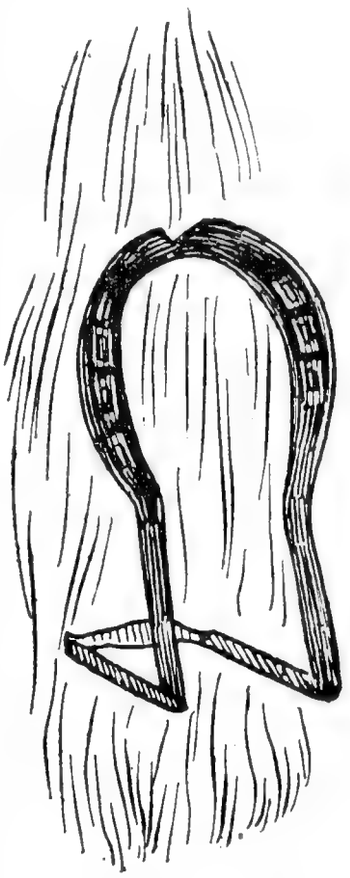
By ROBERT W. ELLIS, D.V.S., New York.

On November 16th, 1900, about 4 P. M., I was called to see a high-lifed, trotting-bred, bay "cob" mare, eight years old, on the street, supposed by the police officers and onlookers to have sustained a fracture. I found upon manipulation of the region of the pastern of the off hind leg, which was bearing no weight, that there was no resistance when the toe was raised forward and upward; and upon causing the animal to place weight upon the limb, the point of the fetlock descended to the ground and the toe of the foot pointed toward the abdomen. A diagnosis of laceration of the suspensory ligament was given, and a guarded although not hopeless prognosis. The history of the case was simply that the mare had become frightened at a combination of noises, caused by a heavy truck going rapidly over the paving stones and electric cars passing, while standing up to the curb, attached to a "runabout," the owner and driver, a lady, being in the carriage, holding the reins, accompanied by a man-servant, who was not a horseman. The mare suddenly whirled around short, and before the lady could get control of her, turned the carriage partly over, throwing its occupants upon the street. The mare ran about two blocks, over a sort of triangular course, coming almost to a halt at the end of the first block, by being confronted by a fence; she turned and ran about a block in another direction, and was caught, being thrown in the catching, and was held down until freed from the harness and wagon by the bystanders. At no time during her attempt to get away did she manage to get up any amount of speed, the distances being too short. So that there was nothing in the history to account for so extensive an injury to the suspensory as existed, the mare being in good condition, and in harness every day. "The knife" was evidently used freely in liberating her, judging from the condition of the harness. Among other things, one of the stout traces was severed by a sharp blade. On recognizing the mare's condition, a roll of absorbent cotton was placed about the leg, and a temporary suspensory bandage placed firmly over it, and the mare led slowly to a stable six blocks distant, when a long starch bandage was placed over the absorbent cotton, and the mare allowed to lie down, it being thought inadvisable to "sling" her, in her nervous condition. The next day she was placed in slings, and the bandages and cotton re-

moved preparatory to redressing, and a careful examination of the parts made. This examination revealed the presence upon the inside of the leg, right back of the metatarsus, and between its middle and lower third, of a clean incision about an inch in length in the skin over the tendons; and on passing the finger into this incision, I came upon the perforans tendon cleanly cut through, and the perforatus nicked on its outer edge, but not cut through. I placed my free hand upon the opposite side of the leg, and passed my finger beyond the ends of the cut tendon, and I could feel it through the uninjured skin on the opposite side. After this second examination, I amended my diagnosis, to "Accidental Tenotomy of the Flexor Pedis Perforans, with Laceration of the Suspensory Ligament as a Complication," and reasoned, that the owner of the sharp blade, who had severed that stout trace with so clean a cut, had performed the "tenotomy" with the same stroke. Bearing heavily upon his knife, to cut the trace, he could not stop its impetus in time (after it passed through the leather) to prevent plunging it into the mare's leg. Entering as it did, between the two tendons (nicking the posterior one as it entered), the mare had suddenly straightened out her leg on feeling the prick from the knife, tightened the tendons upon the blade (situated crosswise between them, held firm in the man's hand, as he regained his balance, preparatory to withdrawing it as quickly as it had entered), and severed the one in relation to the cutting edge, the perforans. The mare then sprang to her feet and lacerated the suspensory ligament in using the leg with the tendon already severed, to regain the standing position, unconscious of the fact that the tendon was divided. Hence, undue strain was thrown upon the suspensory ligament, lacerating its fibres.



A steel brace, of the following pattern, was now placed upon the limb. The portion of the brace, represented by a band going around the front of the hoof, has three holes to receive screws, to screw it to the hoof, one in the centre, and one on each end. The leg was first dressed and bandaged, then other bandages, over the brace, binding the leg to it, and bringing the ends of the divided tendon in perfect apposition. These dressings were renewed every second or third day, and the brace kept in place for sixteen days, the mare remaining in the slings.



At the end of that time the brace was removed, and the following illustrated shoe applied. Five days after the application of this shoe she was removed from the slings and placed in a box-stall, bedded with saw-dust, to avoid tripping. The wounds were now entirely healed and the tendon united, but there persisted a very loose movement of the foot, below the pastern. It would be thrown, rather than placed forward, in very much the same manner that a man uses an artificial foot or limb. Stimulating liniment was now applied once or twice daily, and the leg snugly reinforced by an oakum bandage-boot, for nineteen days, at the expiration of which time, she was sent per ambulance to a model stock-farm at Glen Head, L. I. Having preceded her by rail, I was at the farm to see her arrive in good condition, and eight days later I visited her again at the farm, modified the elevated shoe, and blistered the region of the injury, and extending over the pastern joint, with the object of restoring, if possible, the function of the parts. This was repeated twenty-six days later; and six weeks later I again visited her, and ordered the daily application of liniment and a suspensory bandage returned to as before the blistering. The control of the foot was regained, slowly, but perceptibly, so that some time in May (probably five months after the accident), on visiting the farm I had her hitched to a cart and drove her and was pleased to find her going absolutely sound (the owner having applied the same test and arrived at the same conclusion about a week previously), and she has continued to do so to the present day, with no reason for doubting an indefinite continuance. In other words, the mare is as sound as before the accident, and is one of those pretty "actors" that one turns to look at so that any deviation of gait would be very noticeable. The conformation of the leg is slightly changed, measuring slightly more from the front of the metatarso-phalangeal articulation to the back of the sesamoid region than the other leg. Not noticeable, however, to the casual observer. The very novel source of this accident, as I feel sure it must have occurred, there being an uninterrupted union of the tendon ends, with no sloughing of tissue, which could only take place in an incised wound

(and no other object than a sharp knife could enter a small, clean apperture in the skin from one side of the leg, and cleanly incise a large tendon like the perforans), and the ultimate recovery of the lost functions of the part, the peculiar sequel to the injury, *i. e.*, the loose swinging and uncontrol of the foot below the pastern, have prompted me to report this case. The first, because it *is* novel, and the second, because it teaches us to hold on, and not be discouraged, if we have obtained in an accident of this nature union of the parts and have this sequel of apparent partial paralysis, persistent for weeks and even months.

OBSTRUCTION OF THE INTESTINES OF A HORSE DUE TO THE PRESENCE OF A LARGE HAIR-BALL.

By F. M. PENISTON, D. V. S., Bellemonte, Smith's Parish, Bermuda.

I was called to see a bay mare, about 14.3 hands high, weighing about 800 lbs., 12 to 13 years old, having been owned by the present owner over three years, and had never been sick except on two occasions previous to this. She had become quite thin, or run down, for a short time, but not showing any signs of ill health. I was called on Aug. 30th, and the history as above was given as to her having lost flesh two different times before, as she had done the last month or so. She had slight colicy pains, and had passed no manure during the night. I emptied the rectum, and the fæces were quite hard. I gave her an ordinary colic drench and left two doses in case she had a return of pain through the night. I advised a bran mash that night and another in the morning, and a wine bottle of raw linseed oil. I heard nothing from them until the next day about 5 P. M., and was asked to call and see her. I found her about the same—a little colicy pain occasionally, and eating between the spells as if nothing was wrong. Pulse full and regular, temperature normal, and countenance good. I then gave about one and two-thirds bottles of raw oil, as they had not given all I told them to. The pains were not bad enough or long enough to give an anodyne. On the phone next morning the report was about the same. I waited until 26 hours or so and called, and found her just the same (a little pain sometimes and eating green grass between whiles). I had her exercised and gave soapsud injections; but nothing passed; so I gave another bottle of linseed oil and ten drops of croton oil. On the phone next morning was told she passed the night just the same. Did not have to give drench to stop pain. I had the injections continued through the day, and

called about 26 hours later and gave exercise and injections, with no result. I then gave aloes gum, ℥i; calumet, ℥i: ginger, ℥i. I then told the owner (Mr. J. I .Wilkinson) that she had an obstruction in the form of a hair-ball at the entrance of the rectum or posterior extremity of the colon, and based my diagnosis on a case I had once before that lived on like this for nine days. On the phone next morning they reported the mare better; bowels had begun to move, and there was no pain. I called as soon as possible to see the result of my treatment, and to my surprise had only had one very small discharge, which was as thin as could be. I kept her very quiet, gave hardly any water, fed on dry oats and hay, and left word to be rung up in a short time, when they said nothing more had passed. However, at night she had had another similar discharge, and through the night only one, and the bowels continued to move like this for three days (about two through the day and one through the night). This kept up for four days, when it stopped, and she was again just the same as when first taken. Pain about every half hour for two or three minutes, then she would eat a little grass, etc. I still held out that a hair-ball was obstructing the gut, but could not understand how it could move for a short time (or four days) and then obstruct again, or if, like the one I saw before this, how could anything trickle around it. However, Mr. Wilkinson said he thought something of the kind must be the case, and as I held out no hope for her, decided to let her take her chances. I begged to be kept posted about her symptoms, etc., and on the sixteenth day, or September 15th, I dropped in to see how she was doing, not hearing anything more. I found another veterinary surgeon had been called to give an opinion, and diagnosed typhoid. However, while there she died, and a harder death I never saw. I think she must have taken at least fifteen minutes, and her struggles and countenance were distressing. This being on Sunday, and having on my Sunday best, I lost no time getting sufficient necessaries for the afternoon. The ball which I send you was lodged, as I said before, at the posterior extremity of the colon, and the largest groove or fissure was presented at the rectum, which allowed the fæces, when very soft, to trickle into the rectum. I felt pleased with the post-mortem.

[NOTE.—The hair-ball (ægagropilus) received measures twenty inches in circumference and weighed when removed from the animal three pounds and ten ounces.—EDITOR.]

CHRONIC GASTRITIS.*

By Dr. CHAS. J. POLLARD, Princeton, Ky.

Chronic gastritis is a condition of the stomach almost daily met with in this country in a more or less well developed form, and to successfully treat these cases as they come to us is a goal we all desire to reach.

This disease is almost invariably associated with more or less indigestion manifested by many protein symptoms and accompanied by more or less active vomiting of the ingested materials.

The gastric secretions are almost without exception abnormal, many fermentative changes taking place in stomach contents, thus necessitating lavage more or less frequently for its relief.

The report and treatment of the following case, while not strictly in accord with true homœopathic prescribing, perhaps, was so prompt in effect and has proven so lasting in results that I shall be willing to shoulder any censure that may be heaped upon me.

On May 21, 1900, Mr. H. came to me from an adjoining county and applied for treatment, having been through the hands of two old school physicians in the last four years.

His age, 57; average build, lean, languid, dull, expressionless eyes, coated tongue, dirty, sallow-colored skin; gave history of indigestion for last four years, characterized by eructations of sour materials, pain after eating, nervous depression, sleepless nights, constipation alternating with occasional attacks of diarrhœa, vomiting, not marked, loss of flesh, weak pulse, flabby muscles; in fact, a typical case of gastric catarrh in its chronic form.

From the history of treatment and the many symptoms pointing to the drug, I prescribed nux vomica and diluted muriatic acid after meals, believing the digestive fluids deficient in quantity. The patient reported some improvement in two weeks, his medicine was repeated, and he was cautioned about diet, as formerly.

He reported again on the 21st of June, 1900, and gave history of an attack of rheumatism one week before, but still improving slowly of his stomach trouble.

In the meantime I had been studying this case arduously; I read of a case having been successfully treated with hydrozone

* Read before the Meeting of Kentucky State Homœopathic Medical Society, May 29, 30, 1901.

and glycozone, then I concluded to use these as adjuvants when patient returned.

Owing to impossibility of regular lavage, I furnished patient with two ounces of hydrozone and directed him to add one ounce to a quart of sterilized water and take half a tumblerful half an hour before meals.

This, you will perceive, would procure a clean surface for the oncoming meal, though for the first few days it produced some discomfort, he said, from accumulation of gas.

Immediately after meals he was ordered to take a teaspoonful of glycozone in a wineglassful of water and three grains of nux vomica.

The next report was the 16th of July, when the improvement was very marked in his general appearance; patient was then able to eat without any dread of pain or discomfort.

Prescription was repeated, and by August 1st all signs of any lesion of stomach had disappeared. Patient claimed to be well for the first time in four and one-half years.

Treatment was discontinued, of course. I saw this patient recently and he had practically no tronble since last August.

Dr. Finlay Ellingwood, in his excellent "Materia Medica," says glycozone is one of the best manufactured products of the present time in its action upon enfeebled disordered stomachs, especially if there is ulceration or catarrhal gastritis.

It is a most efficient preparation and I shall use it freely in the future.

DEPARTMENT OF SURGERY.

By L. A. and E. Merillat,

Chicago Veterinary College, 2537–39 State Street, Chicago, Ill.

SURGERY OF THE EYE, EAR AND UPPER AIR PASSAGES.

(*Continued.*)

Subconjunctival Injections have been in use for some time, and can by no means be considered anything new or novel; they have been employed in many instances by practitioners as a last resort, and to the surprise of all concerned have proven beneficial. It is a procedure, however, that should not be employed promiscuously and without aseptic precautions.

Before resorting to such treatment of ophthalmic diseases, we must consider its indication, and determine to a degree of certainty the practicability of such measures. Good results

have been obtained from the use of subconjunctival injections of normal salt solutions in the treatment of chronic inflammatory diseases of the coats of the eyeball; they give very satisfactory results in iritis, irido-eyelitis, corneitis or scleritis, although not indicated in the acute state; but, when the condition becomes chronic the injection of a physiological salt solution will often have a good effect upon the disease. The exact manner in which the good results are produced is not known to a certainty, but in our opinion the salt solution injected into the tissue stimulates the lymph spaces and lymph-channels, and in this way increases absorption of the oversupply of lymph in it. The presence of salt solution in tissues does not add anything to them in the way of nutrition, but the cells, intercellular substance and fibres of a tissue bathed by the solution are stimulated to activity, and in this manner allows them to perform their normal function.

The change following a subconjunctival injection might also be the result of prevented hypernutrition; that is, by reducing the amount of nutritious elements carried to the part involved, the lymphatics are enabled to remove foreign substances contained in the tissue in much less time than would be required otherwise, and in this way the pathological conditions soon would become less intense and the absorbing system allowed to perform its normal function. We therefore notice two ways by which we can account for the beneficial results following such injections, 1st, by increased activity of the lymphatics, and, 2d, by a reduction of nutrition carried to the part involved. To tell which of these two is correct is impossible, and, in fact, of but little importance; what is most valuable to us is the result, not the manner in which nature accomplishes its purpose.

Such injections should never be used in acute conditions, for in such instances the lymph-radicles are already over-stimulated or over-taxed by an increased amount of substances in the interstitial spaces of the tissue involved. The proper course to adopt in acute cases of this nature is to reduce or prevent the development of the inflammatory intensity by external applications; and, when this is accomplished, and the tissues that were involved remain abnormal by hypernutrition, or subnormal activity of the absorbing system, they may then be stimulated by these injections. Some of the indications for subconjunctival injections of *normal salt* and antiseptic *solution* are the following chronic conditions:

1. Scleritis.
2. Choroiditis.
3. Corneal ulcers.
4. Corneal opacity.
5. Iritis.
6. Cyclitis.
7. Irido-eyelitis.

1. SCLERITIS.—The indications for subconjunctival injections in diseases of the sclera are not very numerous; in fact they should not be employed unless the pathological condition encroaches upon the cornea, or when there is danger of a subsequent development of acute scleritis.

If in the infiltration of the sclera, the process is likely to extend to the cornea by passing through the sclero-corneal margin the lymphatic spaces and channels may be stimulated by physiological salt injections. The solution used for this purpose must be well sterilized and filtered. The needle is passed under the conjunctiva into the connective tissue that unites it to the sclera or the external layer of the sclera, near the sclero-corneal margin (*2-3mm. from cornea*), and 2-5 minims of the solution injected in each quadrant of the corneal periphera affected. These injections can be repeated every day or every other day, and continued until the lymphatics have regained their normal activity. The object of the injection is only to assist and excite the physiological function of the lymphatics, and when they are aroused to activity, the injections must be discontinued, in order to give nature an opportunity to remove the abnormal interstitial substance which produces the disturbance.

2. CHOROIDITIS.—Two forms of choroiditis are noticed, viz., (*a*) Exudative; and (*b*) Suppurative.

(*a*) *Exudative choroiditis* is not a common disease in domestic animals, but however is recognized occasionally in anæmic patients. The morbid anatomy of the condition is as follows: The vessels are engorged and surrounded by large cells; the spaces between them contain fibrin and hyalin; proliferation of pigment cells. The exudate may change the relation of some of the layers of the retina, and in the last stage the choroid becomes fibrous as a result of atrophy.

Diagnosis.—It is always very difficult to diagnose choroiditis, for in most cases the retina is involved, and it is generally very difficult to determine whether the exudate is from the choroid or retina, even when assisted by the opthalmoscope. We must have a good history of the case, take into considera-

tion the constitutional condition of the patient and the condition of the sight. In cases of long standing the choroid coat is atrophied and the vitreous humor becomes opaque, but in the early stage we can detect nothing except enlarged blood-vessels with but a slightly impaired sight. The condition is more easily detected in human patients than in animals; slight visual defects are not easily detected in animals.

(*b*) *Suppurative choroiditis* is a condition, suppurative in nature, which sometimes extends to the ciliary body and iris. The cause of the condition is usually due to injuries, such as penetrating wounds, or ulcers of the cornea which extend inward (*metastatic choroiditis.*) The condition may also result from some focus of inflammation which may get some of its septic product into the circulation and cause a septic embolus, which will often produce a secondary infection (*endogenous infection*).

The *symptoms* are more alarming than those of the exudative form, and are not confined to the choroidal condition. The eyelids become swollen, the intraorbital tissues become infiltrated with septic products, which change them to such an extent that the eyeball can scarcely be moved. In this form of choroiditis the use of salt solution is not indicated, and it is useless to attempt anything but evisceration or enucleation. In the exudative form, however, subconjunctival injections have been used in human practice with very good results. The injection should extend a little deeper than when the sclera is involved. The quantity used is about the same as already mentioned. If there is any danger of the exudative condition becoming suppurative, bichloride of mercury solution may be employed instead of salt solution. The strength of the bichloride solution may vary from 1:2000 to 1:4000 or even less.

3. Corneal Ulcers and Corneitis.—The course and termination of corneal ulcers have already been mentioned. *Suppurative keratitis* is always due to the presence of septic organisms, which are generally introduced from without; therefore, the injuries and wounds of the cornea must be promptly treated by disinfection with weak bichloride or formalin solutions. Aseptic solutions, such as sterilized water or normal salt solution, may be used to clean corneal injuries or wounds. Wounds in a normal cornea always heal very readily, if not infected; and for this reason, early attention is a precaution which will often prevent suppurative corneal complications.

The Treatment of these corneal conditions should be aseptic precaution, to prevent extension of disease; and antiseptic,

to enable the ulcers to heal; when the condition involves the deeper structures and the activity of the lymphatics is dormant or sluggish, as in the asthenic form of keratitis, the use of subconjunctival injections of either antiseptic fluids or normal salt solution is indicated and should be administered in the same small doses as already mentioned.

4. IRITIS.—The origin of the cause of iritis may be local or constitutional. Among the most common causes of local injuries are penetrating wounds and foreign bodies in the cornea or ciliary zone; to this we may add metastatic iritis from keratitis, scleritis, eyelitis or choroiditis. The constitutional causes are rheumatism, tuberculosis, epizoötic influenza, pyæmia, and gonorrhœa. Rheumatism is a shield which veterinarians have used in making diagnoses when the cause is obscure; and for this reason we do not like to give this as a cause of any disease. There is no doubt that domestic animals are susceptible to rheumatism, but when the practitioner shelters his diagnoses in the dark and "shady" nooks of such an obscure condition as rheumatism as the cause of iritis, lameness, endocarditis, etc., he often finds it a difficult task to convince other "up-to-date" and progressive veterinarians that his etiology and even his diagnosis are correct. *This* cause (*rheumatism*) for unexplained conditions has been employed to such an extent that it has fallen into disrepute, and most invariably when the veterinarian says that *rheumatism* is the cause of any particular condition, the average driver, coachman or barn-boss will say: "*Ah! he don't know what is the cause of the trouble*—he said it was *rheumatism.*"

The most common causes of iritis in domestic animals are traumatisms, and the common symptoms are sluggish pupil, congested conjunctiva, paralysis of ciliary muscles (*cycloplegia*), paralysis of sphincter of pupil which causes a dilatation of pupil (*corodiastasis*), and in cases of long standing the pupil may become closed (*corodisis*).

Treatment.—If the condition is due to some constitutional disorder that should be improved, but our entire attention should not be directed to that alone; the condition of the eye must not be neglected and probably the most important part of the treatment is to prevent adhesions of the iris. The treatment must not be confined to subconjunctival injections; the use of such injection in the course of treatment is only to prevent infection; if there is any danger of infection, or to increase absorption, nothing more can be expected from the procedure, and the regular

treatment indicated in each case must be followed up carefully.

6. IRIDO-EYELITIS AND EYELITIS.—Both of these are generally only secondary conditions following iritis or choroiditis; some cases, however, are of a traumatic origin resulting from wounds or foreign bodies in the ciliary region. The use of subconjunctival injections in either of the above mentioned diseases is to increase absorption, and by accomplishing this the exudates which usually accompany the disease are lessened, and the danger of adhesions diminished; but the procedure, without other measures, is not sufficient to effect a cure.

SURGICAL ITEMS.

Domestic Animal Dentistry.—The practice of veterinary dentistry is so extremely distasteful to the college professor and better class of veterinary practitioners that the dental operations are usually consigned to the student, the assistant surgeon, the stableman, the horseshoer or the non-graduate veterinary dentist. The apathy and antipathy of the well-to-do practitioner and teacher of surgery toward the art of domestic animal dentistry dates from the earliest history of veterinary science and at this time, the beginning of the twentieth century, it may still be truthfully referred to as a neglected branch of veterinary surgery. The best and most elaborate text-books on veterinary surgery, foreign and domestic, cover the entire subject in a few pages, while the teacher of surgery in the various schools where strenuous efforts are made to augment the skill of students in other departures, frequently dismiss dentistry with only a brief mention of the more complicated operations allied thereto. A methodical effort to develop the skill and dexterity upon which successful dentistry so largely depends is seldom undertaken in our colleges, and is still less frequently acquired after graduation. In this, as in other departments of surgery, we are fostering an enthusiasm for difficult operations which bring only nominal results and entirely neglect simple, popular procedures which are almost universally satisfactory to our *clientèle.* The reason is obvious. Veterinary dentistry, especially horse dentistry, is laborious, difficult and even dangerous until a certain degree of skill has been attained, which facts are responsible for the inclination to slight the work or else willingly consign it to others as both undignified and unimportant. We have all seen our learned professors roll their sleeve to cope with a putrid fistula of the withers or a fœtid uterus, but rarely have we seen them undertake to demonstrate the proper use of dental instruments.

This is not remarkable, as only a few years ago human dentistry was performed by the watchmaker, locksmith and the barber. The human surgeon of the seventies usually referred his patients suffering from an aching tooth to these mechanics, without even a thought that within one short generation the art of dentistry would develop into such an enviable and useful special profession. We do not predict that domestic animal dentistry will proportionately develop to the point of becoming a special profession, but we do predict that our *clientèle* will eventually, if they do not already, recognize that dental operations even of the simplest kind demand the keen judgment and skill of the trained veterinarian. Dentistry is the art of mechanically repairing or improving the mechanism of mastication, especially the teeth. Human dentistry owes its existence to a *bio-chemic disease*(caries), from which few mature individuals escape. The human dentist is thus engaged chiefly in combating and repairing the results of the diseased process, by cleansing and filling cavities with metallic substances and by supplying artificial organs when the natural ones are diseased beyond repair. It may be truthfully said that among the civilized races *all* mature subjects suffer more or less from this disease, which in the early history of dentistry was treated by ablation of the offending organ, but which, it has subsequently been shown, can be treated in such a manner as to make it serve its useful purpose indefinitely. In the domesticated mammals this same disease does not exist to any appreciable extent, if at all, but these animals, especially herbivora, suffer from a *physical defect* (lateral enamel projections) of equal frequency. No student of zoölogy will doubt that the domesticated herbivorous mammal suffers from frightful physical deformities which are eminently inimical to their general health and usefulness. The veterinarian is thus chiefly engaged in correcting these deformities by cutting and floating precisely and to the same extent as the human is engaged in filling the cavities of caries dentium or replacing the organ entirely. The other physical defects and diseases of teeth besides the *caries of human teeth* and the *lateral projections of herbivorous teeth*, though often of eminent importance, demand a very small share of the dentist's attention, because they are relatively rare. The porcine, ovine and even bovine species do not require the same regular attention as the domestic horse, on account of different occupation and their short life. It is only here and there that these genera are permitted to live beyond the period of maturity, except for breeding purposes, in which

case dental attention should be given them. In the canine and feline species the anatomical constitution of the dental organs precludes projecting deformities and the short life prevents caries, so here again the veterinarian meets only an occasional condition demanding attention. It is therefore evident that domestic animal dentistry naturally centres upon the horse, whose commercial value depends almost entirely upon his general health and utility, which is impossible without a normal mechanism of mastication. That mastication and insalivation are two of the most essential digestive processes in herbivora, and of more relative importance than in man, is apparent to all students of physiology and pathology. Coarse amylaceous food of herbivora requires perfect comminution and incorporation with the salivary secretions in order to assure perfect gastric digestion, while the artificially prepared, cooked and seasoned food of man may without serious detriment be passed directly to the stomach with but little mastication. The same may be said of the canine, feline and porcine genera, all of which consume their food without even a semblance of persistent mastication. Then, again, the mouths of these animals are used only for mastication, while in the horse it is utilized for driving. The manner in which a horse accepts the bit is a prime factor in his value. That dental irregularities that wound or even irritate the buccal surface is frequently the cause of making a miserable driver out of an otherwise complacent one is a matter of common observation. A horse that has a "poor mouth," as it is generally expressed, one that will not "go against" the bit, a "side-reiner," or one that protrudes the tongue or slobbers persistently, is frequently improved if not entirely cured by removing the defects which produce these conditions. The human dentist has three objects in view, namely: (1) *To relieve pain;* (2) *to improve mastication* and *general health;* and (3) *to preserve the features of the face.* The aims of veterinary dentistry are:- (1) *To improve mastication*, especially of the horse, and by removing either congenital or acquired abnormalities which wound the buccal surface, produce pain or prevent perfect apposition of the dental arcades; (2) *to treat the secondary conditions* emanating from dental diseases and abnormalities; (3) *to correct driving defects of horses* produced by irregularities which wound or irritate the buccal surfaces; (4) *to improve the appearance of the incisor teeth* so as to make an apparent difference in the age of horses; (5) *to relieve pain* by extracting diseased teeth of all domestic animals; (6) *to remove tumors* of the jaws, teeth or nasal fossæ,

of the horse and ox; (7) *to treat traumata of the jaws and buccal surfaces* from all causes; and (8) *to correct faulty eruption* of the permanent and temporary dentures. A circumspect review of this brief summary will readily reveal the wide sphere of usefulness as well as the importance of veterinary dentistry, so forcibly as to leave no room for negative propositions.—(*L. A. M.*)

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D.V.S., Bureau of Animal Industry, Milwaukee, Wis.

SARCOMA IN A HORSE—DEATH FROM A SARCOMA OF THE CEREBRUM [*Ebertz*].—A mare, 16 years old, showed a tumor on the right side of the neck, in the region of the joint of the third and fourth cervical vertebræ. The growth was of the size of a chestnut, which on palpation proved to be smooth, solid, painless, and firmly grown to the surrounding tissue. The tumor for a long time has shown no tendency to grow, which period was followed by an inclination to an enlargement, so that a diagnosis of a "malignant tumor, probably a sarcoma," was established. Its extirpation was decided upon, and after overcoming considerable difficulties a tumor of the size of a double fist was removed. The new formation on histological examination proved to be a round-cell sarcoma of small cells, showing also the beginning of fatty degeneration. Although the operation wound appeared to take a normal course, a grave prognosis was given, considering the malignant tumor and their great tendency for metastatic formations. Three weeks after the operation the horse was suddenly attacked by dizziness and fell down, distorting the eyes, and remained quiet for a few minutes. After a short time the horse got up without assistance. This attack came on repeatedly at intervals of one to several days, on which a diagnosis of a sarcoma in the cranial cavity, probably in the cerebellum, was based. After a time these attacks of dizziness almost ceased; on the other hand the animal developed a complete stiff gait in the hind legs, carrying the legs wide apart, and at this time at the place of operation a tumor of the size of a nut made its appearance. One day the horse suddenly died. Autopsy: A tumor-like degeneration of

the right kidney, weighing about 14 kilograms, destruction of the right ureter by the new formation, compensation hypertrophy of the left kidney, metastatic formations of the kidney tumor in the spleen, between this and the liver, and also around the rectum. In the great longitudinal fissure of the two hemispheres of the brain laid a humpy grayish red tumor of the size of an apple, which started from the plexus of the vessels, destroying this entirely; the brain substance surrounding the tumor showed an encephalo-malacia flava, the right lateral ventricle is vanished, while the left is dilated to a considerable extent, the convolutions flattened and the brain substance moist; the heart was greatly hypertrophied. The diagnosis of a round-cell sarcoma was confirmed by the pathological institution of Berlin. The sarcoma of the kidney must be considered as the primary growth, and for this speaks the size of the growth, the manner of spreading from this, the strong compensation hypertrophy of the left kidney, the great hypertrophy of the heart, which is the consequence of a diseased condition of kidneys of long standing. It is very peculiar that in spite of the severe alterations of the brain, the horse manifested very slight symptoms to indicate the cerebral changes.—(*Ztschr. f. Veterinärkunde.*)

Filaria Papillosa in the Anterior Chamber of the Eye [*A. Vethy*].—In the anterior eye chamber of a horse, which showed some photophobia, lachrymation and diffused cloudiness of the cornea, a 7 cm. long filaria was noticeable. After a foregoing antiphlogistic treatment the filaria was removed in the following way from the cast horse: After a careful cleansing and disinfection with a 3 per cent. boracic acid solution, atropin was dropped into the eye and the cornea anæsthetized with cocaine, then the eyelids were kept apart with the aid of Desmarre's spoons, the bulbus fixed with a Weber's pincette, and, after an incision was made in the cornea about 3 mm. from the corneal border, the parasite was removed with an iris pincette. Complete recovery followed in 14 days, with the use of a compressive bandage.—(*Veterinarius.*)

Anthrax with a Diminishing in Size of the Spleen [*T. Hajnal*].—A cow, which suddenly died, showed, besides tubercular lesions, a tarry condition of the blood and hæmorrhages in the subcutaneal connective tissue. The spleen was markedly diminished in size, its capsule wrinkled, and on section the pulpa proved to be soft, almost liquid. The microscopic examination of the blood revealed anthrax bacilli.—(*Veterinarius.*)

THE TREATMENT OF PURPURA HÆMORRHAGICA (ANASARCA, PETECHIAL FEVER) [*Mainet*].—With the exception of primary purpura hæmorrhagica, which is very rare, this ailment always has a microbian, not specific cause, of which the effects are due to a conversion of vasadilatoric toxins into the circulatory apparatus. In the course of treatment it is essential to destroy the germs, to neutralize their secretory products or to annihilate them and to encounter the dilatation of the capillary vessels. The treatment therefore aims at general and local antisepsis and a contraction of the vessels. The medicines can be applied by os, by subcutaneous, tracheal, or intravenous injections; also good results can be obtained by serotheraphy. Saline purgatives and diuretics will eliminate the toxic principles, purifying the blood and prevent hæmorrhages, as the ammonia salts, potassium nitrate, alcohol, coffee, turpentine. Further antiseptics, as creolin, creosote, boracic acid, naphtalin, one-half per cent. carbolic acid solution, natr. salicyl., salol., etc. Subcutanously can be applied 200 gm. of a 1 per cent. salicyl. acid solution, or a solution of 1 part iodine, 2 parts iodide of potass. and 100 parts distilled water. The last solution, also carbolic acid, creosote and thymol preparate, were also applied by intratracheal injections, but this method is not recommended, as pneumonia may result from the foreign body, with its bad consequences. The intravenous treatment is to be used with the greatest care; by this way the argentum colloidale Crédé can be injected in a dose of 0.50: 50 gm. of water; also Cheron's serum, of which the formula is: natrium sulph., 8 gm., natrium phosph., 4 gm., natr. hydrochlor., 2 gm., aqua distill., 200 gm., acid. carb. pur., 1 gm. The serotherapy can be practiced with natural or artificial serum, normal serum of the horse, daily 100 gm.; still better, Marmorek's or Deny's antistreptococcic serum in doses of 30 cm. 3 daily for 3 to 4 days. As artificial serum a 7.1000 solution of natr. hydrochloric, can be used or Menveur's serum (natr. hydrochl., 5 gm., natr. phosph., 1 gm., natr. carbon, 1 gm., caffein hydrochlor., 10 gm., and filtrated boiled water 100 gm.) three times a day. The local antisepsis consists of opening the abscesses, nasal injections of antiseptics, inhalations of antiseptic fumes, etc. High fever requires antifebrin, antipyrin, quinine, etc. The symptomatic treatment consists of cold douches to the head, rubbing of the œdema with tinct. of cantharides, oil of turpentine, scarifications, etc.

ENGLISH REVIEW.

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

BILIARY OBSTRUCTION CAUSED BY A PARASITE [*A. Marston*].—The author was requested to examine a pig which was suspected of swine fever, but failing to discover any indication of the disease, the animal was slaughtered. At the post-mortem which was made all the internal organs were found healthy except the liver. The gall-bladder was found of very large size, about three times larger than normal, and was filled with fluid; on the inside was found a worm, three inches in length, about the size of a lead pencil. It completely closed the biliary duct. —(*Vet. Record.*) [This worm belonged probably to the ascaris megalocephala.—(A. L.)]

LACTATION IN A FOAL [*E. P. Smith*].—Cases of early lactation in young females are not rare, but the one reported by the author is more surprising than any on record. It is that of a foal, one day old, which had congestion of its mammary glands. These were well rubbed and soon milk began to flow freely—a pint of it was obtained the first time. The animal was milked for several days in succession and after ten or twelve days dried. The foal remained all the time in good health, but on the ninth day she was strongly in season, as her dam herself was.—(*Vet. Record.*)

FOREIGN BODY IN THE STOMACH OF A DOG [*A. S. Hodgkins*].—Foreign substances often occasion trouble in dogs, and their nature varies considerably. The following case is, however, unusual: A five-year-old Yorkshire terrior became sick. The nose was moist; eyes bright; he was lively, but emaciated; he had a constant irritating cough. Placed under tonic treatment, good food and so forth, he went on for a few days, when one morning he began to scream as in great pain. Having some constipation he was given two aperient pills and placed in a clean kennel, where he remained looking very sickly, drowsy and screaming now and then. Four hours after he had taken the pills he was taken with vomiting, and on examination of the thrown-up mass it was found containing a piece of lead pipe, 3/8 in. thick, 2 inches long and weighing 1 1/2 ounce. The screaming stopped suddenly, the dog took a drink of warm milk, the bowels acted freely and the next day was sent home cured. It seems that there had been plumbers about the house

where he was, thus explaining the origin of all the trouble.—(*Vet. Record.*)

THREE CASES OF ŒSOPHAGOTOMY IN DOGS AND CATS [*G. Mayall*].—*Case 1.*—A fox terrier dog is suspected to have a bone in his throat, as he has great dribbling of saliva and makes frequent efforts to swallow. Nothing was found in the mouth, or pharynx, but on feeling along the neck, a hard substance is felt along the œsophagus, half way between the pharynx and the entrance of the chest. With permission of the owner the dog was operated. "On cutting through the skin, the jugular was exposed and pushed aside, when by the pressure on the opposite side of the throat the spike of a piece of bone was brought into view." Leaving the œsophagus in place as much as possible, it was incised and a triangular piece of bone removed, measuring two inches in length. It seems as a splinter off the shaft of a leg of mutton bone. The œsophagus was sutured with catgut and the external wound with silk. In two weeks the dog was discharged cured. *Case 2.*—A cat was supposed to have a fish bone in the throat. The position of the foreign body being made out by the cat wincing and evincing pain on pressure, the animal was chloroformed and an incision made on the spot where the bone was. There was a great deal of hæmorrhage. The bone broke while being grasped and only half of it was removed, the other being swallowed by the cat. The œsophagus only was sutured, the external wound left open. The animal was kept for a while on liquid food and made a perfect recovery. *Case 3.*—In this case no interference on the œsophagus was necessary as the foreign body made its appearance through the abdominal walls, whence it was pulled out.—(*Journ. of Comp. Pathol. and Therapeutics.*)

ANEURISM IN THE DOG [*C. A. Powell*].—A great dane, seven months old, was attended by the author for an attack of mange, from which he recovered. He also had tape-worms. Some six weeks later he was in very satisfactory condition, but began to fall away in condition. The visible mucous membranes were very pale, the temperature normal, the pulse regular but weak. General tonic treatment was prescribed, but no benefit was derived from it. He then grew rapidly worse, refused all food, and showed pain on pressure over the region of the left kidney; on that spot a swelling was detected. The dog died after a few days. At the post-mortem there was found an aneurism of the posterior aorta, close to the left kidney. It was as large as the two closed fists and had ruptured, leaving a quan-

tity of blood in the abdomen. There was a second aneurism, as big as a small orange, in the chest at the bifurcation of the anterior aorta. The heart was smaller than normal, with flabby walls. All the organs were healthy.—(*Journ. Comp. Pathol. and Therapeutics.*)

AN INTERESTING CRANIAL CASE [*W. Bower and F. Hobday*].—A hackney filly, supposed to have been hurt while at pasture, had a purulent discharge issuing from a hole situated in the forehead, apparently either in the upper part of the right frontal or at its junction with the parietal. As all antiseptic treatment had failed to relieve her, it was decided to operate. Cocaine was injected and the "skull trephined at the upper extremity of the frontal sinus, as high up as it seemed safe to go, and just below the injury, the idea being to work from below." But this could not be done, being arrested by the septum which forms the roof of the sinus. It was necessary to enlarge the hole in the cranium with bone forceps, and when it was sufficiently large to admit a finger with a great deal of care a piece of bone about the size of a shilling piece was removed. It had laid over the brain, leaving the membranes intact. Recovery followed with antiseptic treatment of the wound.—(*Journ. Comp. Pathol. and Therapeutics.*)

BIBLIOGRAPHY.

VETERINARY MATERIA MEDICA AND THERAPEUTICS. By Kenelm Winslow, B. A. S., M.D.V., M.D. (Harv.), Assistant Professor of Therapeutics in the Veterinary School of Harvard University, etc. New York: W. R. Jenkins, Veterinary Publisher, 851-853 Sixth Avenue.

The field of veterinary materia medica has never been filled to the extent that the importance of the subject demanded, and, while all other branches of veterinary science have had numerous contributions from American authors that of medicine and therapeutics has never received the compliment of a presumptious text-book, veterinary posology being about the extent of the efforts put forth. The excellent work by Finlay Dun has been our only guide, and it would be a rather reckless assertion to claim that this treatise was well adapted to the needs of the present generation of American veterinarians. In England, it may be a satisfying compendium of therapeutics, but in the live, bustling up-to-date profession of the Western Hemisphere, it is many years to the rear, and the time is well at hand when we should have text-books adapted to American methods and

conditions. Notwithstanding the fact that the reviewer of the *Veterinary Journal* (England) finds so much fault with the work of Prof. Winslow, it is destined to supersede Dun's "Veterinary Medicines" in all English-speaking schools where prejudice is not the controlling factor, as seems to be the case with everything veterinary which bears the American stamp in the eyes of our London contemporary.

The work under consideration is systematically arranged, beginning with a chapter upon "Preliminary Considerations," which include definitions, mode of action of drugs, absorption of drugs, and their elimination. Then the "Circumstances Modifying the Actions of Drugs," such as the mode of administration, dosage, anatomy and physiology, time of administration, habit, disease, and idiosyncrasy. Following this comes a consideration of the "General Actions of Drugs," with special reference to those acting on the digestive organs, the circulation, the nervous system, the respiratory organs, the urinary and sexual apparatuses, those influencing metabolism, bodily heat, and those acting on the skin. The chapter on "Pharmacy" deals with the more important medicinal bodies and principles contained in drugs, pharmaceutical processes and preparations; official preparations, classifying them according to their solvents and their modes of preparation. "Incompatibility" is treated of in three pages, while "Prescription Writing" is most thoroughly discussed. In the "Classification" the general division of "inorganic agents" and "vegetable drugs" is made, and then the subject of materia medica proper occupies the body of the work, and we are quite safe in saying that, although there may be many errors of omission, there are few of commission in the conservative estimate of the work of Dr. Winslow. Not content with arranging his subject under comprehensive section headings, he makes his work more complete as a reference-book by presenting a chapter upon "Doses of Drugs" for all domestic animals, and then takes up the subject of "General Therapeutic Measures," discussing food and feeding, counter-irritants, cold and heat, disinfectants, antiseptics, and deodorants, venesection, transfusion, saline infusion, hypodermoclysis, and enteroclysis, closing his work by a most complete "Index of Diseases and Remedial Measures," and a "General Index."

Already the text-book of Dr. Winslow has been adopted in many of the colleges of this country, and it is safe to predict that it will receive the endorsement of practitioners wherever it is introduced.

Jenkins has made the volume worthy of its valuable contents by presenting it in handsome style, the typography, paper and binding being excellent. R. R. B.

OUTLINE OF THE CLINICAL DIAGNOSTIC OF THE INTERNAL DISEASES OF DOMESTIC ANIMALS. By Prof. Dr. Bernard Malkmus, in charge of the Equine Hospital of the Royal Veterinary College of Hanover, Germany. Translated by Profs. D. S. White and Paul Fischer, of the Ohio State University, College of Veterinary Medicine. Chicago: Alex. Eger, 34 East Van Buren St.

We are pleased to note by the appearance of this neat little volume that Mr. Eger is keeping up the task which he imposed upon himself a couple of years ago of giving to the veterinary profession translations of some of the best recent productions of foreign authors bearing upon the important specialties in veterinary science. While he has already published a number of works, including "Meat Inspection," "Milk Inspection," etc., none have appealed so strongly to the practitioner as the present volume, for surely no subject is of greater practical importance than that of clinical diagnostics; indeed, many claim that the true science resides in this step, therapy being a simple matter when once the indications have become established by a correct diagnosis. The veterinarian having to rely upon the subjective symptoms in a patient which cannot speak, diagnosis is just so much more difficult than in the human patient. Therefore, any aid that can be brought to him from an authoritative source should be hailed with delight. The great opportunities and brilliant achievements of Prof. Malkmus in this field have made for him an international reputation as a diagnostician, and we are greatly indebted to his translators, Profs. White and Fischer, who are eminently qualified for the work.

The volume consists of 200 pages, with numerous illustrations, many being in colors, some of which are excellent, that depicting a horse suffering from azoturia being very accurate.

We advise every practicing veterinarian to have a copy of Malkmus in easy reaching distance in his office library, and to study it over and over again, for there are many very thoughtful and valuable facts given in a very concise manner.

R. R. B.

BUREAU OF ANIMAL INDUSTRY: CENTURY SOUVENIR BOOK—1884-1900.

Through the courtesy of the compiler and publisher, Dr. D. E. Salmon, Chief of the Bureau, we have received the handsome souvenir volume which bears the above title. At the close of the nineteenth century, the "father" of this magnificent branch of the Department of Agriculture, which has

achieved such glorious results for the live-stock industry of this country and the cause of veterinary science, and whose splendid career cannot be equalled by that of any body of investigators in the world's history, conceived the idea of placing in compact form the story of its accomplishments, together with a sketch of those who have made these results possible. So he undertook the compilation of the volume under review, and he may well send it forth with pride, for it is a most complete and comprehensive work, and is but a just tribute to his army of faithful and devoted workers. It gives a concise history of the Bureau, the objects of its establishment, and the gradual widening of its sphere, all working in one way or another to stop the losses and to increase the receipts of the stock-raisers of the United States. Following the historical sketch there are 568 photo-engravings of the officers and employés, and in the second section a short biographical sketch of each individual in the employ of the Bureau at the close of the century. The frontispiece is a reproduction of the well-known picture of the President and Cabinet, followed by excellent full-page pictures of President McKinley, Secretary Wilson, Chief Salmon, and other dignitaries connected with the work.

We congratulate the compiler on the completeness of the task which he has accomplished and the excellent manner in which his artisans have fulfilled their contracts. R. R. B.

MERCK'S 1901 MANUAL OF THE MATERIA MEDICA: A ready-reference pocket book for the practicing physician and surgeon. Merck & Co., New York and Chicago.

This comprehensive compilation has come to be regarded by those for whose benefit it is regularly published as almost an indispensable companion, for while the text-book in the library goes into the subject with greater detail, the *Manual* deduces into small compass the most potent facts concerning the most modern and useful of the drugs and combinations, besides including the very newest preparations, many of which are not found in the text-books at all. For instance, the present number contains all the important new remedies of the past year. A new feature is introduced in this number by including the solubilities and incompatibilities of the various drugs and chemicals, while a formulary of well-selected prescriptions, gleaned from all reliable sources, has taken the place of the "therapeutic indications" of former editions, the prescriptions being arranged in accordance with the conditions which indicate their uses, thus enabling the reader to perceive at a glance the

purpose each is intended to serve. Part IV is an entirely new department, full of useful information, much of which is contained under the heading of "Poisons and their Treatment." Valuable tables are also here to be found, and altogether the *Manual* for 1901 is a much improved and very useful edition. While intended particularly for practitioners of human medicine, it is a useful guide to the canine prescriber, and will suggest many new combinations for the equine patient. R. R. B.

CORRESPONDENCE.

M'KILLIP'S OPERATION FOR TRACHEOTOMY.

NEW YORK CITY, Oct. 8, 1901.

Editors American Veterinary Review:

DEAR SIRS:—In your complete and also interesting issue of September there appears in the "Original Articles" from the pen of Secretary John J. Millar, V. S., a few lines headed: "Tracheotomy—McKillip's New Method," where it is stated that we (the authors) have been frequently requested to give *our* methods adopted in the operation of tracheotomy; and, further on, "that it has in view the overcoming of the many? (interrogation is mine) complications and unsatisfactory!! (exclamations also mine) results which accompany or follow the operation, that a *new* method seemed inevitable."

For the benefit of your readers, and to put everything in its proper place, by giving to Cæsar what belongs to him, I beg to refer parties interested to the fact that the new mode of operation is described in Peuch and Toussaint (2d edition), published in *1887;* that Zundel, in the 3d volume of his dictionary, describes it in *1877*, ten years before; that an English veterinarian, Gowing, in 1849 or 1850, invented a special tube for same operation; that Bouley described it *fifty* years ago, in 1851; that in the 3d vol. of "Operative Surgery," of Brogneir, published in Belgium in 1845, tracheotomy by section of the ligament between the cartilaginous rings, is mentioned; and, finally, that in *1775*, Lafosse described the whole process as his invention, a fact which has been acknowledged by all those who have written on the subject since.

Is it now a question of priority between Lafosse and McKillip, or is it that the new method of McKillip is already 126 years old? Yours truly, W. J. COATES.

CASTRATION BY LIGATURE.

BELMONT, MAN., October 17, 1901.

Editors American Veterinary Review:

DEAR SIR:—Being a recent subscriber to your valuable journal, the REVIEW, I noticed in the last number, that of October, a communication in the "Italian Review," by E. Bastianini on castration by elastic ligature, about which I should very much like to get further information. The questions I should like to ask are whether this method of castration has been tried on this continent or not, and whether, if it has been tried, has it proved a success. Also, where may the elastic ligature specially made for the purpose, I suppose, be obtained, and is this method of castration as successful on older horses as on young colts? Trusting if you are able to give me the desired information, I am not asking too much, I am yours truly,

WALTER HURT.

[NOTE.—The article referred to was abstracted from an Italian professional journal, and we can throw no further light upon the subject. A letter addressed to the author in care of Prof. Liautard, 14 Avenue de l'Opera, Paris, France, will be forwarded to the journal from which it was taken and thus probably reach the author.—R. R. B.]

SOCIETY MEETINGS.

MISSOURI VALLEY VETERINARY MEDICAL ASSOCIATION.

This association held its 28th regular meeting in the lecture hall of the Kansas City Veterinary College, May 25, 1901.

Dr. Tait Butler presented a paper on "Some Diseases of Animals Produced by Feeding on Corn and Cornstalks," which was well discussed by Drs. A. T. Peters and R. C. Moore.

Dr. A. T. Peters presented a paper entitled "Control of Hog Cholera by Preventive Vaccination," which was discussed by Drs. S. Stewart and W. R. Cooper.

Dr. B. F. Kaupp presented a paper entitled "Tubercular Invasion in Swine," * which was discussed by Drs. Stewart and Peters.

At the business session, Drs. Tait Butler, A. W. Swedberg, C. B. McClelland, R. H. Carswell, F. F. Brown, and D. G. Moberly became members.

* Published elsewhere in this number of the REVIEW.

The following officers were elected for the ensuing year: President—Dr. A. T. Peters, Lincoln, Neb.; First Vice-President—Dr. L. D. Brown; Second Vice-President—Dr. C. B. McClelland; Secretary-Treasurer—Dr. W. R. Cooper, Kansas City, B. A. I.; Censors—Drs. Tait Butler, F. F. Brown, B. F. Kaupp, A. W. Swedberg, and John Forbes.

The following veterinarians were present: S. Stewart, R. C. Moore, B. F. Kaupp, W. R. Cooper, A. Long, E. Lee, E. J. Netherton, J. L. Otterman, A. T. Peters, L. D. Brown, R. H. Carswell, J. D. Cooper, A. Trickett, Robert Jay, R. H. Thomas, S. H. Caldwell, C. A. McCall, A. W. Swedberg, Tait Butler, Jos. Keane, T. A. Scott, H. H. George, D. G. Moberly, W. N. Niel, J. S. Grove, F. F. Brown, C. B. McClelland and A. C. Hart. Several veterinary students also attended.

The association adjourned to meet Oct. 24, 1901, at Kansas City. W. R. COOPER, D.V.M., *Sec'y-Treasurer.*

MAINE VETERINARY MEDICAL ASSOCIATION.

The meeting was called to order at Hotel De Witt, Lewiston, at 7.30 P. M., Oct. 9th, by President Dr. A. Joly. At roll-call there were present Drs. A. Joly, I. L. Salley, W. L. West, C. L. Blakely, W. E. Fairbanks, J. H. Goddard and F. E. Freeman. The minutes of last meeting were read and approved.

The clinic held at Bar Harbor in July was reported by Dr. Salley.

Dr. F. W. White, of Caribou, was elected to membership.

Different cases were reported by members present and discussed.

Voted to hold next meeting at Augusta in January.

Adjourned at 10.30 P. M. F. E. FREEMAN, *Secretary.*

THE CHICAGO VETERINARY ASSOCIATION

held its annual election of officers on October 14, with the following selection of officers for the coming year:

President—Dr. H. W. Hawley.

Secretary—Dr. E. Merillat.

First Vice-President—Dr. C. A. White.

Second Vice-President—Dr. A. E. Rishel.

Third Vice-President—Frank Allen.

The association met at the Chicago Veterinary College with a large percentage of its members present.

ALLEGHENY COUNTY VETERINARY MEDICAL ASSOCIATION.

A number of Pittsburgh and Allegheny veterinarians held an informal meeting at Hotel Schenley on the evening of Aug. 22d, 1901, and, after much deliberation, perfected arrangements for the organization of a local association, which was completed at the same place on the evening of Sept. 13th, and the following officers duly elected:

President—Dr. J. Stewart Lacock.

Vice-President—Dr. N. Rectenwald.

Treasurer—Dr. Chas. W. Boyd.

Secretary—Dr. Jas. A. Waugh.

Board of Directors—Drs. B. F. Bachman, D. C. Gearhart, J. C. McNeil, H. S. Richards and J. E. Spindler.

Charter members—J. Stewart Lacock, H. S. Richards, J. E. Spindler, J. C. McNeil, N. Rectenwaldt, J. C. Kinghan, H. N. Mayer, B. F. Bachman, Chas. W. Boyd, Jas. A. Waugh, David Martin, D. C. Gearhart, G. B. Gilmor, F. Taylor, Geo. H. Dunn, H. Emery.

There was general discussion of existing conditions, and plans formulated for future work. Constitution and by-laws were adopted.

The first regular monthly meeting was held Oct. 2d, 1901, at the office of Dr. J. E. Spindler. Dr. A. W. Hinman, of Braddock, and Dr. John Spohn, of Homestead, were elected regular members, and Dr. F. W. Ainsworth and Dr. Benj. Howes, of Bureau of Animal Industry, were elected honorary members. These meetings have been favored with a large attendance; much sociability and great interest in the welfare of the profession.

JAMES A. WAUGH, *Secretary.*

AMERICAN VETERINARY MEDICAL ASSOCIATION.

President Winchester has appointed the following

RESIDENT STATE SECRETARIES:

Alabama, L. Van Es, Mobile; *Arizona*, J. C. Norton, Phœnix; *Arkansas*, R. R. Dinwiddie, Fayetteville; *British Columbia*, Johnson Gibbins, 623 Granville St., Vancouver; *California*, Fred E. Pierce, 1724 Webster St., Oakland; *Colorado*, Charles Greswell, 211 Whitney Bldg., Denver; *Connecticut*, R. P. Lyman, 369 Allyn St., Hartford; *Cuba and Porto Rico*, C. D. McMurdo, 10th U. S. Cavalry, Manzanilla; *Delaware*, H. P. Eves, 507 West 9th St., Wilmington; *District of Columbia*, A

M. Farrington, 1436 Chapin St., Washington; *Florida*, J. G. Hill, 324 Forsythe St., Jacksonville; *Georgia*, N. P. Hinkley, Atlanta; *Hawaiian Islands*, W. T. Monsarrat, Honolulu; *Illinois*, E. M. Nighbert, Pittsfield; *Indiana*, J. R. Mitchell, Evansville; *Iowa*, J. I. Gibson, Denison; *Kansas*, N. S. Mayo, Manhattan; *Kentucky*, J. W. Jamieson, Paris; *Louisiana*, E. Pegram Flower, Baton Rouge; *Manitoba*, W. J. Hinman, Winnipeg; *Maryland*, L. A. Nolan, cor. Dillon and Fifth Sts., Baltimore; *Massachusetts*, Benj. D. Pierce, 27 Sanford St., Springfield; *Michigan*, G. W. Dunphy, Quincy; *Minnesota*, J. S. Butler, 40 7th St., Minneapolis; *Mississippi*, J. C. Robert, Agricultural College; *Missouri*, W. F. Heyde, 1215 South Jefferson St., St. Louis; *Montana*, Stewart W. McClure, Helena, Mont.; *Nebraska*, J. D. Sprague, David City; *New Hampshire*, Lemuel Pope, Jr., 101 State St., Portsmouth; *New Jersey*, J. Payne Lowe, 185 Jefferson St., Passaic; *New York*, Wm. Henry Kelly, 233 Western Ave., Albany; *North Carolina*, A. S. Wheeler, Biltmore; *North Dakota*, T. H. Hinebauch, Tower City; *Nova Scotia*, Wm. Jakeman, Halifax; *Ohio*, F. E. Anderson, Findlay; *Ontario*, John W. Groves, Hamilton; *Oregon*, Wm. McLean, 328 Fourth St., Portland; *Pennsylvania*, C. J. Marshall, 2004 Pine St., Philadelphia; *Quebec*, Chas. H. Higgins, 6 Union Ave., Montreal; *Rhode Island*, Thos. E. Robinson, 65 Main St., Westerly; *South Carolina*, Benj. McInnes, Charleston; *Tennessee*, Geo. R. White, 316 N. Front St., Nashville; *Texas*, M. Francis, College Station; *Virginia*, E. P. Niles, Blacksburg; *Washington*, S. B. Nelson, Pullman; *West Virginia*, L. M. Reefer, 1406 Chapline St., Wheeling; *Wisconsin*, R. H. Harrison, 83 14th St., Milwaukee.

NEWS AND ITEMS.

DR. W. H. DALRYMPLE, of Baton Rouge, La., was elected President of the Association of Experiment Station Veterinarians at its late meeting in Atlantic City.

DR. W. H. PENDRY, of Brooklyn, N. Y., has been nominated for the Assembly from his district by the Republicans, and we hope to chronicle his election in the next issue of the REVIEW.

DRS. GEORGE H. BERNS, E. B. Ackerman, George J. Goubeaud, and Roscoe R. Bell are arranging to take a course in bacteriology at the Hoagland laboratory, Brooklyn, N. Y., this winter.

DR. J. F. DE VINE, of Rhinebeck, N. Y., has removed and located at Goshen, N. Y., where there seems to be a good opening for a practical veterinarian.

DR. GEORGE WEISBROD, of Brooklyn, N. Y., had under his observation in October a furious case of rabies in a horse, due to the bite of a dog suffering from that disease five weeks previously.

DR. MOSES ISAAC, of New Haven, Conn., for several years past with Dr. J. H. Kelly at his Olive Street hospital, in that city, has resigned his position and sailed for South Africa in charge of a load of horses and mules for the British government. He expects to be absent six months.

"THE COMPARATIVE DIGESTIBILITY OF RAW, PASTEURIZED, AND COOKED MILK," is the subject of Bulletin No. 77 of the Maryland Agricultural Experiment Station, by Chas. F. Doane, in charge of the department of dairy husbandry and bacteriology, and T. M. Price, assistant chemist.

THE AMERICAN ASSOCIATION OF FARMERS' INSTITUTE WORKERS held its sixth annual meeting at Buffalo, N. Y., Sept. 18 and 19, when many interesting and valuable papers pertaining to the welfare of the association were presented and discussed.

EXAMINATIONS FOR MEAT INSPECTORS by the U. S. Civil Service Commission for positions in the Bureau of Animal Industry were held at various points throughout the country on Oct. 22. Any veterinarian who passed the examination will receive appointment, as difficulty is being experienced in securing enough eligibles.

REPORTS reach us that the horse operated upon at the clinic of the Wisconsin State V. M. Association by Dr. Adolph Eichhorn of Milwaukee (double neurectomy for the cure of spavin lameness) was quite successful. The horse had been lame for two years from a large spavin, and since the operation has been doing hard work and going sound.

IN ST. LOUIS, MO., the Board of Health distributed diphtheria anti-toxine made from a horse which subsequently died of tetanus. On Oct. 31, four children which were inoculated with the diphtheria serum had died of lockjaw and others were sick. The Health Department at once began to inoculate those who had received the poisoned serum with antitetanine.

THE CHICAGO HORSE SHOW ASSOCIATION has conferred upon Dr. M. H. McKillip the honor of Chief Veterinary Inspector at the show to be held in November. The large num-

ber of entries and the wide distribution of competitors assures the association of success. Dr. Gerald E. Griffin, U. S. A., and Dr. Orion E. Dyson, of Chicago, have been selected to act as assistants.

THE opening exercises of the Chicago Veterinary College were held at the college auditorium, October 2d, in the presence of the entire faculty, consisting of eleven veterinarians and two M. D.'s. Dr. E. L. Quitman delivered the address to the classes collectively. The number of students registered at the close of the first week was 146, which is the largest attendance since 1893, when the institution changed its course from a two to a three-year course.

DR. W. A. KNIGHT, of Houston, Texas, was on September 3d appointed acting State Veterinarian of Texas, vice Dr. Wm. Folsetter resigned. Dr. F. had been an efficient officer, and had the confidence of the State Live Stock Sanitary Commission, but the duties had become burdensome for his advanced years. Dr. Knight is a native of Ohio, a graduate of the Chicago Veterinary College, class of '91, and a post-graduate of the Kansas City College of '99.

DR. FRANCIS ABELE, JR., of Quincy, Mass., writes: "Three years ago I brought home from the New York meeting an apparatus for the Schmidt treatment. The first animal to use it was a valuable Jersey. She recovered. Last year she had the same treatment, and yesterday for the third time she has yielded to this treatment. Another cow that had the same treatment the first night and did not come to for about a week, has had two abortive attacks since. Shall try next year to milk through calving."

DESERVED RECOGNITION.—In commenting upon the election of Dr. W. H. Dalrymple to the Vice-Presidency of the A. V. M. A., the *Southern Farmer*, New Orleans, La., pays a high compliment to that sterling veterinarian, saying: "Dr. Dalrymple's long and distinguished services in Louisiana place him in the front ranks of teachers and practitioners of modern veterinary science, and his numerous friends in this State are glad to see that his great work is becoming generally appreciated throughout the whole country."

TANNOFORM.—An interesting report concerning the value of tannoform has recently been made by M. H. Hayes, F. R. C. V. S., Yewtree House, Crick, Rugby. Dr. Hayes says: "I used tannoform with 238 government mounts, of which I was in veterinary charge on board H. M. T., No. 38, *Idaho*,

going to South Africa, and found it an excellent antiseptic. The fact of its being soluble in spirit is a great point in its favor." Other features of special note, particularly in the external use of tannoform, are that it is odorless, and is twice as bulky as iodoform. Reports from numerous American veterinarians indicate that tannoform is also a most excellent remedy against the diarrhœa of cattle and in infectious intestinal catarrhs of horses.

SAVING CONVENTION TIME.—On the second day of the late New York State meeting the hour for adjournment for luncheon had arrived, the hotel was a mile distant, the literary programme was full to overflowing. A vote was taken on the question of "lunch" or "no lunch," when the members unanimously decided that they preferred intellectual rather than vegetative food, and at once proceeded with the reading and discussion of papers. But the hospitable Ithacans would not permit their guests to undergo the pangs of hunger in their pursuit of knowledge. Dr. Moore arose to the occasion and sent forth an order for two or three hundred sandwiches, and in less than an hour each member had his ears open and his mouth full. Many remarked that it was the most enjoyable luncheon they had partaken of in many a day.

TRANSMISSION OF DISEASE FROM ANIMALS TO MAN.—In the *New York Medical Journal*, Meany discusses the infection of the human being by animals. Anthrax and glanders have long been known to be thus transmitted. Scarlatina, diphtheria and typhoid fever have been traced to cow's milk. Turner found a typical croupous membrane in the trachea of a pigeon. An epidemic of diphtheria followed a fatal affection of chickens. Diphtheria has been contracted by cats and spread by them to other cats and thence to their child owners. Swine, sheep, horses, cattle and dogs have been found suffering from a disease exactly similar to human diphtheria. Mason attributed an outbreak of malignant plague to a cat, which boarded a steamer at an infected port, showed signs of illness; and the eight sailors who died all occupied the part of the ship frequented by the cat. It is a pity sick animals cannot promptly be placed under the care of a competent veterinarian, now that these practitioners are to be found as thoroughly versed in the ways of modern science as the graduate of a medical college. At any rate, children should not be permitted to handle or attend sick pets, and every disease of domestic animals should be viewed with suspicion unless positively known to be harmless.—(*Alk. Clinic.*)

PUBLISHERS' DEPARTMENT.

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T. E. WHITE, V.S., State Veterinarian.

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WHILE REVIEW readers have become familiar with the name of Prof. Jesse Beery through our advertising department, and many of them with the noble missionery work that he is doing, in educating and making useful animals out of worthless and dangerous ones through his work on educating the horse, few have been as fortunate as Dr. Bitting (who was a member of one of his classes at Lafayette, Ind.), in coming in contact with him personally. But all have an opportunity of becoming personally acquainted with his "Pulley Bridle," which is as far superior to the usual nose twitch, as a means of subjection, by professional men, upon their equine patients, as the thermocautery is to the old "firing iron."

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AMERICAN VETERINARY REVIEW.

DECEMBER, 1901.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

FASHIONS IN HORSE BONNETS.—Years ago, certainly over ten, our people will remember the good Samaritan truck or car-drivers of our large cities would during the hot days of summer try to give some protection and comfort to their horses in guarding them from the rays of a burning sun. At first it was a broad cabbage-leaf; afterwards came a sponge, kept moist now and then, when water was handy, and towards the last few years came the more stylish straw hats; what they have now grown into we do not know.

But, see how the fashion changes. Heretofore Europe was the leader, and from Europe all novelties would travel to America. It seems that with sun-bonnets for horses, the fashion has now travelled from America to Europe, and in the *Veterinary Record* of last September we read that London is probably "the only English town which has, even in a small degree, adopted the ugly and useless incumbrance." Our worthy *confrère* gives, however, a singular history as the origin of that habit in England.

"Some sentimental woman [of England, we suppose] who had joined a Cook's tour to Rome, saw a mule wearing an old woman's damaged bonnet. She asked the owner what it was for, and he intelligently but untruthfully told a tale of sun-stroke prevention. He was rewarded in coin, and the lady forthwith wrote home an account of how horses were protected

from solar heat in Southern climates. A maker of straw hats saw his opportunity and put a few on the market. A firm who own horses and who never miss a chance of being up to date ornamented their van-horses with the attractive head gear * * * and others followed suit. Thus from an Italian joke, through a stupid woman's sentiment and a business man's quickness to seize a novel advertisement, we have the straw bonnet for horses."

This fashion, which our colleague criticises rather severely, and which he hopes will soon disappear, also made its appearance in a very extensive manner last summer in Paris, and the sale must have been very large, as truck and cab horses were seen passing through the streets, horses happy, drivers joking, some people applauding, while others, on the contrary, were ridiculing the idea.

At any rate, we think America has here again been the promoter, as she is in so many things, and it is quite unfair for Italy to have the benefit of the first application, which England as well as France have only begun to use this year. Whether it is advantageous, is a question which may be difficult to settle, but it must be hoped that the fashion will not give rise to the creation of special millinery shops for horses.

* * *

VETERINARY DENTIST TO HIS MAJESTY'S HORSES.—In years gone by veterinarians were satisfied to remain veterinarians, and for those who practised in those days it meant treating domestic animals in the wide sense of the word, when suffering with diseases. The veterinarian would then attend to internal diseases, perform operations, deliver pregnant animals; he would look after contagious diseases, give advice in breeding, etc., etc. The veterinarian treated horses and the like, cattle, sheep, pigs, dogs, etc.

Then came the day when some one found that these attributes were too many—that having to know so much of everything, he knew almost nothing—that diseases were not the same in all species of animals, etc., etc.—and then began the

separation and started the great subdivision of specialties, which from that of equine, cattle, and canine practitioner has brought to light others, such as those who are surgeons before anything else, or obstetricians or sanitarians, down to the specialty of dentistry.

We believe again that horse dentistry is specially of American origin ; at least, if it is not, we doubt if any horse dentist has obtained a greater name and reputation than some of our American horse dentists. Has any been superior to House in his day? With all that, the title has received in England a greater recognition than in any other country, we believe, and the announcement has been made that a Mr. J. M. M. has received a Royal Warrant as the King's Horse Dentist.

This appointment has created a great sensation in the veterinary world of England, and severe criticisms are found in some of the professional papers ; but of what use?

The worthy editor of the *Veterinary Record*, in some well appropriated but severe remarks, writes with perfect right that "Horse dentistry cannot be separated from veterinary surgery, and for the highest personage in the land to ignore veterinary surgeons and select a trainer of horses to look after equine teeth is a gross insult to a body holding a royal charter."

We sincerely approve of these remarks, and hope that this royal sanction will not be allowed to figure on the card of the specialist alluded to, as a means of advertisement, so commonly used by workshops on the Continent and in England.

* * *

Mortality Reduced by Antidiphtheric Serum.—From the comptes rendus of the work done at the Pasteur Institute of Lille (France) in 1900, the results of the prophylaxy and treatment of diphtheria by serotherapy is shown. The benefits derived from the gradually spreading use of antidiphtheric serum on the mortality and morbidity in that city is most striking. The course of the mortality is regularly going down since 1894, because most of the cases treated on the first or second day remained benignant and are not generally declared. Besides this,

the preventive use of the serum, to avoid contagion in families, is becoming more and more generalized, and on that account the number of cases diminishes.

MORTALITY FROM 1888 TO 1900.

Before Serotherapy—		*After Serotherapy*—	
1889 . . .	123 deaths.	1895. . .	42 deaths.
1890 . . .	103 deaths.	1896 . . .	31 deaths.
1891 . . .	90 "	1897 . . .	26 "
1892 . . .	117 "	1898 . . .	37 "
1893. . .	114 "	1899 . . .	28 "
1894 . . .	106 "	1900 . . .	18 "

From 1888 to 1894, six years, the total of deaths has been in the city of Lille 653, an average of 109 a year. From 1895 to 1900, six years also, the number of deaths has been 182, an average of 30 a year. These figures will no doubt be lowered when physicians no longer hesitate to inject the serum in cases of suspicious sore throats, rather than wait until the bacteriological examination of the false membranes has established the diagnosis. As curative or preventive, the antidiptheric serum cannot give rise to any serious accidents, and, on the contrary, offers incontestable advantages.

* * *

"WHITE SCOURS" AND ITS HISTORY.—In a short editorial of the *Veterinary Record* I have found the following as being taken from the *Veterinarian*, vol. XI, p. 613:

"*Violent Diarrhœa, with Inflammation of the Umbilicus.*—During this year there has frequently appeared among calves and foals a violent and to all appearances an inflammatory diarrhœa, which, if not suppressed in time, destroyed them. In the post-mortem examination of these animals the essential difference observable was always an inflamed state of the umbilical artery from the navel to the bladder. The parietes of the bladder were very much thickened and softened, and a collection of matter was found under its peritoneal covering. The only specific and sure medicine to be given to young calves and foals affected by the disease is the kal. sulphuratum (sulphurated potash or liver of sulphur), of which half a teaspoonful at a time may be administered."

From this, says the author, it will be seen that scour connected with omphalitis was recognized in 1838.

This is very well. From this it is quite certain that Prof. Nocard may not have been the first to attribute "white scours" to the diseased condition of the umbilical cord; but, nevertheless, it is he who has found the true cause of the disease, its correct mode of entrance into the organism, that has established the fact of the relationship existing between the manifestations of the digestive apparatus and those of the respiratory. And, finally, it is also to his investigations and his suggestions that the successful treatment, curative and prophylactic of the two forms of disease, is due. A. L.

A NEED—AN OPPORTUNITY.

The fact that the great State of New York, with its vast live-stock interests, with a record of leadership in all progressive movements looking to the preservation and betterment of the health and wealth of its people, is the most notable example of a State without an adequate veterinary staff to guard its herds and flocks against the dangers from contagious diseases, has for some time been a matter of concern and discussion among those who appreciate the great good that such organizations accomplish in other commonwealths and in other countries. First among the States of the Union to enact a law to protect legitimate practitioners, first also to place the standard of veterinary education on a plane so high that no other State has dared to follow its example, it is indeed a subject of wonderment that she has not felt it her duty to utilize the members of that profession to the great financial advantage of her immense investments in horses, cattle, sheep, and swine. But a small number of the great stock-raising States of this country are in a similar backward condition, and every few months we are called upon to record a step of material advancement in this line in some of them. But the Empire State pursues the even tenor of her way, without a thought for the welfare of this great source of wealth, and if there is an outbreak of a disease which

threatens to depopulate this industry in any section of the State, the stockman must fight his battle single-handed, with the aid of whatever private practitioner he can find, whether he be a man with experience in this line, or a novice.

Numerous spasmodic and individual efforts have been made to secure legislation looking to the creation of the office of State Veterinarian, or the establishment of a State bureau of animal industry, but none have had behind them a united effort of the rank and file of the profession, nor have they been pursued with that earnestness and unanimity which command attention and enforce acquiescence.

The New York State Veterinary Medical Society at its late meeting in Ithaca took the initiative in a renewed effort to accomplish this tardy obligation to the live-stock interests of the State by passing a resolution embodying the sense of the society that the office of State Veterinarian was urgently needed, and it instructed its secretary to take certain steps toward bringing the matter to the attention of the legislature. We fear, however, that the effort will be without much success, as it simply throws the whole work upon the shoulders of one man, who can do but little at best in this direction through his unaided though earnest exertions. He will undoubtedly carry out to the letter the instructions of the resolution, but there the matter will end.

There has just been elected to the lower house of the Legislature from the city of Brooklyn a veterinarian who has had long experience in the line of seeking and securing legislation favorable to the veterinary profession. He is, in fact, the father of the first law ever enacted in the State of New York recognizing such a profession, and, we believe, the first law of the kind ever passed in America. Dr. William H. Pendry, a graduate of the American Veterinary College in the early eighties, is the man who accomplished so much for us at a time when it was sorely needed, and we believe he is the Moses who can lead the veterinary hosts to success now through his greater opportunities. A few years ago he introduced such a bill, but he sought

to accomplish its passage without first enlisting the support of the entire profession of the State, and it never left the committee to which it was referred. Now, however, we have the State Society, of which Dr. Pendry is a member, pledged to its support, and with him, as its champion, they should make an irresistible combination, which will never rest until the animal industry of the Empire State is properly guarded against the ravages of the very many scourges which cause greater financial losses yearly than would support such a veterinary guardianship for a decade.

The hour, the man, and the opportunity are upon us. What are we going to do about it?

WORK OF THE BUREAU OF ANIMAL INDUSTRY.

Secretary of Agriculture Wilson has transmitted to the President, under date of November 23d, his report for the year 1901, and it is the most voluminous and comprehensive statement of the affairs of this department ever issued. A large portion of the report covers the subject of animal industry. The grand total of animals and animal products exported during the year exceeded $250,000,000 in value. This vast foreign market is only preserved to our producers by the indefatigable efforts of the department and the rigid inspection exercised through the Bureau of Animal Industry. This bureau inspected for export 385,000 cattle, 228,000 sheep, and 48,000 horses and mules, and nearly 1000 vessels carrying live stock. Imported animals were also inspected to the number of 342,000, and, where necessary, quarantined. The Secretary suggests that with the enormous interests our stock-raisers have at stake, and inspection or quarantine affording after all, a relative, not an absolute guarantee of protection, it might be well for this country to follow the example of Great Britain and exclude live stock from other countries entirely. The meat inspection service involved the inspection at time of slaughter of nearly 37,000,000 animals. Of the more than 5,000,000 cattle inspected, the condemned carcasses were about one-fourth of 1 per

cent.; of the 6,500,000 sheep, one tenth of 1 per cent.; and of 24,000,000 hogs, one-third of 1 per cent. In the control of indigenous diseases, 1,500,000 inspections were made and over 45,000 cars disinfected in the Texas fever service alone. In the repression of scabies in sheep nearly 8,000,000 animals were inspected, and over 1,000,000 dipped under the supervision of the department inspectors. In combatting the disease known as "black leg" the bureau distributed over 1,500,000 doses of vaccine, the result being to reduce losses in affected herds to less than 1 per cent., where formerly it was in most cases about 10 per cent. To aid in detecting tuberculosis in cattle and glanders in horses, over 44,000 doses of tuberculine and 7000 doses of mallein have been supplied. The Secretary points out the serious evil resulting from a system of State inspection which, if it became general, would effectually prevent the marketing of live stock in some sections, and would destroy much of the usefulness of the Federal inspection. He regards the present conditions as so menacing to the interests of the cattle industry in the West and Southwest that he has requested the Attorney General to coöperate in bringing the matter before the Supreme Court for decision as to the constitutionality of these State laws. This request has been favorably received and the assistance of the Department of Justice promised.

FOR THE STUDY OF CONTAGIOUS DISEASES.

An addition of great interest has just been made to the Alfort School, France, which will prove one of great attraction to foreign veterinarians. That is the buildings erected for the new *institute for study and research relating to all contagious diseases* and principally to that which occasions such great losses all over the continent, and which seems to baffle all sanitary measures, viz., foot-and-mouth disease.

We have visited the institute and have already had the pleasure to act as *cicerone* for some of our American friends. The new institute consists of a number of pavilions isolated from each other and subdivided into boxes, also perfectly isolated.

The walls of the boxes are made of hard cement, the corners rounded to prevent collection of dirt, and thorough washing is done readily. The feeding and watering is made by automatic arrangement, and isolation of the animal is perfect. There is accommodations for removal of the cadavers for the post-mortems, for the destruction of cadaveric remains with sulphuric acid, for disinfection of the manures, etc. The whole ground upon which the institute is built is surrounded by walls, and to guard against the possibility of contagion being carried by cats, wire work is arranged on the top of the walls so as to prevent their entering the premises. In fact, those stalls are perfectly disposed for thorough isolation. A most perfect cellular jail.

Work has already been started. Of course, no one is allowed to enter unless he submits himself to all the measures which will prevent him from being a means of contagion, but we may nevertheless be able to keep our friends posted as soon as some results are obtained.

A. L.

VETERINARY EDUCATION IN GREAT BRITAIN.

At the opening of the three veterinary colleges of Great Britain (at London, Glasgow, and Edinburgh) in October, there appeared to be a concerted effort put forth by the Principals in their introductory addresses to bring the question of university affiliation prominently before the public. The schools of that country are maintained solely by private effort, and it is high time that a helping hand should be extended to the colleges in their long struggle for recognition and support. The universities have recently been largely endowed through the generosity of Andrew Carnegie and other philanthropists, and it is a blot upon their sense of justice and progressiveness that the government and the universities continue to ignore the claims of the science of comparative medicine. While American institutions have often been constrained to complain of the frosts of neglect by the state governments and charitable individuals, they have fared infinitely better than our brethren of Great Britain. We

sincerely trust that the effort now being made may be crowned by success.

THE KING OF ENGLAND has appointed the following committee to investigate Prof. Koch's theory as to the non-transmissibility of bovine and human tuberculosis: Sir Michael Foster, Secretary of the Royal Society; Dr. Sims Woolhead, Prof. Pathology, Cambridge University; Dr. Harris Cox Martin; Prof. J. McFadyean and Prof. R. W. Boyce. The committee is urged to make thorough investigation and to report promptly.

IT is expected that Dr. M. E. Knowles, State Veterinarian of Montana, will present the resolutions referring to tuberculosis at the coming meeting of the National Live Stock Association, which meets in Chicago this month. It is probable that there will be a lively discussion upon the subject, as there is considerable opposition to the continuance of the tuberculin test by the government by certain men claiming to be stock-breeders, but who are, as a matter of fact, importers. The resolutions will, no doubt, be along the lines adopted by the last meeting of the A. V. M. A.

THE NATIONAL HORSE SHOW, held at Madison Square Garden, New York, Nov. 18 to 23, was the greatest in all respects of any in the nineteen years of its existence, and decidedly the most notable exhibition of the year, attracting great crowds night and day, which displayed the keenest interest in the events transpiring in the arena. The good which the numerous equine exhibitions have conferred upon this industry is incalculable, stimulating the liveliest competition in the breeding of the finest specimens of the various types of horses, and the rivalry of the wealthy owners to secure the coveted blue ribbon sends the prices soaring. When such an animal becomes sick or disabled the veterinarian comes in for his share of the benefits which first started in the horse show.

ORIGINAL ARTICLES.

TRANSMISSION OF TUBERCULOSIS THROUGH MEAT AND MILK.

By John J. Repp, V.M.D., Ames, Iowa.

Professor of Pathology and Therapeutics, and Veterinarian to the Experiment Station, Iowa State College.

(*Concluded from page 634.*)

B. By Milk.

1. By Artificial Methods.

No evidence.

2. By Natural Methods..

The evidence of transmission in this manner consists of recorded observations which have been made in cases of human beings who have used the milk of tuberculous cows.

Olivier[46] reports that in a young ladies' boarding school 5 girls, the children of healthy parents, died of tuberculosis of the intestines. The cow which had for years supplied the school with milk was found to have generalized tuberculosis including the udder.

Two daughters of a Scotch family of good health who were brought up on milk of tuberculous cows died of tuberculosis. Two sons in the same family who did not use the milk remained healthy.[47]

Stang[48] reports the case of a five-year-old boy of sound parentage and ancestry who died of tuberculosis. The cow whose milk this boy used was found badly tuberculous.

Demme[49] reports the cases of four infants in the Children's Hospital at Berne, the offspring of sound parents, that died of intestinal and mesenteric tuberculosis. He was able to exclude all other sources of infection and to decide that they had been infected by the ingestion of the milk of tuberculous cows.

Hills[50] mentions the case of a child 21 months old, of a

friend of his, which drank the milk of a highly tuberculous cow for one week while on a visit to his uncle, and three months later this child died of intestinal tuberculosis. Other sources of infection could be excluded. A second child brought up on sterilized milk is still healthy.

Hills[51] also reports the death of a boy 4 years old at Yonkers, New York, from tubercular meningitis. The infection was traced to the milk of 2 cows of whose milk this boy had drunk and which proved on autopsy to be tuberculous.

Ernst[52] reports the death of 3 children of one family from tuberculosis. These children had used the milk of a cow which later died of advanced tuberculosis including the udder.

Leonhardt[54] reports the death from tuberculosis of the meninges, intestines, and mesentery of 2 children fed on milk of a tuberculous cow.

Sontag[55] reports the case of a six-months-old child of healthy parents which died of tuberculosis and which had been fed on the milk of a tuberculous cow.

Hermsdorf[56] has reported the case of a child dead of intestinal tuberculosis which had been fed on the milk of a tuberculous cow.

Rich[57] reports that a young man of healthy parents who died of tuberculosis had used plentifully of the milk of a herd of 74 cattle, 65 of which were tuberculous, some of them markedly so. Also, another young man died of tuberculosis. Two months later Rich destroyed 80 cattle out of the herd of the family, that is, about 90 per cent. of the entire herd. Also, a young woman died of tuberculosis, and a month later the cow whose milk she had used died of advanced tuberculosis.

Thorne[58] reports that 22 physicians out of 339 practising in Ohio replied in the affirmative to the question, "Have you been able to trace any cases of tubercular disease to the milk of unhealthy cows?" and that 33 replied affirmatively to the question, "Have you had reason to suspect the origin of tubercular disease in older children or adults to be in the milk- or meat-supply?"

This series of experiments and observations has been selected from literature with the greatest care. Any reports which appeared not to be well authenticated or of a doubtful nature have been excluded. Besides this mass of positive evidence there is much more, that, while not so positive, is not less convincing. It appears that the evidence collected by Thorne from physicians in Ohio is especially valuable, not only in itself, but because it indicates what might be learned by addressing the same series of questions to physicians throughout the world.

Still further corroborative evidence is offered in the fact that such great numbers of bottle-fed children die of abdominal tuberculosis, and in the fact that tuberculosis of adults is decreasing in many places, while tuberculosis of infants and small children does not show this marked decrease, and is, in fact, increasing. Death from tuberculosis in all its forms in England and Wales has decreased 39.1 per cent. in the past 35 years. The greater part of this diminution was in the lung forms of this disease; for the same period the intestinal form has decreased only 8.5 per cent. It is noteworthy that in the same period, the increase in abdominal tuberculosis in children under one year has been 27.7 per cent. Northrup[59] and Still[60] have presented statistics of autopsy in children which show that the pulmonary form of the disease is most common; that is, that the pulmonary lesions are primary, thus refuting the conclusion of most other pathologists also based on autopsy. Koch[61] in his very recent (July 23, 1901) address before the British Congress on Tuberculosis, has made reference to the findings of several physicians, including himself, in support of a similar allegation. This difference of conclusion can hardly be accounted for, except upon the supposition that it is due to a difference in judgment among pathologists, as to what is a primary and what a secondary lesion. This is a point on which the pathologist must exercise great care. He must not in this connection overlook the fact that, even though the most marked lesions appear in the thoracic cavity, this does not exclude primary infection by way of the digestive tract, because, as is well known, the infective

agent has easy channels of passage from the abdominal cavity into the thoracic cavity by way of the thoracic duct and the vena cava.

Theobald Smith[62] calls attention to this migration of the disease, as having been observed by him and others (Spengler) experimentally. Even assuming the conclusions of Northrup and Still to be correct, although they are contrary to the opinions generally held, there is still left a large percentage of cases to be accounted for by intestinal infection. In 269 tuberculous children on which Still made autopsies, he considered that the channel of infection was the intestine in 53 cases, and the lung in 105 cases. This is enough to warrant the most earnest crusade against the source of such infection.

However, neither animal inoculation, with its unmistakable results so far as the animals themselves are concerned, nor the recorded observations of almost doubtless transmission to man through the milk and meat prove, with the positiveness of a demonstration, that tuberculosis is transmissible to man through the milk and meat. Yet, to nearly all students of this subject, this is convincing proof, and we find the results of it in the protective legislation which everywhere abounds.

We have still further and more valuable evidence which may now be taken up.

Whether or not tuberculosis of animals is transmissible to man, depends upon whether or not the tubercle bacillus of the animal species is pathogenic for man. If this could be demonstrated, we would have a positive proof that would be beyond all question. We know that the virulent tubercle bacillus of the bovine species exists in the meat and milk products of these animals in many cases where they are tuberculous, and we know that man consumes these products thus bearing the bacillus. Therefore, if the pathogenicity of this animal tubercle bacillus for the human species can be proved, the question is no longer debatable. The following examples are offered for consideration. In my opinion they are capable of supplying the evidence we need.

Tscherming[63], of Copenhagen, attended a veterinarian who had cut his finger in making an autopsy on a tuberculous cow. The wound healed, but there remained a swelling which soon ulcerated, and refused to heal, so that the whole tumefied mass had to be cut out. The microscope revealed the distinct tuberculous process, and the presence of the characteristically staining bacilli.

Pfeiffer[64] attended, at Weimar, a veterinarian named Moses, 34 years old, of good constitution, and without hereditary disposition, who, in 1885, cut his right thumb deeply in making an autopsy on a tuberculous cow. The wound healed, but six months later the cicatrix still remained swollen, and in autumn, 1886, the man had pulmonary tuberculosis with bacilli in his sputa and death occurred in $2\frac{1}{3}$ years after the wound. Post-mortem revealed tuberculosis of the joint of the wounded thumb, and in the lungs extensive tubercles and vomicæ.

Law[65] reports that a young veterinary friend of his who was inoculated in the hand in opening a tuberculous cow, suffered from a tumefaction of the resulting cicatrix, with tubercle bacilli.

Rich[66] reports that a man cut his finger on a spicula of bone while making a post-mortem examination of tuberculous cows, and that in a few weeks he developed a tuberculous joint, and a few months later showed unmistakable signs of phthisis.

Ravenel[67] reports the case of a veterinarian who cut the knuckle of his finger while making a post-mortem examination of a tuberculous cow. The wound healed badly, remained swollen, and showed decided tendency to ulcerate. Removal of the cicatricial mass was practised and the tissues sent to him for examination. They showed typical tubercular lesions, with giant-cell formation.

I am well acquainted with this case myself and believe it to be an undoubted case of direct transmission of tuberculosis from cow to man by inoculation. This veterinarian told me that he did not become alarmed about the wound on his finger until he noticed a swelling and tenderness of the lymphatic glands on the inside of the elbow.

Ravenel[68] also reports the following two cases:

"On January 1, 1900, my assistant, Mr. G., while performing a post-mortem on a goat which had succumbed to experimental inoculation with a culture of bovine tubercle bacillus, scratched his knuckle on the broken ends of the ribs. Within a half hour the wound was washed out with a 1:1000 solution of mercuric chlorid, and sealed. It healed promptly, but about three weeks after became reddened, swollen, and sensitive, especially on motion. It was protected, but grew worse, and on February 27 Dr. C. H. Frazier excised the nodule, with a margin of healthy skin. With one half of the nodule we inoculated 2 guinea-pigs subcutaneously, and the other part was prepared for sections. These sections show an infiltration process which encroaches on the papillary layer of the skin, some of the papillæ being destroyed. No typical giant-cells can be made out. None of the sections were stained for tubercle bacilli. On May 5, one of the inoculated pigs died and the other was killed. Both of them showed a generalized tuberculosis involving the chest cavity as well as the abdomen. There has been no return of the lesion so far.

"The other case is that of a well known veterinarian of Philadelphia, who, in making an autopsy on a tuberculous cow, wounded the knuckle of his forefinger. Between 3 and 4 weeks after, the scar was noticed to be enlarged, reddened, and somewhat sensitive. As it showed no tendency to improve, but rather grew worse, some 6 weeks after it was first noticed it was excised by Dr. H. W. Cattell, and the wound cauterized with bromin, since which there has been no return. The nodule was examined by Dr. John Guiteras, who demonstrated its tuberculous nature by finding tubercle bacilli in sections."

Further evidence than this is not on record so far as I have been able to ascertain. Whatever our conclusions may be they must be drawn from this evidence together with some corroborative evidence of another character, which will be referred to later on. Those who are in search of more convincing evidence of the pathogenicity of the bacillus of animal tuberculosis for

man must be informed that it is not to be had without direct experimental inoculation or experimental feeding of members of the human species with tuberculous products of animals. That this is not likely to be done it is needless to state. It is not impossible that some one may apply to tuberculosis experiments of the same nature as those described by Arning[69], in which a criminal was inoculated with leprous material. Certainly this sort of experimentation might be done in case of criminals, but such experimental work can never be done in case of children. Hence, the relation between the milk of tuberculous cows and tuberculosis in children will never be decided on any evidence so positive as this.

Adami[70] considers as doubtful the conclusion that there has been a causal relation between the milk used and the tuberculosis of the persons using it, or between the wounds received while making autopsies and the subsequent tuberculosis in cases such as those cited in this article. He bases his opinion on the fact of the impossibility of total exclusion of all other sources of infection. One who puts forth such a statement as an argument does not realize the abyss of fatalism into which he would plunge science in all attempts at discovering the source of infection in case of any of the infectious diseases; especially would this be the case in such a chronic disease as tuberculosis. If the argument were valid, it would apply to all diseases. It is not possible to absolutely and totally exclude all other sources of infection in any case. To do this would demand on the part of the experimenter and observer a knowledge of all possible sources of infection, other than the one under consideration, that might be active in a given case; and, further, a knowledge of altogether hidden and entirely unknown causes which might act. Unless this were done the same objection might be raised, viz.: The other causes have not yet all been excluded; there may be some source of infection of which neither you, nor I, nor any one else has any knowledge. *Reductio ad absurdum!* All we can do, and all that it is necessary to do, is to exclude all known or probable sources. We must

decide upon an anchorage somewhere which the light of scientific knowledge points out. If we have done this, and get positive results in a sufficient number of cases, we have a legitimate right to draw conclusions accordingly. In the cases referred to it is to be considered that we have practically excluded all other sources of infection. Science does not require that more be done.

Some work has been done to ascertain whether or not there is any difference of morphology, character of culture, or virulence between the tubercle bacillus derived from man and that derived from animals, with the hope of incidentally shedding some light on the question of the transmissibility of tuberculosis from animal to man. It was taught by the earlier investigators from Koch forward, with few exceptions, that the bacilli from these two sources were virtually similar. This belief was held and taught until the recent experiments of Smith,[71] Pearson,[72] and Dinwiddie[73] were made, and which show that the bovine tubercle bacillus is distinctly more virulent for the species of animals thus far experimented upon than is the human bacillus, with a few exceptions in which no difference in virulence was seen. Theobald Smith is probably the only one who has made a comparative study of the bacilli from the bovine and the human source in culture and under the microscope of sufficient extent to be of any value. He has noticed some points of difference, but none that, so far as we know, have any bearing upon the question under consideration. It is true that if there is a marked difference between the bacilli from the two sources it may in time be found out that, by a careful study of the bacilli themselves, we shall be able to differentiate cases of human infection from cases of bovine infection in man by an examination of the respective bacilli. However this may be, such a stage has not yet been reached. It may be that the cultures of human bacilli which Smith studied were all made from cases of human infection, and that the bacilli were adapted to the human system for generations. If a study of human bacilli from a case of supposed bovine infection could be studied side

by side with bovine bacilli, the differences which Smith found might not be present. This seems to be a fertile field for investigation. Koch[74] expresses (July 23, 1901 vaguely the possibility of differentiating between intestinal tuberculosis in man of animal and of human origin by inoculation of cattle. If of animal origin, the cattle, he leads us to infer, will be infected, and if of human origin the cattle will not be infected. He does not, however, offer the proof necessary to remove this from the realm of pure speculation.

On the other hand, it is not unlikely that the bovine tubercle bacillus, by passing through the bodies of several persons, or even one, may be so modified as to present under study the characters which we ascribe to the human bacillus. Weight is added to this view by the experiments of Nocard[75] in which he succeeded by means of cultures *in vivo* transforming the human bacillus into one of the avian type. Also by the experiments of Dubard and Kral[76] in which it was shown that the tubercle bacillus derived from fish was at first pathogenic for cold-blooded animals only and grew only at a low temperature, but that by passage through a series of guinea-pigs and rabbits it became virulent for these animals, and that by frequent transplantation it was induced to grow at incubator temperature and produce a culture just like the human tubercle bacillus, from which it was supposed to have been at first derived.

Neither the work of Smith, Pearson, nor Dinwiddie adds or pretends to add anything positive to our knowledge of the transmissibility of tuberculosis from animal to man through the meat and milk. All evidence we have from this work is that afforded by an interpretation of the results and the use of them as a basis for reasoning about what the result would be if the terms of the experiment should be reversed and human beings were inoculated with bovine bacilli. By such an examination of these results we find that they are rightfully interpreted as antagonistic to the idea that tuberculosis is not communicated from animal to man through the meat and milk. Smith's experiments have, evidently, because of careless reading, been used by some writers

as proof of a nontransmissibility from the animal to the human being. On the contrary, Smith's experiments do not indicate this, nor does Smith claim that they do. This author says, after announcing his experiments, without any reference to these experiments, "It seems to me that, accepting the clinical evidence on hand, bovine tuberculosis may be transmitted to children when the body is overpowered by large numbers of bacilli, as in udder tuberculosis, or where certain unknown favorable conditions exist." Smith concludes his article by saying,[77] "if in this brief summary I have presented nothing but problems to be solved and doubts to be entertained, I feel quite, etc.," thus indicating that he has proved nothing, but that he has only pointed the way toward the proper field of investigation, something he has certainly done. Dinwiddie does not touch upon these points.

The work of Smith and Dinwiddie, already referred to, which points to the conclusion that the bovine tubercle bacilli are more virulent[78] for a number of species than the human tubercle bacilli and equally virulent[79] for others, certainly warrants us, if we draw any conclusion at all with reference to man, that the bovine tubercle bacilli are more virulent for man also. The extreme susceptibility of man to tuberculosis, indicated by the large percentage of the human race suffering from the disease, would further point to the soundness of such a conclusion. Manifestly the opposite conclusion would be eminently unfair. It has been intimated by Conn[80] that "if the human bacillus is only slightly pathogenic for cattle it is at least likely that the bovine variety may not be very dangerous to man." It would be as reasonable to say that, inasmuch as the American soldiers who at one time during the Philippine War were armed with Springfield rifles which were of short range were not dangerous to the Filipinos, neither were the Filipinos at that time armed with long range Mauser rifles, dangerous for the American soldiers.

I consider that there is another point worthy of notice. It is this: In the comparisons of the virulence of bovine and hu-

man tubercle bacilli which have been made by Smith and Dinwiddie they have compared the bacilli of human *sputum* with the bacilli of bovine *tissues*.

I believe that we cannot make a fair comparison between tubercle bacilli from the human and the bovine source unless all the conditions on both sides are as nearly similar as possible. We cannot make a fair comparison between tubercle bacilli derived from human *sputum* and those derived from bovine *tissues*. Smith has found by comparative study of the bacilli from these two sources in cultures that those from human sputum are more saprophytic in growth than those from bovine tissues. It may be that the more saprophytic the bacillus is the less virulent it is, and that this will account for the fact that the bacillus from human sputum shows itself to be less virulent than that from bovine tissues. It appears that in order to carry on absolutely fair comparative researches it would be necessary to watch the cases on both sides for a considerable time to make out whether they are acute or chronic and then take the germs from tissues in the same part of the body of each, and from tissues which have undergone similar degeneration on account of the disease. Reliable work can be done only with cultures and not with tissues. The reasons for this are easily apparent. Until this is done it seems to me that but little can be done on this part of the subject which will warrant us in drawing conclusions. If experiments be made in the manner suggested it may be that the difference in virulence between human and bovine bacilli would not appear, and that they may be found to be of equal or nearly equal virulence.

Inasmuch as Koch's address before the British Congress on Tuberculosis[81] on July 23, 1901, has received so much attention and has been the occasion for so many unwarranted dicta, especially upon the part of those who oppose the doctrine of transmission of tuberculosis from animal to man, it is incumbent upon me to give it special notice here. First, I would notice a certain statement of his which has been the subject of most misinterpretation. Koch has made within the last two years

numerous inoculations and feedings of cattle with human tubercle bacilli from sputum in which he has failed to infect them. At the same time cattle inoculated or fed in the same manner with bovine tubercle bacilli from the lungs became badly infected. He concludes : " Considering all these facts, I feel justified in maintaining that human tuberculosis differs from bovine and cannot be transmitted to cattle. It seems to me very desirable, however, that these experiments should be repeated elsewhere, in order that all doubt as to the correctness of my assertion may be removed." Koch has nowhere stated that because human tuberculosis cannot be transmitted to cattle neither can cattle tuberculosis be transmitted to man. Some critics of Koch's paper have made it appear that Koch has given expression to such a line of reasoning, but a careful reading of the paper will show that he has not done so. He does not use this argument at all when he comes to answer the question, " Is man susceptible to bovine tuberculosis ? " So far as the answer to this question is concerned he wisely leaves his cattle experiments out of the consideration. Second, he makes the following answer to the question " Is man susceptible to bovine tuberculosis ? " "Though the important question whether man is susceptible to bovine tuberculosis at all is not yet absolutely decided, and will not admit of absolute decision to-day or to-morrow, one is nevertheless at liberty to say that, if such a susceptibility really exists, the infection of human beings is but a very rare occurrence. I should estimate the extent of the infection by the milk and flesh of tuberculous cattle and the butter made from their milk, as hardly greater than that of hereditary transmission, and I therefore do not deem it advisable to take any measures against it." Let us see what brings him to this conclusion. It is the result of his own observation and the observation of several other physicians, to wit, that *primary* tuberculosis of the human intestine is a very rare disease. His reasoning may be stated in this way: If tuberculosis were set up in the human being by ingesting meat and milk of tuberculous cattle the primary lesion would be in

the intestine; primary tuberculosis of the human intestine is very rare; therefore, infection of the human being with tuberculosis by ingestion of meat and milk of tuberculous cattle is very rare.

The soundness of his reasoning should be examined into. In the first place, as already pointed out at another place in this article, there is room for difference of opinion in regard to the prevalence of primary tuberculosis of the human intestine, and the burden of proof is certainly on the side of those who claim that primary intestinal tuberculosis is rare. I may ask on which side tuberculosis of the peritoneum, liver, spleen, and mesenteric lymphatic glands should be counted. It would appear most reasonable to suppose that in these manifestations of tuberculosis the offending bacilli entered by way of the digestive tube.

Also Koch's own experiments, detailed in his paper before the British Congress on Tuberculosis, in which he produced "tuberculosis of the lymphatic glands of the neck, and in one case a few gray nodules in the lung" of pigs by feeding human sputum, and "tuberculous infiltration of the greatly enlarged lymphatic glands of the neck and of the mesenteric glands, and also extensive tuberculosis of the lungs and the spleen" in pigs by feeding bovine bacilli, certainly contradict his hypothesis, namely, "that a case of tuberculosis has been caused by alimenta can be assumed with certainty only when the intestine suffers first—that is, when a so-called primary tuberculosis of the intestine is found." Pearson[82] refers to experiments of his in which "it has been shown in the most unmistakable way by many feeding experiments . . . . that, contrary to the early belief, animals fed tubercular materials may develop primary pulmonary tuberculosis, and, in some instances, fail to show lesions in any other organ."

Upon this foundation Koch's conclusion rests. I can only add that the facts do not warrant so sweeping a conclusion.

After all, we must face the homely facts that we have in cattle and in man a very prevalent disease which we properly call by the

same name, tuberculosis, in both species and which presents very much the same pathological picture in both; also that we find in sections from the tissues of tuberculous subjects of both these species myriads of germs which have practically the same morphology and the same staining reactions; also that these germs from these two sources are found to have in a general way the same cultural qualities. These familiar characteristics, although they do not answer to the critical demands of precise science, should certainly lead us to ask for the most convincing proof that tuberculosis of man and tuberculosis of animals are two different diseases before we adopt the belief that they are.

It may be stated *en passant* that students of this subject of transmissibility of tuberculosis by meat and milk, whether they be individuals or commissions appointed to study the matter, are almost unanimous in their opinion that there is danger of such transmission, and that this danger is great enough to call forth protective legislation and regulation against these sources of danger. Attention may be called to the fact that the British Congress on Tuberculosis before which Koch read the paper to which reference is made above passed a resolution after his paper was read and debated, recommending that the present restrictive regulations thrown around the sale and use of products of tuberculous cattle should be continued without any relaxation.

What evidence has brought them to such conclusion? Practically that which has been presented in this paper.

SUMMARY.

The evidence presented here is:

1. That tuberculosis may be transmitted to animals through their eating the meat of certain other animals which are tuberculous or by their being inoculated with it.

2. That tuberculosis may be transmitted to animals through their ingestion of the milk of certain cows which are tuberculous, or by their being inoculated with it, both when the udder of the cow is diseased and when it is healthy.

3. That, therefore, the meat and milk of certain tuberculous animals contain living, virulent tubercle bacilli.

4. That the tubercle bacilli of cattle are pathogenic for man.

5. That, therefore, the meat and milk of certain tuberculous animals is capable of producing tuberculosis in human beings who use these products as food.

PRACTICAL CONCLUSIONS.

1. In Regard to Meat.

The meat of all food animals, especially cattle, is unfit for food when the animal is highly tuberculous; but is safe for food when the animal is only slightly or moderately tuberculous, especially so if the meat is well cooked, provided the tubercular tissues are eliminated.

2. In Regard to Milk.

a. The milk of a cow with tuberculous udder is always dangerous for food unless it is well sterilized.

b. The milk of tuberculous cows with healthy udders is sometimes dangerous for food unless well sterilized. We cannot tell except by experiment, which is impracticable as a routine matter, when such milk is dangerous and when it is not. Hence the milk of tuberculous cows without disease of the udder should always be looked upon with suspicion, and either not be used or be used only after sterilization.

c. Tuberculous cows may be kept for breeding purposes provided they are isolated, even from their own offspring, and their products sterilized before use; or,

d. They may be slaughtered for food under conditions imposed by the conclusion stated above in regard to meat.

GENERAL CONCLUSION.

All legislation and regulation should favor the disposition of tuberculous animals as suggested above, so far as meat and milk are concerned.

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A FURIOUS OUTBREAK OF ANTHRAX is reported from the British Northwest, 2500 sheep having died out of a total of 6,000 on one range alone. The Dominion, Provincial and local authorities promptly took the most effective measures possible and vaccination of horses, cattle and sheep was inaugurated on a colossal scale, owners clubbing together and furnishing an abundance of funds. The final reports of the veterinarians should be most interesting.—(*Breeder's Gazette, Nov. 9.*)

THE VETERINARY PROFESSION AND ITS FUTURE.

INTRODUCTORY LECTURE TO THE NINETEENTH ANNUAL SESSION OF THE CHICAGO VETERINARY COLLEGE, OCTOBER 2, 1901.

By E. L. Quitman, M.D.C., of the Faculty.

Gentlemen:

It is with much pleasure that I welcome you to the Chicago Veterinary College at its nineteeeth opening exercises. I am pleased to see that so many of you have the courage and enterprise to attempt to enter one of the highest and noblest professions—a profession which has been dragged from the depths of quackery and ignorance and placed on a level with that of our sister profession, human medicine. Our domesticated animals are subject to nearly, if not all, the diseases of the human being, and require the same skill in diagnosis and treatment as does man himself.

The term *veterinary* is derived from the Latin, *Veterina*, beasts of burden. This term is now used in such a broad sense that veterinary medicine and surgery embrace the medical and surgical management of all the domestic animals.

Veterinary science comprises a knowledge of the conformation and structure of all the domesticated animals, their physiology and racial and individual characteristics, their humane management in health and disease, their utilization, their protection from, and medical and surgical treatment in, the diseases and injuries to which they are exposed; their amelioration and improvement, their relations to the human family with regard to communicable diseases, and the supply of food and their products for human consumption.

There is evidence that the Egyptians practiced veterinary medicine and surgery in very remote times, but only from the Grecians do we obtain any very definite information as to the state of veterinary and human medicine in ancient times. The writings of Hippocrates, the father of medicine (450 to 356 B. C.), afford evidences of excellent investigations in comparative path-

ology. Aristotle wrote on physiology and comparative anatomy, and on the maladies of animals, while many other Greek writers on veterinary medicine are cited by Varro, Columella, Galen.

Until after the conquest of Greece, the Romans do not appear to have known much of veterinary medicine. Varro (116 to 28 B. C.) may be considered the first Roman writer who deals with animal medicine in a scientific spirit. His "De Re Rustica," in three volumes, is largely derived from Greek writers. Celsus is supposed to have written on animal medicine. From the third century onwards, veterinary science had a literature of its own, and regular practitioners, especially in the service of the Roman army. Perhaps the most renowned veterinarian of the Roman Empire was Apsyrtus of Bithynia, who in 322 A. D. accompanied the expedition of Constantine against the Sarmatians, in his professional capacity, and seems to have enjoyed a high and well-deserved reputation.

Toward the close of the modern period veterinary medicine was much cultivated in the cavalry schools of Italy, and Spain also, in the fifteenth century, had an organized system of good practitioners, who have left many books still extant. Germany was far behind and produced no literature until the end of the fifteenth century. In the sixteenth century the influence of the Italian writers became manifest, and the works of Fugger and Fayser marked the commencement of a new era. In Great Britain veterinary medicine was perhaps in a more advanced state than in Germany, yet it was largely made up of the grossest superstitions. Among the Celts, as among the other civilized nations of Europe, the healer of horse diseases and the shoer were held in high esteem, and the court farrier enjoyed special privileges.

The earliest known work in English appeared anonymously toward the commencement of the sixteenth century, namely, "Propertees and medcynes for a horse and mascal of oxen, horses, sheepes, hogges, dogges."

English books of the seventeenth century show a strong

tendency toward improvement in veterinary medicine and surgery, especially as regards the horse. This improvement is more notable in the literature of the eighteenth century. Veterinary anatomy was greatly advanced by the "Anatomy of an Horse" (1683) of Snape, farrier to Charles II, illustrated with copper plates, and by the still more complete and original work of Stubbs, "The Anatomy of the Horse" (1766). This latter work marked a new era in veterinary anatomy.

The most important era in the history of modern veterinary science began with the establishment of veterinary schools. France took the initiative step. Bourgelat, through influence with Louis XV, induced the government to establish a veterinary school at Lyons in 1761. He directed it himself for a few years, when he realized that the great benefits from it justified an extension of its teachings to other parts of France. Therefore, at Alfort, near Paris, in 1766, he founded a second veterinary school, which soon became and remains to this day one of the finest and best veterinary schools in the world.

Soon after the Alfort school was established, the National School for Austria was founded at Vienna by order of Maria Theresa, and this school, remodeled and reorganized by Joseph II, is now the largest in the country. Prussia quickly followed suit, and government schools were founded in almost every European country excepting Great Britain. In 1790 St. Bel, after studying at the Lyons school and teaching both at Alfort and Lyons, went to England and established "The Veterinary College of London," which has been the parent of other veterinary schools in Great Britain. The first veterinary school in Scotland was founded by Professor Dick, a student of Coleman's, and a man of great perseverance and ability. In 1844 the Royal College of Veterinary Surgeons (not the Royal Veterinary College) obtained its charter of incorporation, its purpose being to examine students taught in the veterinary schools and to bestow diplomas of membership on those who successfully passed the required examinations.

The first college to be founded in the United States was the

Columbia Veterinary College (now defunct) in 1857 in New York City. We have now in North America a large number of colleges, quite a few of them, I am sorry to say, of the mushroom variety. Several of the universities have established departments of veterinary medicine.

The veterinary literature of this period affords striking evidence of the progress of the science: excellent text-books, manuals and treatises on every subject belonging to veterinary medicine are numerous, and there is an abundance of periodical literature. The practical and technical education of practitioners has, of course, been improviug to a corresponding extent.

Veterinary medicine has been far less exposed to the vagaries of theoretical doctrines and systems than human medicine. The explanation may perhaps be that the successful practise of this branch of medicine depends upon the careful observation of facts and the rational deductions therefrom to a greater extent than does human medicine. It is a medical eclecticism, based on practical experience and anatomico-pathological investigation, rarely, indeed, on philosophical or abstract theories. In this way veterinary science has become preëminently a science of observation. At times it has been slightly influenced by the doctrines which have influenced human medicine, such as those of Broussais, Rademacher, Hahnemann and others, but not for long. Experience of them when tested upon dumb, unimaginative animals soon exposed their fallacies and compelled their discontinuance.

Of more importance than the cure of disease is its prevention, and this is now considered the most important object in connection with veterinary science. More especially is this the case with those serious disorders which depend for their existence upon the presence of an infecting agent, and which are communicable to man.

Every advance made in human medicine affects the progress of veterinary medicine, and recent discoveries must in the end create as great a revolution in veterinary practice as in

human medicine. In preventive medicine the application of the germ theory is of much importance. The sanitary police measures, based on this knowledge, are easily framed, and if carried rigorously into operation, must eventually lead to the extinction of these disastrous disorders.

The medicine of the lower animals differs from that of man in no particular except, perhaps, in the application of utilitarian principles. The life of man is sacred, but where there are doubts as to the possible restoration to health and soundness of an animal, monetary considerations generally decide against the adoption of remedial measures.

This school was organized in 1883 by Professors A. H. Baker, R. J. Withers, and Joseph Hughes. The new veterinary school had neither pecuniary endowment nor public support. The three gentlemen had neither wealth in hand nor wealthy relatives, but, nevertheless, did have two necessary elements of success, namely, faith and an abundant capacity for work, and so successfully did they use these elements that at the end of two years they found the space in the rickety old livery stable, with the dissecting room across the alley in a little, old barn, inadequate for their purpose. Consequently, this building was planned and built, and even here by reason of the phenomenal growth in the attendance, important changes have been necessary from time to time for the accommodation, comfort and welfare of the students, and to-day the school is one of the best equipped on the continent. The course is as scientific as is consistent with thoroughly practical instruction. There are abundant facilities for the teaching of theory and practice of veterinary medicine, anatomy, chemistry, veterinary dentistry, both theoretical and practical, helminthology, general pathology, histology, the use of the microscope, materia medica, pharmacy, hygiene, breeding, and general management of domesticated animals receive careful and thorough attention. Special attention is also paid to veterinary surgery and obstetrics, lameness, shoeing and examination of horses for soundness.

The founders of the Chicago Veterinary College can look

with pride upon the successful career of their graduates, some of whom are employed as teachers of veterinary science, a large number holding important government positions, and nearly all enjoying lucrative practices. It is to the success of its graduates that the success of the college is due, and I am constrained to say to you that the reputation that it is to have in the future will depend on the fidelity with which each one of you shall perform the duties of the positions you will occupy.

You, young men, in choosing the profession of medicine, have entered upon a field of study of wider scope, of more intense interest, and capable of yielding fruits of greater benefit both to yourselves and to your race, let alone the poor suffering dumb brute, than any other known to us. Regarding the extent of the field of study you have entered upon, it may truthfully be said that it extends to and includes some part of every science known to man. For while man himself stands as the central figure in this vast field, his anatomy and physiology finds analogies and illustrations in every class, order or species of animal.

The present era in medicine, by which I mean the last half of the nineteenth century, is preëminently one of brilliant discoveries and inventions, of rapid and extreme fluctuations in opinions and practice. These characteristics are the natural results of the transition from centuries of purely theoretical groping in darkness, to the rapid unfolding of actual knowledge concerning the composition and properties of the material world we inhabit, in the progress of modern chemistry and physics, in actual knowledge of the structure and function of various parts of the body, and the influence of exterior agents upon them. The germ theory of disease is a modern innovation, and a most important one, especially in preventive medicine. The present status of medicine has an actual scientific basis for each of its branches, accompanied by all the instruments and methods necessary for further reliable investigations, and the great necessity now is, not new instruments, new remedies or new specialties, but the patient application of our ample methods of inves-

tigations to the detection and elimination of existing errors, and to the verification of all practical deductions by actual tests either in the laboratory or in the clinic room.

For example, it is not enough that you know a microbe or a ptomaine may produce a certain disease; you should be able to follow the germ from its point of entrance into the system to its exit or destruction. It is not sufficient that you know the symptoms of a disease; you should be able to see clearly the actual morbid process which takes place through all the different phases of that disease. Neither is it enough that you should know that one remedial agent may act as a cathartic, another as a diruetic, and another as an antipyretic, but you should know whether the first produces its effects by increasing secretion from the mucous membrane, or by inciting increased action of the nervous and muscular structures of the intestines; whether the second increases the flow of urine chiefly by increased activity of the renal cells, by greater dilution of the blood, or by nervous excitation; and whether the third reduces the temperature by retarding the process of heat production, or by increasing heat dissipation, or by depression of the heat centres of the brain. The great practical importance of an exact knowledge of etiology, pathology, and therapeutics is too obvious to every intelligent student to need further illustration. It should be the aim of every student and practitioner of the healing art to know the actual changes in the blood, the tissues, the secretions and excretions, and the function of each organ, from the beginning to the end of every morbid process. It should be equally his aim to know the exact composition, properties and actions of every remedial agent he uses, and its influence on any one or all of the structures and functions of the living body. The present facilities and appliances for exact research, if used intelligently and patiently, make the evolution of such completeness of knowledge possible in every department of medicine.

In proportion in which you see clearly the important lines of study I have indicated and steadfastly follow them, in the same proportion will all the departments of veterinary medicine

increase their claims to the position of true sciences, and its standard will be raised at least to that of the human medical profession. Yours is a noble calling with plenty of room at the top.

The outlook for the veterinary profession never was so bright as at the present time. The field for the veterinarian is constantly increasing. The rapidly growing population of the United States itself, calls for a corresponding increase in the raising of food animals. The same conditions call for an increased number of horses, which animal, I am glad to say, is here to stay; it is a case of the "survival of the fittest." Several times "horsedom" has had a scare; when railroads were first introduced, it was thought that the horse would be a thing of the past, but they only caused a general increase in trade and a greater demand for horses to cart produce of all kinds to the depots.

The general introduction of electric cars in the cities was first looked on as a setback for the horse, but this was found also to be an error. It only presaged an increasing population and a corresponding demand for the horse.

Then came the bicycle; this, for a time being, did greatly decrease the demand for light drivers and saddle horses; but it proved to be only a "nightmare" in the form of a fad, and after a few years, like all fads, played itself out.

Now, last of all, and still before us, is the automobile fad; for I am sure it is only a fad and will soon have its run and be over. This can be illustrated by a joke. A prominent automobilist upon being asked how much it cost to run his machine, replied, about a cent a mile to run it and $10 per mile for repairs. This reply is proven by inquiry among automobilists and by noting the immense bargains offered in the machines by people who have grown tired of them.

I am personally acquainted with a number of people who have given them up and gone back to the old standby, the horse.

Yes, he is here to stay.

Again a vast and growing field for the veterinarian of high quality, is in the government service as inspectors in abattoirs, stock yards, ports of entry, experiment stations, etc. Indeed, in this specialty, the demand exceeds the supply.

As an item of interest and proof of the immense amount of animals inspected for the year 1900, I might mention that the total number of cattle inspected ante-mortem was 53,087,994.

That the horse raising industry is greatly on the increase is evinced by the high prices at the present time, being as high or higher than at any time of the past; also our horse export trade is growing very rapidly, as shown by an increase for 1900 of forty per cent. over 1899, the United States having exported 56,315 horses during 1900.

This greatly increasing demand at home and abroad for live stock and dairy products, means an increased value of such animals, an increased number of such animals, and, what is more for us, a necessity for an increased number of veterinarians. You, gentlemen, are to be congratulated for entering the profession at so opportune a time for quickly gaining a lucrative practice or making your mark in the scientific world. But I here again wish to emphasize the fact that your success in either path depends entirely on how you spend your time while at college. The studious, thoughtful student will surely make a success, either as a practitioner or a scientist. The careless, lazy student will so surely be a failure. From now on let " work " be your watchword.

I once more, gentlemen, welcome you to this institution and on my own part, as well as on that of my colleagues, assure you that no pains of ours will be spared in promoting the great purpose for which you have come, and in rendering you whatever aid may be necessary to make you all that you could wish.

THE U. S. WAR DEPARTMENT has just announced that it has abandoned the automobile as unsuited for any service in the field, after two years' trial in the Philippines and at Fort Meyer, Va.

HUMAN TUBERCULOSIS IS TRANSMISSIBLE TO CATTLE.*

By Prof. M. H. J. P. Thomassen, of the Veterinary School at Utrecht.

Translated from "Recueil de Médecine Vétérinaire," by L. Van Es, M. D., V. S., *Mobile, Ala.*

I had not the least idea that my announced communication "on the identity of human and bovine tuberculosis" could in reality create the great degree of interest which it owes to the sensational lecture made before the general meeting on Tuesday last by Prof. Koch.

The great teacher on tuberculosis denies the identity in question, and his assertion is based especially on results obtained by the inoculation of bovines with pure cultures or with the sputum of phthisical men.

In experiments made in common with Prof. Schütz, he has not been able to succeed in bringing about tuberculous lesions. At the most, there could be observed at the place of inoculation abscesses, the contents of which contained the bacilli of tuberculosis.

During the session Profs. Nocard, Bang and Woodhead have protested against the conclusions of Prof. Koch, to wit: that the milk and the meat of tubercular animals present little or no danger of infection to man.

Nocard has called attention at this very congress, that the results of experiments contradictory to those of Koch would be communicated, with the proofs on which they are based. Therefore I will endeavor to explain to you the experiments in question; but to begin with, I will stop to give you a short historical review on the question concerning the susceptibility of cattle to human tuberculosis.

Although Laennec had already identified tuberculosis of man with that of cattle, and even after the glorious discovery by Villemin, in 1865, it was for a long time rejected, to see in the

* Communication to the Congress at London, July 26, 1901.

lesions of tuberculosis of the ox the same characteristics as in those of man.

The anatomo-pathologists, with Virchow at their head, defended, during a number of years, the opinion that pearl-disease of cattle is a disease entirely distinct from human tuberculosis. It was not until 1882 that the discovery of the bacillus of Koch and its constant presence in the specific lesions of all the species triumphed over the last resistance on their part. In the meanwhile, during the period between 1865 and 1882, a number of learned men have busied themselves to prove the identity of the two tuberculoses, and have done so with success.

As proof, it was necessary to take the virus from one species and cause it to develop in the other. Of course, there could only be question of an infection from man to animal. In case one succeeded in one sense, the opposite should be regarded as very probable. It is Chauveau who, at the veterinary school of Lyons, made the first attempts in 1868. The infection of the bovine species by human tuberculous virus was brought about in three manners: by the introduction of tuberculous matter into the digestive organs, by intravenous injection, and by the injection into the subcutaneous connective tissue. Three subjects who swallowed infectious material derived from human lesions became all tuberculous. The lesions had the same character as those of animals which had ingested material obtained from bovine lesions.

In one single case the human virus was introduced intravenously; after 29 days the injection had already caused the formation of interesting lesions, all localized in the chest. The hypodermic injection of a tuberculous emulsion, derived from the human species, gave rise to a local tuberculosis, with at the most, lesions in the nearest lymphnode, without the least manifestation of a generalization of the infection.

The author comes to the conclusion, that human tuberculous virus behaves itself toward the bovine species as tuberculous virus derived from the same species. Klebs inoculated a calf of four weeks into the peritoneum with tuberculous material

from man. The animal, which was killed after three months, had on the omentum and part of the stomach a great quantity of small, pedunculated, non-calcified growths, which had the histologic characteristics of pearly tubercles. He found besides gray miliary tubercles in the lymphnodes of the mesentery and a few in the liver and in the spleen. Klebs does not make mention of changes at the place of injection.

Kitt obtained, by the inoculation of a calf with 20 grammes of juice obtained from scrofulous nodules of man, an acute tuberculosis and death in 46 days.

Bollinger seems to have ascertained a typical pearl-disease, after the inoculation of sputum of a consumptive into the peritoneum of a calf. The lungs and the other thoracic organs presented no lesion whatever.

Crookshank inoculated a calf into the peritoneum with sputum, diluted with a weak solution of chloride of sodium. After 42 days, the animal succumbed to a pyæmia. He observed, besides, abscesses, containing Koch's bacilli, also a miliary tuberculosis of the lungs and of the liver.

Those few experiences show evidence that human tuberculosis can be experimentally transmitted to the ox. This proves at the same time that the two tuberculoses are identical.

The results of experimental infection by means of pure cultures of the human bacillus were notably different, leading to the most harmful conclusions regarding their practical application.

The first experiments in this sense, dating 1898, have been made by Theobald Smith, of Washington. He called attention first to the morphologic difference between the human bacillus and that of cattle; further he pointed out a still greater difference in the report on their pathogenesis.

The bacillus of pearl-disease was more virulent for the greater part of the animals experimented upon; death came sooner, the lesions were more extensive, and they enclosed a more considerable number of bacilli.

Smith inoculated 11 bovine animals of which 5 with the

bovine bacillus and six with the human one. Of the first five, two succumbed to a miliary tuberculosis, and of the three others, which were slaughtered two months later, one had typical pearl-disease and the other two had lesions, which could be regarded as being of a tubercular nature. The animals had become very thin and shown fever during the first weeks after inoculation.

It was not the same with the cows inoculated with cultures from human sputum. Slaughtered two months after infection, all those animals only showed local and insignificant lesions.

Frothingham made similar experiments on four calves, with cultures coming from the liver of a one year old child.

1st calf. 3 months old. Intraperitoneal inoculation. When tested with tuberculine 5 weeks later, the animal showed a reaction of 1.9° C. It was killed 6 weeks after inoculation.

2d calf. 3 weeks old. Inoculated in the same manner. Tested 5 weeks later, it had a thermic reaction of 1.6° C.

3d calf. 3 weeks old. Inoculated through the trachea, showed on being tested 5 weeks later a reaction of 2.9° C. It was killed six weeks after the infection.

4th calf. 2 months old—was similarly injected into the trachea. 5 weeks later a reaction of 1.4° C. followed the test. Three of those calves had a local tuberculosis in the vicinity of the place of inoculation, that is to say, in those inoculated into the abdomen, on the omentum and peritoneum and the other (inter-tracheal injection) in the cervical lymph-ganglia on the corresponding side and in the muscles of the neck. In no case was the tuberculosis general. In three calves, infected with the sputum of a consumptive, Frothingham found, 5 months later, in two, local and insignificant lesions; the third showed no lesion at all.

The author finishes with the conclusion that, apparently, the calf is little susceptible to the human bacillus. Is this small susceptibility due to a less active virulence of the bacillus or to a greater resistance of the animal? This remains a fact to be elucidated by numerous experiments.

In 1899, Richard Gaiser made mention of an experiment.

He inoculated a calf into the eye and into the subcutaneous tissue with human bacilli, which had showed to be very virulent in the guinea-pig and in the rabbit.

On the first day the eye showed a severe irritation, which disappeared at that point until when, 15 days later, no inflammatory trouble remained. After 8 days, the cornea had become transparent and one could distinguish the iris, on which had formed a small yellowish deposit, which disappeared little by little. On the flank a small swelling had formed, which disappeared without leaving a trace. About 3 months after the inoculation the calf was slaughtered and at the autopsy no tubercular lesion could be found whatever. The inoculated rabbits and guinea-pigs succumbed to a generalized tuberculosis. Another calf infected in the same manner with the bovine bacillus, of which the virulence had been increased by passing it through a rabbit, was taken by a generalized tuberculosis.

Own experiments. The startling results published in 1898, by Theobald Smith, caused me to experiment on this line, in order to contribute, if possible, to the elucidation of a question which, at first, seemed to attract but very little the attention of bacteriologists, although it is from a hygienic point of view of the utmost practical importance, as we have just seen at this very congress.

In the month of March, 1899, two calves, one 8 weeks and the other 4 weeks old, served for a first experiment.

They were first subjected to the tuberculine test. After an injection of 10 centigrammes of tuberculine, no reaction occurred, so that the animals could be considered as being free from tuberculosis. The milk on which they were fed came from a tuberculine tested cow, which did not react.

I. The 8 weeks old calf received into the abdominal cavity a culture on glycerinized potato, obtained from the exudate of a child affected with a tuberculous meningitis, the culture being procured from the laboratory of Prof. Spronck, of Utrecht. Its virulence had been tested on the rabbit, and on the guinea-pig.

During the first weeks after the inoculation, the animal remained normal and showed no trouble.

On the 14th of May, it was subjected to the tuberculine test for a second time; after the average temperature during 3 days had been ascertained to be 38.6° C.

After an injection of 0.15 G. tuberculine, the following thermic reaction was revealed:

May 15.	8 A. M.	39.7
"	10 "	39.9
"	12 M.	40.2
"	2 P. M.	40.5
"	4 "	40.6
"	6 "	40.
May 16.	10 A. M.	38.8

The highest reaction, ascertained 17 hours after the injection of tuberculine, was 2° C. This reaction allowed one to suppose that the calf could be affected at least with a localized tuberculosis, so much the more, as during the last days the coat was less smooth and the appetite from time to time was not as desired.

On one of the first days of June, the calf was slaughtered, and in spite of the most searching post-mortem examination, not a trace of tuberculous lesion could be found.

II. The calf of 4 weeks old was inoculated during the first days of April, after having been subjected to the test already mentioned, into the anterior chamber of the eye, with a culture on glycerinized potato, obtained from a tubercular arthritis of man.

The virulence of the bacilli was tested on small animals, used for experiments. Beginning on the following morning symptoms of an intense keratitis showed themselves and the cornea became opaque to the extent that the process on the iris could not be followed further.

In the meantime the animal became affected with an enteritis (dysenteria alba), which required a thorough treatment.

During convalescence a certain degree of paresis developed,

so that the animal remained almost continually in a recumbent position. Notwithstanding this, the appetite remained such that the animal kept alive.

On the 14th of May another tuberculine test was applied. The mean temperature on the three preceding days amounted to 39.° C. After the injection of 0.15 G. tuberculine, about 10 o'clock at night, the following figures were obtained the next day:

May 15.	8 A. M.	39.5
"	10 "	39.6
"	12 M.	39.1
"	2 P. M.	39.1
"	4 "	39.
"	6 "	38.9

This reaction of 0.6° C. seemed to exclude the existence of tuberculous lesions.

On May 27, about 6 weeks after the infection, the calf was slaughtered and found to be affected with a generalized tuberculosis. The eyeball was markedly atrophied; after hardening, the sections revealed tuberculous lesions, especially in the iris and which contained quantities of the Koch bacilli. The pharyngeal, cervical, mediastinal and bronchial lymphnodes on the corresponding side were tumefied and hypertrophic; they showed on section miliary tubercles. From the bronchial nodes the bacillus has been cultivated and sections from the different ganglia revealed tubercular lesions, containing bacilli.

The lungs were affected on both sides, especially at the apices.

On the surface we found a few yellowish gray elevations, which, after incision, proved to be deposits of the size of a small nut, and containing a cheesy material. In coverglass preparations from this material, bacilli were found, which, morphologically, were similar enough to the Koch bacillus, but which decolorized with the Ziehl–Gabbet method.

The lungs enclosed furthermore numerous miliary tubercles, and a few grayish, fibrous ones of a greater size, of which the

microscopic examination proved the tuberculous character by their structure, and by the presence of the specific bacillus. No tubercle showed signs of calcification. The results of the post-mortem examination shows that we have to deal with a fairly well generalized tuberculosis. The route followed by the bacilli from the eye to the lungs was evident.

III. In the month of December, 1899, a heifer of about 2 years old, and being in the best of condition, served for another experiment. In November, the animal, after an injection of 0.25 G. tuberculine, showed only a reaction of 0.5° C. On the 1st of December a rich culture on potato was injected into the trachea of the animal. It had been grown from a tuberculous kidney of a man. No trouble could be observed as a consequence, and on the 13th of February, 1900, an injection of 0.30 G. tuberculine, caused a thermic reaction not exceeding 1° C.

On February 16 an entire culture was injected into the thorax and another into the abdominal cavity. Of the latter, a small quantity was spilled into the muscles of the left flank.

On the next day, the temperature ran up to 40.3; the animal was dull and showed little appetite. After two days, its condition had again become normal. Bit by bit a hard tumor, of the size of a fist and easily movable, had formed in the flank at the point of inoculation. After three weeks this was opened, and after cutting through a fibrous envelope of the thickness of a finger, a yellowish purulent material escaped. It was rich in specific bacilli, which we were able to cultivate. Those cultures were characterized by a pale color. The wound, which was not treated with antiseptics, cicatrized little by little, so that soon there remained nothing but a slight fibrous thickening. In the month of July, 1900, the tuberculine test was repeated without producing a notable reaction. The heifer was slaughtered in April, 1901. The animal, splendidly fat, showed not the least tuberculous lesion.

IV. A fourth heifer, about 2 years old, was also inoculated, after a preceding tuberculine test, into the anterior chamber of the right eye with bacilli grown from the kidney of a man. On

the day following, the cornea was opaque, which, however, did not prevent the observation of the exudate in the anterior chamber for two days. The animal seemed to suffer to the extent that the appetite diminished. At all times the temperature remained normal. On December 19 the condition had become worse, the thermometer showed a temperature of 40.6° C., which at the night of the same day came down to 40.4° C. The fever lasted for three days. In the meantime the eye had assumed twice the normal size, so that the eyelids no longer covered the cornea, which dried up and looked somewhat like leather. On the 13th of February the tuberculine test was repeated with 0.30 G. Before the injection the mean temperature amounted to 39°. The following reaction could be observed on the next day:

February 14.	7 A. M.	39.5
"	8 "	40.3
"	9 "	40.1
"	11 "	40.0
"	12½ P. M.	39.7
"	2 "	40.0
"	3 "	39.7
"	6 "	39.7

There was thus to be noticed a thermic reaction of 1.3°C. Furthermore, the animal was dull, carried the head droopy, and had but little appetite. The tumefaction of the eye and the periorbital region had become more marked. The animal coughed a great deal. All those symptoms caused us to consider the heifer tuberculous.

About May 15 following she was slaughtered. In the eye tuberculous lesions had developed, but in only one bronchial ganglion I met with tubercles, which unfortunately were not subjected to a histologic or bacteriologic examination.

Conclusions.—The results of those experiments show that it is difficult, but not impossible, to cause in the bovine species a generalized tuberculosis by means of pure cultures of the bacillus found in the human species. The identity of the two tuber-

culoses still remains thus a solid truth, which shows that we will always have to reckon with the danger of infection from cow to man, and which in my opinion will be more easily brought about than the opposite. The greater virulence of the bovine bacillus, generally admitted, urges us, contrary to the advice of Koch, to a strict supervision in regard to milk and meat coming from tuberculous animals.

The success of an experimental infection depends for a great deal on the degree of resistance of the animal, as suggested by Nocard and as demonstrated in the second experiment.*

It is to be desired that as soon as possible numerous experiments be made of which the results will prove, and of this we have no doubt, that the theory founded on the Schütz-Koch experiments is an error resulting from a premature conclusion.

A GERMAN ANALOGUE OF TEXAS CATTLE FEVER.—The list of diseases imputed to parasites is now to be swollen, it seems, by a form of hæmoglobinæmia frequently observed in cattle in various marshy districts of Germany and often productive of death. As described by Jackschath (*Centralblatt für Bakteriologie und Parasitenkunde*, xxix, 14; *Wiener klinische Wochenschrift*, July 18th), the parasite is pear-shaped or roundish, and is observed in the red blood corpuscles. He maintains that it is conveyed by the ordinary cattle tick (*Ixodes reticulatus seu reduvius*), so that in this respect the malarial cattle disease of Germany resembles the cattle fever of Texas.

WHAT EVERY READER SHOULD DO.—"Permit me to congratulate you upon the completeness of the current volume of the REVIEW. I read every word of it carefully and find it instructive and interesting. I am especially interested in that division called 'Reports of Cases,' and shall endeavor to contribute something toward the same."—(*S. Stewart, Kansas City, Mo.*)

THE ROCKER OPERATING TABLE, used at the Kansas City Veterinary College, was an object of special interest in the clinic held in connection with the Missouri Valley Veterinary Association in October.

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* Case III.

"SURRA" IN THE PHILIPPINES.

By Coleman Nockolds, 1st Class Vet., 1st Cavalry, U. S. A., Batangas, P. I.

"Surra" is a disease apparently confined to tropical regions. As seen in the Philippines it has the characteristics of a pernicious anæmia; the animal becomes debilitated, and although the appetite continues as good or even more ravenous than when in health, there occurs a progressive emaciation, with marked loss of strength, accompanied with fever. That "surra" is caused by a hæmatozoa there is no room for doubt. The chief symptoms are loss of strength and flesh, fever of the intermittent type occurring during paroxysms. Temperature during 104 to 105, between paroxysms normal or below, which are marked by great pain. It is during the paroxysms that the blood should be examined and the worms will be seen. In the case of a mule that came under my observation the worms were very apparent, with a $\frac{1}{6}$ objective during the height of the fever, whilst in the blood of two horses suffering from the same disease no parasites were to be seen either during or between the paroxysms. The red blood cells are changed in shape and diminished in number. The pulse is hard and bounding, and respirations quickened. There is often a papular eruption upon the conjunctiva. The animal lies down most of the time and soon becomes a pitiable looking object, because of the appearance of bed sores upon various parts of the body. The position taken whilst standing is in my opinion rather characteristic of the disease—the head lowered, the back arched, fore limbs partially flexed, as are also the stifle joints and all the fetlocks, taking that attitude which is seen in "cocked ankle." There is incontinence of urine, and while in the standing position urine dribbles from the animal constantly. The animal is anxious; tears run down the face, and it neighs when the attendant approaches. Even during the height of the paroxysm and when in great pain the patient is always ready to eat or drink. Control of the limbs is apparently partially lost, as the animal usu-

ally falls heavily to the ground whilst endeavoring to lie down. As a result there is bruising and laceration of the knees, fetlocks, etc. The paroxysms in the case of a mule lasted from four to six hours; in the case of two horses twenty to twenty-four. When endeavoring to walk, which they do only on rare occasions, there is marked incoordination of movement. In some cases there is slight discharge from the nostrils and in all cases more or less œdema under the belly and of the legs, especially after a few days' sickness. Palpitation of the heart and paleness of the mucous membranes are constant symptoms.

The treatment in the case of two troop horses which were under my charge consisted of placing the animals in slings, good nourishing food, and the administration of quinia sulphate and iron twice each day, with an occasional laxative of oil and calomel. The animals recovered after an illness of ten and twelve weeks respectively.

A mule suffering from "surra" was given a purgative of aloes and calomel and put on an arsenical treatment, but continued to get worse, until finally it was unable to assume a standing position, and in falling down when trying to rise had exposed the bones of the knees, so was shot to relieve further suffering. To the last minute this animal had a ravenous appetite.

The chief signs after death were as follows: An abundant frothy discharge from the nostrils, under portion of chest and belly œdematous, conjunctiva ulcerated; tissues extremely pale and infiltrated with a yellowish fluid; muscular organs friable. Peritoneum and pleural cavities contained a considerable quantity of fluid and a number of worms, most probably the *filaria papillosa*. Stomach and intestines normal in appearance, but contained a quantity of dark brown foul smelling liquid. Liver reddish-yellow and very friable; kidneys palish and a small quantity of pus in the pelvis of the left one. Spleen slightly swollen, but of normal consistency. Bladder normal, containing urine, which was fouud to be loaded with albumen. Lungs slightly congested. Heart palish, but normal in consistency. Brain and cord apparently normal.

All cases of "surra" that I have seen occurred since the animals have been on half rations of native grass, which is of very coarse texture and obtained from swampy districts.

I have found the quinine and iron treatment, with an occasional laxative, to be superior to the arsenic treatment, and those animals that are not fed on native grass do not suffer from the disease.

A STUDY IN PSYCHOLOGY.—Prince, the "policeman dog," which by watchfulness and prompt action twice caused the arrest of burglars while they were looting his owner's apartments, is dead. Prince caught a cold about two weeks ago, which developed into pneumonia and heart disease, and he died in his mistress' home yesterday afternoon. Although of the usual tawny color, Prince was not an ordinary St. Bernard. His great face, marked in black and white, shone with intelligence, and his owner for the seven years of his life, Miss Jane Maguire, of No. 315 West Fourteenth Street, is almost broken hearted. Miss Maguire always fed the dog with her own hands, and he became very fastidious in his diet, always insisting on having chicken or broiled steak or chops for a meal. His favorite drink was coffee. Nothing was too good for Prince, especially after he had shown his ability as a policeman. He caused the arrest of a larcenous intruder in his owner's house in January, 1897. The thief was lifting a marble clock from the mantel in the parlor when the watchdog sprang upon him. The man dropped the clock with a crash and ran into the hall, and there he was held by the St. Bernard. In capturing his man Prince never bit him. With a spring he placed his great paws about the fellow and held on while Miss Maguire called for help. When a human policeman reached the house he handcuffed the intruder and led him away. Another time a ragpicker had filled his bag with valuable plunder in Miss Maguire's apartments when Prince sprang upon him, and the man's cries brought the household to the scene. The ragpicker was badly frightened, and stood motionless in the dog's embrace. Prince was able to discriminate with ease between various classes of persons, and generally showed his preference for those who were well dressed.—(*New York Herald, Nov. 10.*)

IF the present ratio of increase continues, the REVIEW'S circulation will double in the next two years.

RADICAL OPERATION FOR BURSAL ENLARGEMENTS.

By C. C. Lyford, B. S., M. D., D. V. S., Minneapolis, Minn.

Accident, with Nature as an assistant, is often a forerunner of both medical and surgical science and success.

Few veterinarians who have been in practice for a quarter of a century have not had opportunities of seeing lameness and bursal enlargements cured or improved as a result of direct injury. In the horse the fetlocks are especially subjected to wounds and bruises during runaways and kicking fracases, and in many cases of this kind I have noticed beneficial results.

Bursal enlargements have been long considered dangerous ground for surgical interference, especially so with young practitioners, who have an idea that the veterinarian is the whole thing, and Nature his enemy; but sooner or later he will learn that Nature is his best friend, and to consult her oftener, and his fellow-practitioner and books more seldom, would prove beneficial, not only to himself and his patient, but to the owner of the animal.

In considering the treatment of cases I shall take them up, not as any particular class, but as they appear in my practice during the past sixteen years.

No. 1, June, 1885. A brother of Billy Dayton, 2-27½, was sent me for treatment, he being a confirmed cripple from distension and enlargement of the bursæ of fetlocks on both front legs. I at once aspirated and injected tincture of iodine. This was followed with cooling lotions and bandages for two weeks. Then three successive blisters were applied at intervals of ten days. The swelling by this time had entirely disappeared, and the horse jogged apparently as well as ever; so was returned to his owner, Mr. Dayton, who lived in Wisconsin. For the next two months he was driven on the road preparatory to some fast work that he received in September and October. In November he was returned to me with bursæ as large and patient as lame as ever. I then decided upon opening parts above fetlock of both front legs, injecting U.S.P. tincture of iodine, fol-

lowing daily with corrosive solution, 1/500 parts, dressing wound with marine lint saturated with listerine, parts being kept cold with wet bandages. This was continued for four weeks, at which time the wounds were entirely closed. I then followed with blisters of cantharides and biniodide of mercury, repeating every two weeks for six weeks. At the end of two months the horse was apparently in good shape and was returned home the last of January, 1886. He was immediately given road work and used for speeding on the ice. I received report from the owner during the spring that he showed no signs of returning trouble, that he intended to put him on the track; but the owner died shortly after this and the horse was lost sight of.

No. 2, October, 1895. Was called to see gray gelding belonging to D. Clapsidle. Previous history indicating enlargement of fetlock, two years' standiug. Said horse had met with an injury ten days prior to my visit, caused by a cut under the fetlock, opening the bursal sheath. Having been dressed and bandaged, the cut had healed, though so distended and painful that he could not rest his weight on the foot. I at once opened above fetlock on both sides, passing the seton through and dressing the parts with antiseptics and keeping cool as in previous case. The horse was given a box stall and yard to run in. Parts were dressed twice daily. Wound had closed at the end of three weeks, when a blister was applied. Two weeks later he was put at work on a heavy meat wagon, from which time he had not lost a day's work until the fall of 1900, when he died from other causes. To all appearance this leg was as good as the other, and had never gone lame from the time of treatment.

No. 3, brown gelding, was presented for treatment July 14th, 1899, at the Minnesota State Veterinary Medical Association meeting, held at Faribault. Subject was as near as possible a duplicate of No. 2, excepting no wound, parts being painful from distension of the sheath and bursæ, resulting from a severe sprain. I advised operating, though the majority of the members thought differently. The owner coincided with me, and I assisted Dr. S. D. Brimhall in opening and putting seton

in place, and dressing parts. The horse was sent home with instructions to move seton and dress leg twice with antiseptics and cooling lotions each day. The only report from the case was given by Dr. Hay, of Faribault, six months later, who said the treatment was too successful to be profitable, as the owner never even consulted him regarding the case, but the horse was at work and as good as ever, and the leg as small as its fellow.

No. 4, June 26, 1900, bay mare Judith, belonging to the Minnesota State Experimental Station, having been sent to my infirmary to be delivered, but before removal got cast in the stall and produced a nice big fat capped hock, so I called Drs. Reynolds and Brimhall to assist in the operation, which consisted in casting, cleansing and cocaining the parts. An opening was made at the lower part of the swelling, from behind upwards, to within half an inch of the apex. The sack was then separated from its attachments and removed. Parts were cared for as in previous cases recorded, and were healing nicely until ten days later patient got cast in the stall the second time, causing the entire hock to swell to double its original size. Then I decided to place her in sling, where she was kept until August 4th, the parts being nicely healed, showing only a small scar about the size of a nickel.

No. 5, October 20, 1900, was called to see William K., 2-23¼, belonging to J. W. Hull, Minneapolis. History of long standing trouble, with more than a year of lameness at intervals. The part affected the left front leg at fetlock ; large bleb appearing on outer and upper side, about the size of a turkey's egg. I at once opened parts and injected sheath with iodine. By opening the sack, I found it consisted of a number of coats, indicating the result of several attacks of inflammation. I removed as much of the external wall of sack as possible, and at the point of the external excision a depression is now to be seen.

William K. has been in use since March 1st, and is now free from lameness, with leg firm, and does not swell from using. His treatment was as near as possible a repetition of previous cases.

Thoroughpins may be simple or complicated; in the latter case they extend down the sheath on the inner side of the hock, following the tendon or perforans, or may be connected with bursa of tibio-tarsal articulation—in which case I would not recommend a radical operation, though have often seen punctured wounds entering the true joint, that were healed without causing stiffness.

I was consulted during the spring of 1891 by the Fire Department of Anoka, Minn., regarding one of their horses, which was afterwards sent for treatment to the Experimental Station, St. Anthony Park, a photograph of which Dr. Reynolds has kindly presented for your consideration. See No. 6, which does not differ materially from No. 7 and No. 8, excepting the size being much larger, and confined to the upper part of the hock.

No. 7 appeared July 12th, 1901, at our State veterinary meeting, Northfield, Minn., the subject being a black gelding, weighing about 1100 lbs., though greatly emaciated from overwork and lameness of both hind legs, more especially the right, at stifle, which with the enlargement of his left hock, made it difficult for him to stand. The stifle was cocained and fired, pyro-punctured, work being done by Dr. J. P. Foster, of Selby, S. Dak. The hock was then cleansed, shaven and cocained, and opened at two different places on the inner and one on the outer part of hock, the swelling being more extensive on the inner and upper portion, following the sheath of the perforans tendon downwards and backwards to nearly two inches below the castor. The enlargement on the inner surface of the hock being something over 9 inches in length, with a septum between upper and lower portions of sack, which prevented direct communication between the two parts. Having thoroughly opened and explored the different cavities, a ten per cent. solution of tincture of iodine was used to swab the parts out. After dressing the parts with antiseptic solution of corrosive sublimate, 1 to 1000, covering the parts with compresses, the leg was done up as in previous cases. The case showed no indication of hæmorrhage two hours later, when the meeting

adjourned, the patient being left at the infirmary of Dr. K. J. McKenzie, whose later reports on the case are very interesting:

"July 18, 1901.—The patient with bursal enlargements is pretty weak at present. I was away all day the day following the meeting. On my return found my man trying in every way to stop hæmorrhage from the leg that you operated on. He bled considerably. That was last Friday night, and last night (the 17th) I came in from the country and found the stall flooded with blood from the other leg, where he had been fired. I hustled a hypodermic and salt solution, and he braced up considerable. The wounds are in excellent condition and there has been very little swelling. I think he would have gotten along finely had he not had to lose so much blood."

"July 31, 1901.—Our patient with bursal enlargement is doing better, and I have hopes of his recovery. I used the saline solution subcutaneously after the hæmorrhage, and got some beautiful sloughing about the neck."

"August 21, 1901.—Yours asking about the patient with bursal enlargement came to hand, and will say he is going to make a live of it, all right. The parts in which the sloughing took place are granulating nicely. I evidently used the solution too strong, without proper antiseptic precaution, merely ordinary cleanliness. I have been using a bichloride, 1 to 1000, and it is doing nicely. I feel that the sodium chloride saved his life, though it did raise Cain with his common integument. They say he is not as lame on either leg as he was."

No. 8 is so nearly a duplicate of No. 6, that it needs very little consideration, besides being only about one-half the size of No. 6. The history points to about one year's standing. I was called to operate August 16th, 1901, at which time I was assisted by Dr. Reynolds both in operating on and photographing the leg. The subject was placed in slings on account of lameness induced by bursatti sore, at the inner portion of the coronary band of same foot. After thoroughly opening the parts, and injecting tincture of iodine, the seton was passed through the leg, and leg dressed as in previous cases.

Since the operation, I have examined the case about twice, August 20th and August 27th. On the first date the leg was badly swollen and discharging profusely. The latter swelling had disappeared so that the parts were smaller than at the time of operation, and the discharge was but slight, though the sore on foot was still troublesome, having spread one-third way around the foot.

As to advice regarding operations of this kind, one should not be afraid of cutting freely, and giving parts thorough drainage, and see that the wounds are kept sufficiently open, and for such a time as to insure complete healing of internal parts, and destruction of the bursæ, which should heal by granulation before wound is closed.

The blood vessels being larger and more numerous on the inside of legs at both hock and fetlock, cutting may be done freely on the outside, being more guarded while operating on the inner side; but by no means consider either sufficient alone, as I have invariably seen it fail, where the opening was on one side and the injections could not be forced through, hence, I consider a seton almost indispensable both for drainage and keeping the parts open.

CONCENTRATED MEDICINES, in the form of tablets and granules, for canine patients, which have been in extensive use in this country for several years, have just reached England, and the November *Journal* acknowledges the receipt of "a small case, easily carried in one's pocket, containing six small bottles, and each containing a number of 'little pills for dogs.'" After remarking that the drug house which sent them furnished the formula of each, it says: "We like the pills, and approve of the principle." Now that this American fashion has received the endorsement of the worthy editor of the *Journal*, those who have been dispensing these "little pills" for a number of years may breathe more easily.

THE deaths from tetanus in St. Louis, Mo., resulting from the inoculation of diphtheric antitoxine reached fourteen, and the special committee appointed to investigate the cause have rendered a report stating that the serum drawn from the horse on September 30th was not properly tested, and that it was obtained during the period of incubation of the disease in the horse.

TAENIA EXPANSA IN THE SHEEP.

By Dr. H. F. Eckert, Markesan, Wis.

Read before the Wisconsin Association of Veterinary Graduates.

The subject I wish to dwell upon this evening is the disease known as *tænia expansa* in the sheep. No doubt this disease has caused more trouble to sheep-owners than any other disease known. It is extensively distributed all over the United States and Europe; in fact, wherever sheep are to be found, and is a source of great concern to the sheep-owners on account of its frequent fatalities, which are caused by the irritation of the mucous membrane of the alimentary canal owing to the presence of the tape-worm.

On July 5th, 1900, an outbreak occurred at Markesan. I was called to the farm of August Klavon, in the town of Mackford, to see a flock of sheep where the lambs were dying at an alarming rate. The owner stated that he had lost 25 lambs within the last two weeks. Upon my arrival I found that the lambs were a hard looking lot, they looked stunted or like a lot of lambs that had a very poor pasture. They were 42 in number, three or four of them were dragging in behind the flock. The old sheep all looked well and thrifty. By carefully questioning the owner it was learned that nothing but sheep had been kept on one and the same pasture for 15 years on account of the water supply in the pasture. The pasture contained a small creek which would only run during the wet season of the year; this stream also had two or three stagnant pools where the sheep got their water supply during the dry season. This water, I believe, was the seat of infection. I also learned from the owner that he had lost several lambs the previous spring. After consulting the owner it was decided to dispose of one of the lambs and hold a post-mortem examination on the same. On opening the lamb I found that the small intestines were completely filled with the tape-worm, *tænia expansa*. On places they were as many as six deep and from one to fifteen feet in length, so it made it almost impossible for any food to pass. The mu-

cous membrane was in an irritable condition. The owuer also stated the lambs would be unwell for two or three days, then becoming affected with convulsions would turn about in a circle and drop dead.

The appearance of the worm is a dull white, the length variable, the largest measuring from five to six yards in length and from one-twenty-fifth of an inch in breadth at the head, to one-half an inch at the tail—that is, in old sheep. The head is generally small, the neck is very short, the first segments are very short, the others as they proceed backwards to the tail become longer and broader. The head is small at the end, and is furnished with four suckers; the body of the worm is made up of segments very wide and flat, which vary in length in the different portions of the body. Each segment is furnished with an independent set of genital organs, and contains eggs or young embryos, so it will be observed that each segment is capable of reproducing its kind without the assistance of any outside agencies. The segments become matured as the embryos develop within them and are separated from the others to be ejected with their excreta on the ground, there to fulfill their life circle. The segments nearest the tail are the first to be shed, the remainder following in their turn.

Symptoms.—A paleness of the skin will be noticeable; the visible mucous membrane, such as the lining of the eyelids, will also have a bloodless appearance; the fleece is dry and brittle; the animal becomes poor in flesh; the lambs look unthrifty and do not develop; the appetite at first remains good, being increased if anything; the desire for liquids is also increased, the animal at times drinking greedily. The digestive functions soon become deranged, rumination is imperfectly performed, the breath becomes fœtid, signs of colic will be observed at irregular intervals, the evacuations are varied in character; at times the animal is constipated, again it suffers from excessive diarrhœa, the belly becomes distended owing to the accumulation of fæcal matter or gas, the evacuations have a mucous character and are yellowish in color, an examination frequently revealing segments of the

tænia expansa. In severe cases the sheep becomes so weak that it is with difficulty that it keeps up with the flock when grazing. They are attacked with convulsions, finally a malignant diarrhœa which refuses to yield to treatment, the animal gets down, unable to rise, and succumbing by exhaustion.

Treatment.—This is also both curative and preventive. Where *tænia expansa* is in a flock all the animals should be dosed, as the well ones if allowed to graze in the same pastures as those already affected are sure to pick up the eggs of the parasite and in turn become mediums for its distribution. Before administering vermifuges to the sheep they should be prepared for the same by being kept without food and water for at least twelve hours; they should be all dosed at one time and be kept confined for at least twenty-four hours after receiving the medicine, so that the segments and eggs which will be expelled are not distributed over the pasture. When we are satisfied that the medicine has had the desired results the sheep should be allowed to go to a new pasture and the yard in which they were confined should be thoroughly disinfected to destroy all evidence of the disease. One of the best and simplest tæniacides to use is kamala; this is obtained in the form of a coarse red powder, its effect on the sheep for expulsion of the tape-worm being very satisfactory, and the nearest to a specific of any medicine I have ever used. Take kamala 3 drams, mix thoroughly in 3 ounces of linseed gruel; this is the dose for adult sheep. Lambs take from one to two drams according to their age and size. This should be given very slowly to the animal to insure its passing into the fourth stomach and so on into the intestines, as if it should be hastily given it is liable to enter the rumen, where its effect would be lost; this treatment should be repeated in a week. Out of 92 lambs and sheep treated by me under this treatment, I did not lose a single case.

Preventive Treatment consists in not overstocking the pasture. Attention must be paid to the water supply, as this appears frequently to be a source of infection.

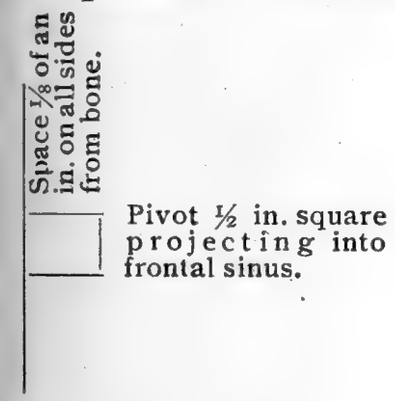
REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

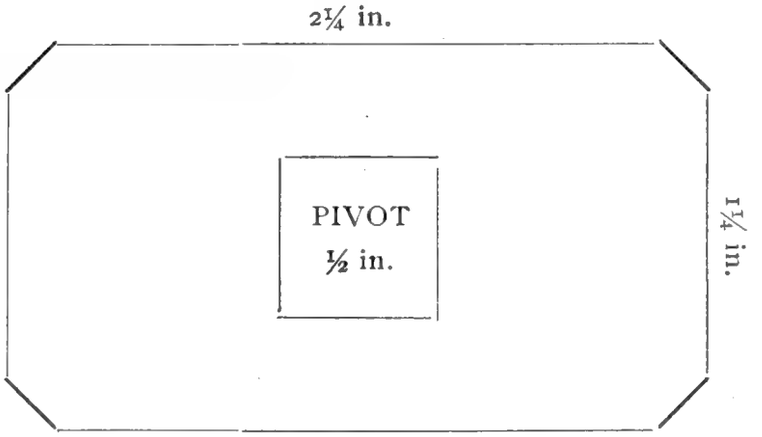
UNIQUE SURGERY.*

By A. M. Leek, Student, N. Y.-A. V. C., New York City.

This case is of recent occurrence. Having heard of the result achieved I sought out further particulars, recognizing the importance of bringing it before your notice, it being the *first* performance of this operation to be recorded amongst the annals of veterinary surgical achievements—and the one who performed this operation is a member of the faculty of our college (I refer to Professor J. Elmer Ryder, to whom all praise is due). The animal upon which this operation (unique in its character and grand in its results) was accomplished is a valuable mare of the "hunter" type, named "Freckles." She was shipped by rail from Virginia to New York the latter part of April of this year. On the journey in the car to this city she sustained a compound comminuted fracture of the frontal sinus, about 2½ in. in diameter, caused by throwing up her head in car, strking a bolt. The wound was dressed antiseptically and loose pieces of bone removed amounting in quantity to a hand-



LATERAL VIEW OF PLATE.



FRONT VIEW OF PLATE.

ful. Cicatrization then proceeded rapidly until about June 1st, when there remained a round opening in the sinus ⅝ of an inch in diameter, the surrounding skin turning in and refusing to cover. The edges were cut back and kept healthy, but as no progress was made, and after all known treatment had failed, it was decided to introduce a silver plate and cover the opening in the sinus, as respiration was carried on through this artificial open-

*Read before the Veterinary Medical Association of the N. Y.-A. V. C., Nov. 12, 1901.

ing with inspiration and expiration. Accordingly an impression of the skull was made with dental wax on Aug. 2d and a plate of pure silver ordered made. Plate thickness of ordinary writing paper. Object of pivot on back of plate, prevented it from slipping out of place, as it would naturally do. For obvious reasons nothing but pure silver could be used. Pure silver is 1000 fine, solid silver is 996 fine. Cost, $6.50.

Upon completion of the plate and insertion of the same on Aug. 8th it was found necessary (the animal acting mean) to throw her. A longitudinal incision 3½ in. lg. and a transverse one of 2½ in. was then made and the plate (having been rendered aseptic by boiling in carbolic solution [1 to 30]) inserted and wound closed with silver wire. The entire operation was performed under a carbolic spray. For the first week after plate was introduced there was a slight purulent discharge from the near nostril with no odor; this subsided after one week. No discharge since. There is no bulging at location of plate; no thickening of skin nor tissues nor soreness on pressure, neither has there been any elevation of temperature at any time.

At present all that remains is a round cicatrix about ½ in. in diameter.

Prof. Ryder discharged the case Sept. 3d. Since then the mare has been regularly schooled over fences and is entered at the coming show at the Garden in the green hunter class.

As to whether silver plates could be used over any other opening than the one herein described (which is probably the most favorable place) seems possible to me.

In conclusion the deductions to be made from the above described feat of our professor are that often opportunities will present themselves requiring the exercise of mechanical ingenuity.

As the veterinary physicians of the future, will we be able to meet them?

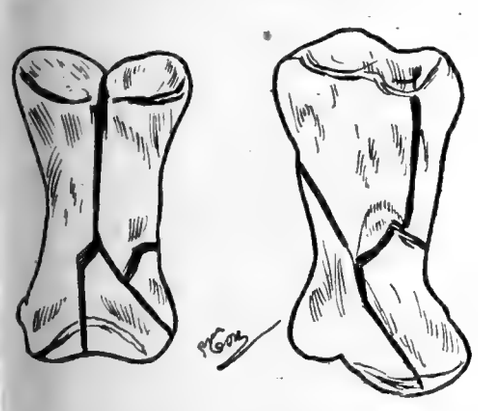
COMMINUTED FRACTURE OF THE OS SUFFRAGINUS IN A RACE HORSE.

By Wm. C. Miller, D. V. S, House Surgeon American Veterinary Hospital, New York City.

On Friday, October 11th, a stable boy was exercising a bay stallion, three years of age, on one of the race-tracks near New York City, and was warming him up on the back stretch, when he heard something "pop" like a pistol shot; thinking something had happened to his horse, he dismounted and examined

him, but could find nothing wrong, and remounted, but had ridden only a few yards when the horse showed marked lameness on the near hind leg, so much so that it took all the help available to bring him back from the track to the stable, when a veterinarian near by was called, who seemed to think it a sprain of the suspensory ligament and flexor tendons, and advised cold applications. During the afternoon and night horse was very uneasy, lying down and in continual pain. When standing would keep lifting the near hind leg up and down. Cold applications were continued with no results, and another veterinarian was called to see the case, who, being undecided about the certainty of his diagnosis, advised that Dr. Coates, of this hospital, be called, and he went to see the horse on October the 17th, and diagnosed the case a fracture of the os suffraginus, and advised that the horse be sent to the hospital, where a splint could be applied and the animal be placed in slings. The horse was brought here in a van on October 18, very lame, hardly touching the ground with the near hind foot; the inner side of the coronet was noticeably thickened, hot and very painful. Upon manipulation crepitus over the region of the os suffraginus could easily be felt.

The leg was bandaged from the foot to above the fetlock, a thick leather splint moulded over it, firmly bandaged, and the horse put in slings, which seemed to worry him a great deal and caused him so much uneasiness, that it was thought advisable to take him out of them and put him in a box-stall, where he would lie down most of the time, standing only a short while during the day, and then as if in great pain. On the 21st the bandage, which had become somewhat loosened, was renewed; the animal seemed to be resting somewhat easier, until the 26th, when the bandage, which had become displaced from the continual uneasiness of the horse, was replaced by a new felt splint moulded over the fetlock and coronet. In the meantime pain was continuous, animal very uneasy and appetite poor, so much so that on the 28th he refused to eat at all, and on Nov. 1st died.



Post-mortem.—Examination of the leg showed the os suffraginus fractured perpendicularly, the outer portion of which was again fractured into four pieces. Quite a thick bony deposit had been formed around the whole of the anterior and

lateral faces of the os suffraginus, and on the superior portion of the antorior face of the os corona. The accompanying rough sketch of the segments, held in position by wire, will give a correct idea of the front and rear views of the fractured bone.

FOUND—FATHER'S MITTENS.

By J. A. McCrank, D. V. S., Plattsburg, N. Y.

On the evening of June 10th of this year I was called to see a cow, just driven in from pasture. She was greatly distended and in distress, but otherwise had every sign of good health. I advised letting her rest in the paddock for the night and I would see her in the morning. I suspected she ate too much of the quickly growing grass. When I called in the morning she was all right; chewing her quid, and wanted to go out again. She was sent to pasture at noon and returned in good condition at night. The next evening she came in very greatly distended and distressed; the same treatment was resorted to and was followed with similar results. This condition of affairs continued until June 25, when she was found dead in the pasture. I was informed and made a post-mortem. Besides about a pound of nails, tacks and wire, I found a large pair of coarse woollen mittens, patched and darned to make them very large and heavy, having been in use for many years. The owner's son was present at the post-mortem. When he saw the mittens he called out, jubilantly, "Oh, there is father's mittens that he lost last winter; he blamed me for destroying them." The truth, indeed.

The animal was fat, healthy and in the pink of condition, and, if you will allow me to prophesy, she would have lived a good long life of health and usefulness had she not overburdened or overcrowded the rumen with the sweet young grass, which forced the mittens into the passage to the reticulum.

Her flow of milk was not in the least interfered with all this time.

TRACHEOTOMY IN A MARE.

By John Minchin, V. S., Goshen, N. Y.

On October 2d last I was called to go see a mare nine miles from my place, that her owner said could hardly breathe for a day or two, and that morning he thought she would choke. On inquiry was told the mare's head was very much swollen, and to hurry up and come. And so I did. I found the animal in a very dangerous state—head of an enormous

size, eyes almost closed, and breathing very loud ; lips and submaxillaries all out of shape. After a careful examination and study, I told the owner I knew of only one chance for the animal and that chance would be at his risk, viz., to open the trachea and insert a tube for the purpose of breathing, etc. But as I said above, 'twould be at his own risk,—for this was the second case I had seen in twenty years,—when he said "go a head." To make assurance doubly sure, I had him call one of his neighbors to assist. Mr. Neighbor did not put much faith in my doing anything of the kind ; but he did his duty as an assistant. On account of the great swelling of the parts I found it very troublesome to perform the operation and insert the tube, there being so much inflamed tissue. When I did get through in a very short time, the mare got some relief. She was much exhausted and very weak. I administered a tonic through the rectum, as it was impossible by any other channel, and gave orders to do the same every two or three hours at least, and to be sure to stay by her all night, with a pailful of hot gruel constantly before her. On my return the second day, to my great surprise, the animal seemed to be doing finely, having partaken of quite a quantity of nourishment, and did not need any more injections. Although I did not have very great hopes of her I can tell the readers of the REVIEW to-day, November 12th, that the animal is almost as well as ever. The wound is no larger than a quarter of a dollar and few observers would notice it.

[NOTE.—We fancy our correspondent has been in the presence of a case of purpura hæmorrhagica.—R. R. B.]

A SEVEN-LEGGED FŒTAL CALF.

By A. JASME, V.S., Savannah, Ga.

On November 9 was called to attend case of dystokia in a cow ; labor commenced day before. Posterior presentation ; could feel four legs. Could not make out exact condition, and proceeded to cut out what I could feel. A rope on one hind leg could not move the calf until three legs were cut off. Then applied rope over leg and hips, around lumbar region, and succeeded in removing a calf, and, to my surprise, four more legs. The anterior portion was intact, and showed three legs, two of which in normal position, the third between the two, the scapula resting from the base of the thorax against the ribs of the right side. Those three legs were same length and perfect. I had not so good a chance to examine the four hind legs, as

three had been amputated. However, they also seemed to be well formed and about the same length. Each foot had perfect toes, with the exception of one that had three. Do you know of many seven-legged calves? I am sorry I was not called the day before; the calf may have lived. The body was perfect everywhere else, and I think the calf was not long dead when I was called. Would say that the bones seemed soft and were not hard to break.

"WOLF IN THE TAIL."

By FRANCIS ABELE, JR., Quincy, Mass.

Was called to cow for "wolf in tail," a very bad case. Four wolves were present, the last being the highest up on the tail. The owner was desperate, because he could not check the hæmorrhage. The history did not suit my credulity. Like many other veterinarians, I believe what my own senses tells me, and simply give consideration to what others tell me. Owing to the excessive congestions, I really thought I had some sarcomatous or carcinomatous condition. Removed tail above last wolf. Had it examined microscopically. It proved to be simply inflamed tissues, probably due to medicaments.

DEPARTMENT OF SURGERY.

By L. A. AND E. MERILLAT,

Chicago Veterinary College, 2537–39 State Street, Chicago, Ill.

SURGERY OF THE EYE, EAR AND UPPER AIR PASSAGES.

(*Continued.*)

SCLEROTOMY.—Sclerotomy signifies puncture of the anterior chamber of the eye to relieve intraocular tension and remove foreign bodies.

Indications:

1. Chronic simple glaucoma.
2. Secondary glaucoma.
3. Hæmorrhagic glaucoma.
4. Staphyloma.
5. Parasites of the eye.
6. Internal opthalmia.
7. Recurrent opthalmia in solipeds.
8. Simple iritis.
9. Choroiditis.
10. Foreign bodies in the iris.
11. Exopthalmos.

12. Hydropthalmos.
13. Dislocation of the eye-ball.

Instruments.—Sharp-pointed bistoury, speculum, forceps, spatula and scissors.

Restraint.—The animal should be placed on an operating table or in the lateral recumbent position by means of the side-line and anæsthetized, and the eye fixed by a forcep held by an assistant; this is a very movable organ and any movement at the time of operation would be apt to defeat its object.

Technique.—Previous to operating, myosis is produced by the instillation of a solution of eserine into the eye; this contracts the pupil to pinhole size, or almost so, and thus to a great extent lessens the danger of prolapse of the iris. Under no consideration should atropine or cocaine be used on the eye in this operation. Having produced myosis, and taken all aseptic precautions, an incision is made at the corneo-sclerotic margin, either at its inferior or superior aspect. The superior is more easily exposed, but the inferior has the advantage of removing all putrid matter. The incision being made, the bistoury is held in position and partly turned; this separates the edges of the wound and facilitates the escape of the aqueous humor; in any case this must be slow in order to avoid intraocular hæmorrhage from the sudden reduction of tension. The bistoury is now slowly removed and the edges of the wound allowed to come in apposition and a few drops of the eserine solution instilled. Should there be any tendency to prolapse of the iris it should be pressed back with a sterilized spatula and retained by a bandage and a course of eserine. Should it still tend to escape it becomes necessary to seize it and snip it off with a sharp pair of scissors, thus turning the sclerotomy into an iridectomy The operation is completed by stitching the upper and lower lids of the eye together and thus preventing irritation and injury to the same. The above operation is termed anterior sclerotomy. A posterior sclerotomy is sometimes performed for the same conditions. This is done by making an incision 8 or 10 mm. behind the outer margin of the cornea and the wound made to gape by a slight turn of the bistoury on its axis; this allows of the escape of the aqueous humor. The success following this operation, however, is not as great as that of the anterior sclerotomy.

After-treatment.—This consists in keeping the eyes protected, bathed with cold water daily, and the use of a mild collyrium, two or three times a day, such as the following:

℞ Zinc sulph., ʒ ss.
Aqua rosa, ℥ j.
Aqua, ad q.s., Oii
M. ft. sol., et filtra.

The stitches may be removed from the eyelids on the third or fourth day.

ENUCLEATION OF THE EYEBALL.—This is an ocular operation which is only used as a last resort. When the eye is in such a condition that there is danger of complications which impair the appearance of the patient or endanger other anatomical structures to an invasion of the disease that involves the eyeball, it then becomes necessary to remove the eyeball; in fact, when such conditions exist, enucleation is the only rational treatment, and procedure, in such instances, should not be deferred until the complications have become so serious as to reduce the probable good results of the operation. The indications for the operation may be enumerated as follows:

1. Staphyloma.
2. Suppurative choroiditis.
3. Rupture of eyeball.
4. Accidental injuries.
5. Injuries from heat or chemicals.

1. *Staphyloma.*—Bulging of the cornea which will not yield to milder treatment, both surgical and therapeutic, may in time become a source of annoyance; the protrusion may become large and unsightly; or, the condition may favor septic infection and become very painful. When a staphyloma develops to such an extent that keratocentesis fomentations are inadequate, and there is danger of septic infection, or if septic infection has already invaded the eyeball, the only remedy is enucleation.

All diseases of the cornea that terminate in septic conditions of the eyeball may also be considered indications for the operation in question.

2. *Suppurative Choroiditis* is an infection of the choroid coat which in most cases involves the iris and ciliary bodies before the condition can be arrested. The condition may follow surgical operations, such as paracentesis, sclerotomy, iridectomy, or result from penetrating wounds of the eyeball. *Metastatic choroiditis* is sometimes observed, but in most instances it is of an endogenous origin; the septic material is carried to the choroid from some inflammatory focus by the choroidal vessels, and form septic emboli in the substance of the coat. Besides this

form of choroiditis we may include all septic inflammatory conditions of the inner structures of the eyeball as indications for enucleation of the eyeball.

3. *Rupture of Eyeball.*—Under this topic we will consider ruptures of various intensities, *e. g.*, (*a*) Complete ruptures of all the coats of the eyeball; in this class of injuries we include all injuries to the eyeball that rupture all the coats and accompanied by prolapsus of the structures within, such as the iris, lens, choroid, vitreous humor, or retina. The rupture is usually at the circumcorneal attachment, and the edges may be very ragged and vary in size; (*b*) Partial ruptures of the coats, such as the choroid, without injuring the sclera and conjunctiva; or rupture of choroid and sclera without rupturing the conjunctiva. In all ruptures the sight is impaired, but all ruptures are not indications for the operation. Those ruptures which render the ball susceptible to infection are the only indications generally; most of the other injuries of this kind can be successfully treated otherwise. With these indications we may consider hydrophthalmosis, which is a condition generally followed by more serious complications in the course of time, and in some instances requires enucleation.

4. *Accidental Wounds.*—Injuries caused by accidents often terminate unfavorably, and in such instances it is necessary to remove the eyeball in order to prevent complications. All injuries that leave the eyeball infected, or subject to secondary infection, are indications for the operation.

5. *Injuries from Heat, Chemical or Electric Currents.*—Injuries of this origin are not common in domestic animals, but occur occasionally as a result of accidents. When the injury is caused by strong acid or alkali the superficial structures may be so badly injured as to destroy the sight and allow the inner structures to protrude through the outer coats. If such conditions become obstinate, and secondary infection takes place and involves the inner portion of the ball, it should be removed.

Operation.—The patient must be cast and secured. The operation may be accomplished by the use of a local or general anæsthetic, but we would recomend a general anæsthetic.

The instruments required are an eye-speculum, artery and dissecting forceps, strabismus hook and enucleation scissors.

Technique.—An incision is made in the conjunctiva near the cornea and dissected from the anterior surface of the ball and straight muscles. The ball is then dissected from the orbit with the scissors and the ball pressed out of its socket and the optic

nerve cut as near to the sclera as possible. The muscles and conjunctiva can easily be dissected by rotating the eyeball. All hæmorrhage must be checked with hot water. If the hæmorrhage is extensive, the orbit must be filled with wads of absorbing cotton, saturated in hot water. After all hæmorrhage is arrested, the edges of the conjunctiva may be sutured; this, however, is not necessary; most operators prefer to fill the orbit with wads of aseptic gauze or cotton, and a suitable bandage applied over the orbit.

After-treatment.—The first dressing should be changed two or three hours after the operations, and the orbit washed with a mild antiseptic solution; the dressings should be applied every day for the next three or four days; after the fourth day the wads in the orbit may be omitted.

Complications.—The most common complication is secondary hæmorrhage, which must be controlled with hot water and wadding. Tetanus is another complication that may follow. Cellulitis and meningitis may also be sequellæ; each of these require good drainage and the removal of septic material from the wound, followed by hot fomentations.

SURGICAL ITEMS.

Oöphorectomy — Spaying—Female Castration.— Although this does not interest the city practitioner very much, in some parts of this country it is quite an item to the country practitioner, especially in the great cattle-raising districts. The animal the veterinarian is most frequently called upon to perform this operation on is the ox. I will endeavor to explain why, what season of the year, the age and *modus operandi*, viz.: The spayed animal will carry more flesh and acquire that flesh much faster than the one not spayed and will sell for a better price. As an example, I will relate an experiment to this effect: A bunch of spayed heifers and a bunch of non-spayed heifers were weighed in at equal weight, placed in the fattening pens under the same conditions for six months; were again weighed at the end of this six months, and the spayed heifers weighed 115 pounds per head more than the others, and sold for 15 cents more per cwt. In regard to the season of the year, it has been demonstrated that the best time is from about May 1st to about November 1st.

When you recommend the warm weather to the average farmer the first thing he wants to know is "what about the flies," but no professional man need ever fear the fly in this case, no

matter how warm it may be. As regards the age, the younger the animal the better for it, the easier for the surgeon, and the less danger. The best age at which the heifer should be spayed is six months. As to spaying a pregnant animal, I have seen it demonstrated that it was safe to spay one with a calf not more than four months gone. Of course, it causes abortion, which generally takes place in from 36 to 60 hours, although it may be longer. It matters not whether the animal is in heat or not. As to the milking qualities of the spayed cow, it depends to a great extent on the time she is spayed, according to the latest experiments. If the animal is wanted for milking purposes the correct time to perform the operation is when she is in her prime, which is from three to six weeks after giving birth to the young. In this case they generally remain good milkers on an average of from three to five years.

Modus Operandi.—The first item under this head is the fasting or starving of the animal. They should be fasted for from 36 to 48 hours, or even longer would be better, but all farmers don't look at it that way. The next item is the securing of the animal, which is done many different ways, but will only relate the most important. The one considered the best is the stocks, which should be provided with a door at the front end similar to a dehorning door. This door to be used for the purpose of confining the head of the animal, and at the same time it should be arranged so that it could be opened to allow the animal to walk out the front end when the operation is completed. There should be another door on the left side, which, after the animal's head has been confined, can be let down so as to expose the left flank where the operation is performed. Some veterinarians use the block and tackle and perform the operation through the linea alba; again, some throw them, but in either of these the men that do the rough end of the job are generally worn out before very many operations are performed, whereas when using the stocks it is no harder on those men than is the ordinary work of the farm hand. One of the most important items of this operation is cleanliness or sterilization. You should have an assistant to clip the hair; wash the part with soap and water and then bathe it with a solution of some good antiseptic. Then for the knife, which should be kept in some good antiseptic solution along with the other instruments. Make a puncture into the abdominal cavity. This should be about half way between the last rib and the anterior angle of the ilium and about three

inches below the transverse processes of the lumbar vertebræ. After this is done make an incision about three inches long involving the skin only; into the puncture place one finger of each hand and tear the muscles, peritoneum, etc., instead of making a clean cut of them; into this opening pass your left hand backwards toward the pelvis and proceed to locate the horns of the uterus, which can be easily traced to the ovaries; take off the ovaries with a pair of long handled scissors, making a clean cut. It is best to take off both ovaries before removing the hand; then stitch up the skin only, beginning as high as possible and leaving a drainage at the bottom. Use the continuous suture, which is easily removed. Brush some pine tar over the stitches and allow the animal her own freedom afterwards. Cows that have been used for breeding purposes are sometimes spayed through the vagina, which is about the same as the operation in the mare, which will be described below. Deaths in the ox not quite 1 per cent. (19 out of 2143).

As for the mare, as a general rule we seldom have an occasion to perform this operation, but nevertheless it is done sometimes. It is considered much more dangerous in the mare than any of the other domesticated females. Until a few years ago it was not resorted to except in animals that became unmanageable on the recurrence of heat and who would not breed, or were utterly unsuited for breeding purposes. But a few years ago the breeders of thoroughbreds became a little enthusiastic over the subject of spaying, and as a consequence I was fortunate enough to see quite a number of the operations performed. As is the case with almost every race-horse man, they had a hard-luck story to relate. They claimed that the mare would not run up to her standard during the period of heat by at least two or three seconds, and related that just about the time their mare was in condition to run a record-breaking race, it was just their kind of luck to have her come in heat and spoil everything. Although I saw quite a number of yearling fillies operated on one season with only a few deaths, there were some of them that made first-class runners, but never heard of any of them breaking any world's records. As to the season of the year, it makes little difference, as we generally have nice warm barns in which to keep them. The operation was formerly extensively practised in Europe, the incision being made through the flank, and in a large percentage of them, as the old saying is, "the operation was a success but the animal died." Percentage of deaths in those I saw spayed was about 6 per cent.

(4 out of 72). Prof. Williams relates an occasion where he performed the operation in twenty mares, ranging from two to twelve years, without a single death. The modern surgeon performs the operation through the vagina, and it is simple when once understood. The animal should be properly confined. May use the same stocks that were used in operating on the heifers. Strap all four feet to the floor and place the animal in the slings. The rectum should be emptied before beginning the operation. Cleanliness is the prevailing item always. With the knife make a puncture through the most anterior part of the roof of the vagina just above the *cervix uteri.* Into this puncture place your long handled scissors and open them, thus tearing the parts; pass your hand through this opening and trace the horn of the uterus until you come to the ovary and take off with the ecraseur, or may be twisted off with a pair of forceps. After the second ovary is removed the operation is completed, as there is no suturing done in this case. As to the after-treatment, there doesn't seem to be very much, only that the animal should be put on a soft diet for a fortnight or so.

Next comes the spaying of the bitch. This animal when spayed becomes brighter, more docile, and for a house dog stays at home better, and at the same time never has too much company around and is never found linked with a dog. Some seem to have the idea that they grow very fat and lazy, but I attribute this to the fact that those cases are the ones that are kept in the parlor and occupy the best chair, etc., and are never allowed outside the house to take a little exercise only once or twice a day and then exercise is not the object when they are out. The old bitch that has been bred, may, when her time of heat should come, take the male from habit, so, therefore, I think they should be spayed when young. Fast or starve the animal for 48 hours. Have her properly confined. Shave the seat of operation, which is generally just posterior to the umbilicus, but different veterinarians prefer different regions. Wash the part with soap and water and bathe with a solution of mercuric chloride or some other good antiseptic; with the scalpel make about a two-inch incision down to the peritoneum; then puncture through the peritoneum into the abdominal cavity; into this puncture place your directory and with your curved bistoury make the incision in the peritoneum; place one or two fingers into this opening and locate the horn of the uterus, which can be traced to the ovary; bring the ovary out and take

off with the canine emasculator or whatever method you may select; after both ovaries are removed stitch up the opening and dust some dry antiseptic on it; put the animal on a soft diet for a fortnight or so and remove the stitches about the fourth day.

Spaying of the Pig.—This operation is generally performed by the farmer, and, therefore, doesn't interest the veterinarian to a very great extent; nevertheless, it should not be omitted here. The operation can be performed the same as in the bitch or may be performed through the flank. The animal is laid on an inclined plane with the head downward, and if the operation is performed in the flank either flank will do, whichever is the most convenient.—(*J. K. Jameson.*)

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D.V.S., Bureau of Animal Industry, Milwaukee, Wis.

IODIDE OF POTASSIUM AS A PROPHYLACTIC AGENT AGAINST PARTURIENT PARESIS [*A. Kragerud*].—The treatment of parturient paresis with iodide of potassium is already known all over the civilized world. At the same time it proves to be far superior to any other treatment. The author also observed the successful antitoxic effects of the iodide of potassium in milk fever, both by intramammeal and by the intravenous injection. It occurred to him that administered by os as a prophylactic against this disease it might be advantageous. To prove this he selected cows which were predisposed to the disease, standing also in stables in which the disease was very frequent. A few hours before parturition a cow of middle weight received per os two drachms of iodide of potassium, dissolved in a pint of water, which dose in 12 to 20 hours was repeated. Up to this time the author had applied this prophylactic treatment in 100 cases with the best results. A few of the cows showed the first manifestations of the disease after the first dose was given (dullness, capricious appetite, skin changeable from warm to cold, etc.), but after a few hours these symptoms disappeared and the cows remained healthy. In a few stables in which the disease was prevalent for a great number of years all the cows received the iodide of potassium as a prophylactic treatment, and the disease did not reappear after this. There is much rejoicing amongst the farmers at these results

in that by this cheap and easy treatment their best milk cows escape parturient paresis. The author recommends to his colleagues further experimentations in this direction. — (*Berl. Thierärzt. Wochenschr.*)

ATROPHY OF THE OPTIC NERVES IN A HORSE AFTER A GREAT LOSS OF BLOOD [*Walther*].—A gelding, 14 years of age, frightened, slipped and fell on the pavement upon the right chest wall; this was immediately followed by a profuse pulmonary hæmorrhage. The blood which escaped from both nostrils amounted to about 8 quarts. The horse was taken to the stable, which was about 50 yards away. He moved drowsily, was very fearful, both pupils were markedly dilated. A close examination on this day was omitted to prevent new hæmorrhages. On the next day the examination revealed the following: pupils dilated to their extreme, showing a greenish gleam; a reaction of the pupils did not take place, even in the brightest light. The horse is completely blind. The examination with the ophthalmoscope reveals that the refracting parts of the eyes are clear; in the right eye towards the nasal direction from the papillæ are two sharply defined hæmorrhages noticeable in the retina, of the size of a hemp. Both papillæ appear paler than normally. In the course of the following days the papillæ became a greyish white ground color, which partially are traversed by light stripes; they from time to time became smaller. The hæmorrhages in the retina finally appear as yellow spots. After three weeks the horse was discharged as incurable.—(*Zeitschr. f. Veterinaerk.*)

ACTINOMYCOSIS IN A HORSE [*Schwartz*].—April 28th a young horse was brought to the sick-ward with the history that the animal takes its food considerably slower than the rest of the horses and that it has a tumor on the upper jaw. The examination of the buccal cavity revealed positive results. On the upper jaw there was an enlargement, hard in consistency and of the size of a pigeon's egg, which extended from the right corner incisor to the left middle incisor. On its surface there were several somewhat softer spots, which contained tracts, from which a light yellow thick secretion was discharged. The mucous membrane surrounding the tumor was reddened, the blood-vessels of the upper lip much congested. A probing of the tracts and injections of a liquid into them revealed a connection of these, as the injected solution squirted from all the openings. Under the microscope the discharge, with an addition of acetic acid, appeared as a grayish yellow lumpy mass which

presents itself as fungi, also resisting the addition of caustic potash. Further microscopic pictures reveal the club-shaped ray fungi, on which the diagnosis was established. The treatment consisted for the first three weeks of internal administrations of iodide of potassium in the form of pills, and externally tincture of iodine and also Lugol's solution. As there was no improvement obtained by this treatment, a radical operation was decided upon. Preparing for the operation the tumor was infiltrated by Schleich's anæsthetizing method. For the operation the horse was cast and anæsthetized by equal parts of chloroform and ether. The tumor was then removed by the aid of a knife and sharp spoon, the diseased parts of the bone removed and scraped, in which procedure it was also found necessary to extract the right middle incisor. Following this a rapid recovery took place, and repeated examinations showed satisfactory results. The operation required three-quarters of an hour's time. Cases of actinomycosis in the horse are very rare and therefore worthy of report.—(*Berl. Thierärzt. Wochenschr.*)

Quinine Against Hæmoglobinuria of Cattle [*von Hellens*].—At the veterinary meeting at Helsingfors, Finland, von Hellens gave some communications on the subject. Since the year of 1895, the author observed the very favorable effects of the sulphate of quinine in hæmoglobinuria of cattle, recommending this treatment to his colleagues. This was met with approval, and as a consequence v. H. was enabled to collect extensive statistics on the cases. Separating all the cases from which one could not determine the exact course and termination of the disease, there remain for the statistic 591 cases, of which 475 (80.4 per cent.) recovered, and 116 (19.6 per cent.) succumbed. These results are certainly very satisfactory, considering that by the other treatments the death rate was 30-50 per cent. But it will become still better when one separates those 32 cases, in which the quinine treatment was not introduced in proper time, the disease being too far advanced. Deducting these 32 cases there remain 559 animals, of which 475 (85 per cent.) recovered and 84 (15 per cent.) died. The rate is still more favorable when it is considered that many of the deaths occurred in those cases where insufficient doses were given. Regarding the dose, the author recommends the administration of 20.0 gm. of quinine. Smaller animals 15.0 gm., while large, or those more severely affected, receive 40.0 gm. (twice 20.0 gm).—(*Svensk Veterinartides Krift.*)

ITALIAN REVIEW.

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

PROBABLE PARALYSIS OF THE LEFT BRACHIAL PLEXUS [*Prof. Lanzillotti-Buonsanti*].—This diagnosis was made by the author in the presence of the symptoms which were exhibited by the patient and confirmed, it may be said, by the successful treatment which was resorted to. A five-year-old had been bought recently at auction, and after two weeks was returned as being incurably lame. There was no other history, and when seen by Prof. N. L.-B. there was marked atrophy of the shoulder muscles; a small swelling on the inner side of the carpus, rather œdematous in nature; the leg held in abduction and semi-flexion, with a tendency to pointing. Sensibility was normal over the whole leg to punctures of needles. All motions were extremely difficult, the horse when called to walk being unable to raise the right leg, or if urged to do it dragged it along the floor. Trotting was perfectly impossible. When left alone, the animal assumed the same immobile position, the leg in abduction, semi-flexed and somewhat pointing. The dropping of the elbow, classical symptom of radial paralysis, was absent. After a few days of rest, an experiment was made on the horse, he being submitted to the effects of an electric current for ten minutes, on the shoulder, on the arm and the left pectoral muscles. Immediately after, the animal was asked to walk and to trot, but did not present any peculiarity. The treatment by the use of subcutaneous injections of nitrate of strychnia was then decided upon. Of these the animal received three. The first gave no result and but little effects of strychnia were noticed. At the second the effects of the drug were very severely marked, while at the third they were quite mild. Improvement in the condition of the patient was noticed only after the second injection, and from that time kept on increasing until final recovery was complete in just three weeks.—(*Clinica Veter.*)

CALCIFIED CYSTS OF THE EXTERNAL FACE OF BOTH FORE CANNONS [*By Prof. Lanzillotti-Buonsanti*].—These tumors did not at present interfere with the use of the animal, but the owner thought they might later, perhaps, lame him and he wished them removed, if possible. They were about as big as a hazel nut, ovoid in form; the left one was hard and movable, the right, hard also, seemed to be adherent to the under tis-

sues. The diagnosis established, the author proceeded to the removal, casting the horse on the left side to operate on the right leg first and *vice versa*. In removing the right tumor and isolating it from the plantar nerve and artery, upon which it passed, a ramification of the artery which enters it had to be ligated. The left tumor is smaller and covered by the skin ; it seemed to have started from an indurated spot of the skin. The plantar artery passed at its base and sent four little branches into it. The artery was quite large. The plantar nerve was adherent to the base of the tumor, and careful dissection was necessary to take it off. The wounds after being disinfected were sutured and dressed antiseptically. Recovery final in three weeks.—(*Clinica Veterin.*)

Upon Several Cases of Syndesmotomy for Treatment of False Dislocation of the Patella [*By A. Malgarini*].—For cases of the superior luxation of the patella as causes of cramps in bovines, the author admits but one proper treatment, and that is the operation of syndesmotomy. He records briefly 18 cases, in which the operation has been performed by him, and always successfully and without serious complications —in fact, without any. The cases were of various nature, sometimes unilateral, on the right or on the left side, and then, again, in others, both legs were affected. In these last he generally allowed a number of days to elapse before operating on the second leg. Of those 18 cases, fourteen were cicatrized without suppuration, in the other four, small collection of pus occurred at the seat of the operation ; but these subsided without trouble, with little attention and care.—(*Clinica Veterin.*)

False Rabies as a Mania of Maternity [*Dr. E. Stragia.*]—This simple case is that of a fat setter slut, which, having bitten a servant passing close to her, was suspected of rabies. The animal was known by the author, as he had operated upon her some time before for a large sebaceous cyst of the left elbow. The dog slobbered some at the mouth, growled, barked and assumed a threatening aspect to those who approached her. For the last eight or nine days she has been more quiet than usual ; her mammæ had become considerably swollen. Since three days she has lost her appetite. The year previous she had presented somewhat the same symptoms, but in a much milder form. Taking in consideration that for two years the slut had not been covered, that during several years previous all her sucking pups had died, and that she had already presented similar symptoms, the author came to the con-

clusion that these symptoms belonged to the class of false rabies, and were due to a "mania for maternity." A little change in her hygiene and care, with purgatives, improved her in two days, and cured her entirely in a week.—(*Il Nuovo Ercolani.*)

MORPHIA IN COLICS OF HORSES [*Dr. T. Lorenzetti*].—Under this title, and after entering into general remarks upon the use and the effects of morphia, reviewing the observations of several authors, the author gives in detail the records of ten cases where he had had recourse to morphia as an essential part of the treatment, adding to it according to the indications other means, such as laxatives, rectal injections, frictions, etc., in cases of colicy manifestations. The first two cases were fatal, one from extensive enteritis, the other from rupture of the spleen. The other eight were successful, the last one showing special interest as being one in which a six-months-old filly had received an abdominal wound, with protruding organs and ligature, etc., and was saved by the use of morphia. In his conclusion Dr. Lorenzetti says: (1) Morphia is the hypnotic *par excellence*, for horses, notwithstanding the contrary opinions of others; (2) In doses of 20 to 50 centigrammes in subcutaneous injections, it gives rise to no bad effects, but, on the contrary, produces a beneficial and short sleep; (3) In general practice it is the agent (*principle*) for the treatment of colics in horses, without the uses of other drugs; (4) That when morphia fails, a serious or fatal prognosis is, in general, imposed.—(*Il Nuovo Ercolani.*)

ECHINOCOCCI IN THE ADIPOSE TISSUE OF A STEER [*C. de Benedectis*].—After recalling the fact that already two cases of echinococci were reported by him, one in the extensor muscles of the forearm of a pig, and the other in the pleura of a steer, the author gives the description of a post-mortem examination of a fat steer where in the adipose tissue a great number of vesicles of various sizes were found, in which the typical nature and mode of formation of the parasites were readily made out. This case of Dr. B. confirms the remarks already made by writers, such as Macé, Perroncito, Neuman and others that echinococci can be found in every part of the organism.—(*Il Nuovo Ercolani.*)

TWO CASES OF JAUNDICE IN SWINE DUE TO HELMINTHS [*C. de Benedectis*].—On certain occasions the author has been obliged to seize and isolate a number of pigs which were affected with jaundice. Desirous to account for the appearance of such disease among a number of them, he made careful examination

and found that in two the true hepatogeneous jaundice was due to obstruction to the escape of the bile in the intestines. In both he found a lumbricoid entered partly into the ductus communicus choledicus and closing it so completely that no escape of bile could take place. The parasites were by the portion not in the canal floating in the cavity of the duodenum. The case is certainly very interesting.—(*Il Nuovo Ercolani.*)

VERMINOUS BRONCHITIS IN CATTLE [*Dr. Umberto de Mia*].—Notwithstanding the fact that the presence of strongylus in the bronchia of adult large ruminants is denied by some, the author made out that diagnosis in a large herd of young and adult animals which had pastured, lived and were now stabled together. One of the adult animals being the sickest and very anæmic was destroyed, and the bronchia were found containing a very large quantity of *strongylus micruri.* The treatment which was recommended varied according to the cases and their condition. Two animals which were considered not worth treatment received a tracheal injection of a mixture of olive oil, spirits of turpentine, oil of crede and phenic acid. Others were placed under the Neumann mode of treatment, viz.: assafœtida, empyreumatic oil and mucilaginous decoction. Later on alteratives were administered—iodine, iodide of potassium, etc.—all these various forms of therapeuty were used in tracheal injections, except the Neumann, which was given by tablespoonfuls. During the curative treatment the animals were kept isolated, and when the disease had disappeared minute disinfection was carried out for the stables where they were kept and advice was given to the owner to not put cattle in the suspicious fields where they probably caught the germs of the disease.—(*Giorn. della R. T. and Acad. Vet. Ital.*)

ENGLISH REVIEW.

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

FRACTURED RADIUS IN A PREGNANT MARE [*John Connochie*].—The case is that of a mare in foal, which from a kick had sustained a simple fracture of the radius, near the lower extremity of the bone. On account of her condition, and being a good brood mare, an attempt at treatment was decided upon. The leg was properly bandaged and padded, leather straps and splints were resorted to, and the mare placed in slings, with all possible precaution to prevent skin troubles. The mare was

well fed, laid on flesh, and towards the twelfth week of the treatment she was safely delivered of a well nourished and perfectly formed foal. At the end of the thirteenth week the splints were removed, and then the mare was ordered short walking exercises, after which she was replaced in slings. After a short while she was put in a loose box, and then turned to pasture. Recovery was perfect, except that on account of the seat of the injury, the knee is perfectly ankylosed.—*Vet. Journ.*)

Septic Pneumonia [*C. Sutton*].—Under this title the author records the case of a gelding which presented symptoms of colic, which in his estimation were due to impaction. Although placed under treatment, the animal did not improve, but exhibited symptoms of choking, and after a few days had a thick fœtid creamy discharge from the nostrils, which was not satisfactorily accounted for. Notwithstanding the fact that the animal fed more or less, he gradually wasted away, and finally quietly laid down and died. A large abscess pressing and constringing the œsophagus close to its entrance to the stomach was found. The œsophagus showed signs of disease of long standing; there were other abscesses with inspissated pus and septic matter. Those were the cause of vomition. The stomach had a perforation, the mucous membrane having been involved for some time, the serous only recently. The lungs were the seat of septic pneumonia.—(*Vet. Journ.*)

Unusual Number of Tapeworms in a Dog [*H. Taylor*].—The record of the number of these parasites in dogs has just been broken. According to Neumann, the number of *tænia serrata* which Bertolus and Chauveau have found in the dog varied from one up to sixty-four—these being exceptional figures. In an Airedale terrier the author gave 35 minims of tenalin in water, and in twenty minutes the dog evacuated a large quantity of fæces and a tangled mass of tapeworms, which on being teased out and counted was found to be composed of sixty-six tænia, all belonging to one species, *tænia serrata*.—(*Vet. Journ.*)

Vomition in a Horse [*A. Spicer*].—All horses that vomit do not have ruptured stomachs, and some do recover. One more case is added to those that are already recorded. It is that of a gelding which after a heavy meal of maize and middlings was taken with abdominal pains, during which he also exhibited symptoms of vomiting. The attacks were repeated at intervals of eight or ten minutes. The nose was not drawn into the

chest, and there was little muscular effort. The contents of the stomach were ejected entirely through the nostrils and consisted of a yellow fluid with semi-digested food, smelling strongly of fermented maize. The treatment adopted was the administration of aloes and strychnia. The pains subsided in a short time. After a couple of days the bowels moved and recovery was complete.—(*Vet. Journ.*)

A PROSTATIC TUMOR [*J. H. Carter*].—A diseased condition of the prostate is not always easy to be made out, and the diagnosis may be rendered difficult, especially by the fact if ladies are the owners, and delicate questions cannot be asked. Such was undoubtedly the case in the setter which the author was called to treat, and in which he first made a diagnosis of balanitis. The animal was placed under treatment and for a while seemed to improve. But after a while he grew worse. He was in fair condition bodily and to all external appearances in good health. On micturation, he had copious discharge of thick pus, probably some four ounces in quantity, followed by normal urine. At other times the urine would be discharged first, followed by the pus; or, again, the pus would be streaked with blood. The animal remained under treatment for a month without result, and returned to the owner. Four months after he was brought back to Mr. J. H. C. to be destroyed. At the post-mortem, on opening the abdominal cavity, a large growth was found, of the size of a fair-sized pineapple, which was attached to and communicating with the prostate gland at the neck of the bladder. Section of the growth revealed a great number of cysts filled with pus.—(*Vet. Journ.*)

A THORACIC TUMOR [*J. H. Carter*].—A black St. Bernard dog, some six months ago, showed a swelling on the left side of the chest, which gradually increased in size, until it had reached that of a child's head, when he was brought to the author for treatment. Stimulating liniment externally and iodides internally failed to bring relief, and the last request of the owner was to kill or cure him. The tumor seemed to have reached its extreme growth. Explored with puncturing needle, instead of pus, a dirty brown grumous material escaped, and a free incision to introduce the finger has, for result, only to obtain the sensation of a hard, gritty substance, resembling bony spiculæ. Extirpation is decided upon. The dog well prepared and chloroformed, a bold incision is made, the skin dissected, but there the operation has to stop, as all attempts to isolate it from its attachments are impossible, the growth extending too

deeply; the fingers introduced in it to explore it, enter the thoracic cavity. The animal is killed. At the post-mortem it is made evident that the tumor penetrated the walls of the chest and invaded the left thoracic cavity, so much so as to displace the pulmonary lobes. Section of the tumor shows in its centre a quantity of broken down bony débris and lowly organized tissue. The heart was enlarged and flabby. Spleen half healthy and half œdematous. It is supposed that at some time or other the animal had been kicked on the left side, had several ribs broken, and that the result was the formation of the tumor. —(*Vet. Journ.*)

TROUBLESOME MONKEY CURED BY OOPHORECTOMY [*F. Hobday, F. R. C. V. S.*].—Monkeys have sometimes the privilege of becoming pet animals, and, instead of passing their life behind the bars of a cage or only enjoying liberty when tied up to a chain, they may, if they know how to behave, have greater joys in life; but, unfortunately, they are liable to many objections, and their sense of generation is in some instances likely to render them improper and even disgusting for their human owners; thus, they are exposed to operations which have for object to change their nature, their desires, their ideas, perhaps. The author records the case of a large female, between three and four years old, which had become indecent in her behavior, and even vicious, with attempts to bite. She had been in heat for several months, her external genitals became much enlarged and a quantity of slimy fluid was escaping. With all antiseptic cares while chloroformed she was operated upon and both ovaries removed. The wound was carefully sutured, dried and covered with iodoform collodion. Recovery was perfect; and the animal became much more friendly than she had ever been.—(*Vet. Journ.*)

BIBLIOGRAPHY.

BOVINE OBSTETRICS. By M. G. DeBruin, Instructor of Obstetrics at the State Veterinary School in Utrecht. Translated by W. E. A. Wyman, M.D.V., V.S., Milwaukee, Wis. New York: W. R. Jenkins, 851 Sixth Ave.

The well-known veterinary publishing house of Jenkins is assuredly doing its part toward building up English veterinary literature, as every little while there is turned out by its presses some work of an American author or translator, without which enterprise there would have been lost to us very many important works which now are thumb-worn from frequent reference.

Last month we had the privilege of referring to the original work on materia medica by Dr. Winslow; this month we have upon our desk the authorized translation of Prof. DeBruin's treatise on bovine obstetrics, by Dr. W. E. A. Wyman, of Milwaukee, whose name has become familiar to readers of veterinary literature through his work on "Clinical Diagnosis of Lameness in the Horse," and his numerous contributions to the periodical press. DeBruin occupies a high position as a scientist and bovine obstetrical specialist, a man well qualified to put forth such a pretentious treatise, which was issued as a section of the book on "Veterinary Surgery and Obstetrics," by Profs. Bayer and Fröhner.

Dr. Wyman has arranged the contents of the work in a very comprehensive manner, placing them into sections, as follows:

Normal Pregnancy: (1) Changes taking place in the uterus from conception to development of youug; (2) the fœtus and its annexes. Normal Birth (eutokea): (1) The genital passage; (2) causes, course, and treatment of normal birth; 3) involution of the uterus. Abnormal Birth: (1) Diseases and accidents of Pregnancy; (2) diseases of the fœtus and its annexes; (3) extra-uterine pregnancy. Abnormal Parturition (Dystokia): (1) Abnormalities in the mother; (2) abnormalities of the fœtus. Obstetrical Operations: (1) operations on the parent; (2) repositions and operations on the fœtus. Dismembering of the Fœtus (Embryotomy): Auxiliaries in the Study of Mechanical Obstetrics. Diseases during and following the act of Birth: (1) of the Mother, (2) of the Calf.

A veterinarian, particularly if his location brings him in contact with obstetrical practice, who makes any pretence toward being scientific and in possession of modern knowledge upon this subject, will not be without this excellent work, as it is really a very valuable treatise. It contains nearly 400 pages, numerous illustrations, and is put together in Jenkins' best style. R. R. B.

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The above-named society was called to order in the lecture-room of the New York-American Veterinary College on the evening of Nov. 6, by the President, James L. Robertson, and, although the attendance was small—Drs. Ryder, Lellman,

Peary, Delaney, McCully, Cochrane, Robertson, DuBois, Bell, and a number of students of the college—the proceedings were very interesting, and mutually instructive, and it seemed as though an interest was springing up which promises well for the society's future.

Dr. Wilfred Lellman presented some interesting specimens and gave very full and accurate histories of the cases. First, the heart of a dog which had died of endocarditis, the specimen showing the thickened semilunar and tricuspid valves, with stenosis of the pulmonary artery. The doctor had treated this patient for some time, and had been able by auscultation to diagnose through the heart sounds the insufficiency of the valvular structures, and had advised against excessive exercise. A long run was sufficient to bring on a death which he thought might have been delayed for several years possibly. His theory of the cause of the condition dates back to the severe distemper from which he suffered in his youth, he being about seven years old at the time of his death. Another specimen exhibited was the two navicular bones from the front feet of a horse which he had been called to treat, and which showed ulceration of the cartilage, and even into the bony structures. The interest in this case, to the doctor's mind, resided in the fact that the feet were wide and flat, as against the popular notion that navicular-thritis is only found in the narrow, contracted foot.

Upon this latter specimen an extended discussion took place, as to the means of diagnosis of the disease, the various forms of treatment, especially the neurectomies, and the prognosis from a practical standpoint.

But those present did not confine themselves to the subject of navicular disease, but digressed in all directions, from trephining the sinuses to the removal of the lumbricoid from puppies.

For the December meeting a surgical clinic will occupy the evening. Two subjects will be submitted for the demonstration of various surgical procedures. Dr. Ryder will perform vaginal ovarectomy and tarsal tenotomy; Dr. Clayton, median neurectomy; Dr. Peary, peroneal tenotomy; Dr. Delaney, a dental operation, and others will demonstrate some practical method of performing some of the operations that the city practitioner is daily called upon to do, if time will permit.

We are sincerely glad to see this evidence of a rekindled interest in the society, and hope that it is but the beginning of many such pleasant occasions.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

President Winchester has appointed the following committees for the term of his office:

Executive.—D. E. Salmon (Chairman), Washington, D. C.; H. D. Hanson, New York; M. H. Reynolds, Minnesota; C. A. Carey, Alabama; G. A. Johnson, Iowa; W. H. Hoskins, Pennsylvania; T. E. Budd, New Jersey, and the officers *ex-officio.*

Diseases.—E. M. Ranck (Chairman), Pennsylvania; J. Law, New York; A. T. Peters, Nebraska; L. Frothingham, Massachusetts; R. R. Dinwiddie, Arkansas.

Intelligence and Education.—E. B. Ackerman (Chairman), New York; T. B. Cotton, Ohio; W. J. Hinman, Massachusetts; G. W. Dunphy, Michigan; J. C. Robert, Mississippi.

Finance.—R. C. Moore (Chairman), Missouri; W. H. Kelly, New York; C. Curtis, Rhode Island.

Publication.—M. H. Reynolds, Minnesota (Chairman); Roscoe R. Bell, New York; J. J. Repp, Iowa; L. Van Es, Alabama; R. P. Lyman, Connecticut.

Resolutions.—T. Butler, North Carolina (Chairman); D. E. Salmon, District of Columbia; S. Brenton, Michigan; S. B. Nelson, Washington; G. H. Berns, New York.

Army Legislation.—L. Pearson, Pennsylvania (Chairman); R. S. Huidekoper, New York; W. H. Lowe, New Jersey; A. Peters, Massachusetts; M. E. Knowles, Montana.

OHIO STATE VETERINARY ASSOCIATION.

The annual meeting of this association will be held at the Veterinary Department of the Ohio University, Columbus, Ohio, Jan. 14 and 15. One of the special features of this session will be its clinics, which last year very far exceeded our expectations, and the present committee hope to equal or excel that programme. The fact that our State University contains a Veterinary Department should interest every veterinarian a citizen of this State with a desire to know more about it; and we well know that the anatomical and pathological exhibit alone will well repay for the trouble of a visit. Then there is the Biological Hall, as well as one of the finest equipped dairy and cheese-making schools in the United States. Every veterinarian is invited to the meeting, whether he be a member of the association or not; and if having anything of interest to the profession they are cordially invited to present it.

WM. H. GRIBBLE, D.V.S., *Secretary.*

WASHINGTON C. H., OHIO, Nov. 15, 1901.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The annual meeting of this association will be held at Trenton on January 9, 1902, and it is expected that there will be a large attendance and a full and interesting programme.

GEORGE W. POPE, *Secretary.*

CLEVELAND VETERINARY MEDICAL ASSOCIATION.

The veterinarians of Cleveland, Ohio, have organized an association bearing the above title, and at a recent meeting the following officers were elected for 1901-1902: President, E. P. Shaffter; Vice-President, E. H. Shepard; Secretary-Treasurer, A. E. Cunningham.

NEWS AND ITEMS.

DR. R. C. MOORE officiated as veterinarian for the Kansas City Horse Show Association.

DR. WM. MCEACHREN, formerly of Windsor, Ont., is now located at Louisna, Mo.

DR. W. S. CASS, of St. Louis, paid Kansas City a visit during the latter part of October.

THE KANSAS CITY VETERINARY COLLEGE reports an enrollment of over eighty students this session.

THE VETERINARIANS TO THE NATIONAL HORSE SHOW, held at Madison Square Garden last month, were Drs. Wm. Sheppard, Thomas G. Sherwood and J. Elmer Ryder.

THE veterinarians attending the Missouri State Veterinary Society and the Missouri Valley Veterinary Medical Association, visited the Kansas City Horse Show in a body on Wednesday evening, October 23d, over eighty in number.

DR. L. H. HEMPELMAN, of St. Louis, Mo., graduate of the A. V. C., who is now engaged in the practice of human medicine, was enjoying his honeymoon in New York City in November, and made a pleasant call upon his veterinary *alma mater.*

NEBRASKA was well represented at the meeting of the Missouri Valley Veterinary Association, the following being in attendance: Dr. H. L. Ramacciotti, Omaha; Dr. J. D. Sprague, David City; Dr. J. S. Anderson, Seward; A. T. Peters, W. A. Thomas, and T. S. Gains, Lincoln.

BUREAU OF ANIMAL INDUSTRY.—The London *Times* pays a glowing tribute to our great animal bureau, as indicated in the

following cablegram to the New York *Times*: "London, Nov. 11.—The *Times* to-day prints a notice of the annual report of the United States Bureau of Animal Industry. It says that though the work appears somewhat late, there can be nothing but praise for this grand volume, which is worthy of the greatest Bureau of Animal Industry in the world. The contents show that the interests of American stock breeders are well looked after by the Department of Agriculture at Washington. The numerous articles in the volume, says *The Times*, are all of high practical interest."

JAMES BRODIE GRESSWELL, F.R.C.V.S., of Louth, England, was sued by a farmer named Nixon for £45:5s. damages for neglect and improper castration of four colts, and the former put in a counter-claim for £2:13:8 for professional services. It was brought out on the trial that the plaintiff employed the doctor to perform the operations, but that instead of his doing the work he sent an assistant, and neither of them being personally known to the plaintiff he presumed that the operator was Dr. Gresswell. The instrument used was the "Reliance," and the result was that all four colts bled profusely, one being dead in the morning, another had chronic paraphimosis, and the other two were greatly weakened. Being unable to secure the attendance of the operator when notified of their condition on the following day another veterinarian was called in. The jury found for the plaintiff for £26:6s., and disallowed the counter-claim.

CHARLES H. ORMOND, D.V.S., of Milwaukee, Wis., was killed at the farm of George Wing, Nashotah, that State, the latter part of November. He was called to the farm to see a lame horse, and while examining the foot the horse suddenly kicked, striking the doctor on the top of the head, the calk of the shoe penetrating one of the cranial bones, resulting in his death a few hours afterwards. He was hurled against the side of the stall, but was conscious, which he gradually lost. Dr. Ormond was a graduate of McGill, class of '81, and had practiced in Milwaukee ever since, where he was highly esteemed professionally and personally. His father, William Ormond, was also a veterinarian, and was supposed to have been murdered three years ago, having been found dead in a field in Minnesota. Notwithstanding the most strenuous efforts of his son, the mystery surrounding his death was never cleared up. Dr. Ormond, Jr., was 45 years old, and unmarried.

MR. MULE RECEIVED THE DEATH PENALTY.—Odd things happen in our southern sections, and not the least unique take

place in Georgia, where the "Cracker" obtains and the watermelon grows as big as a rain barrel. From Richmond county comes news of the legal execution of a mule. "It appearing to me from the representation of Foster Sherlock, a policeman of the county of Richmond, that a certain domestic animal, to wit: a small black mule, about 13½ hands high, weighing about 750 pounds, now on the premises of J. W. Clapp, near Martinet, in Richmond county, Georgia, is glandered and diseased beyond recovery and a menace to all other domestic animals in the county: It is ordered that in accordance with section No. 1755, of the Code of Georgia, that, first, said mule described as aforesaid be killed by said Foster Sherlock. Second. That the remains of said mule as recommended by J. A. Oliphant, the physician employed by the county of Richmond, be cremated. H. H. Nichols, J. P., 1269 Dist. G. M. September 25, 1901." The mule was put to death immediately after the sentence was pronounced.

In a Nutshell.—The automobile show, which has just left the Madison Square Garden, lacked the element of interest that makes the Horse Show fascinating. It is not easy to get enthusiastic over machines, inanimate, unresponsive and unintelligent. The motor carriage is nothing but a machine, and it lacks all the qualities which develop genuine and lasting affection in the owner. But the horse is a vital intelligence. He is another living creature, and the tie which connects living things binds him to man. Whoever heard of an automobile straining every nerve to do the will of its driver and responding to the mood of its rider? Why, the smallest child prefers a live kitten to a wax doll, even though the doll can say "mamma" and "papa" and can walk when you wind it up. The enthusiastic crowds fill the Garden this week because there is an exhibition of life there. It is customary to talk about the show of men and women in the boxes. And that does very well for those who want to say smart and cynical things. But they know that they are making only superficial comments. Of course, thousands go because they believe that is "the thing" to do. But they are not those for whom the show is held. The multitudes go to pay their tribute of affection to an animal which has for centuries received and deserved the confidence of men. And it should be encouraging to the pessimists to know that even in this town, sated with novelty, there should remain enough of genuine interest in this splendid animal to make the Horse Show worth while.—(*Brooklyn Eagle, Nov 19.*)

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R. W. E.

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AMERICAN VETERINARY REVIEW.

JANUARY, 1902.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

RUSH SHIPPEN HUIDEKOPER.

This distinguished veterinarian died of a complication of diseases, hastened by pneumonia, at Philadelphia, on the 16th ult., and the profession of America has thus lost one of its most conspicuous representatives. Few men have entered upon their life-work better equipped for it than our deceased colleague. Possessed of a splendid constitution, a liberal education, great wealth and influence, a natural love for its truths and mysteries, he could easily command whatever his fancy dictated. A basic medical education placed him in an enviable position when he sought his veterinary degree from historic Alfort, and, not content with her stamp of approval, he entered the famous laboratories of Virchow, Koch, Chauveau, and Pasteur to complete his technical training. Fortified with such advantages, it was not surprising that he should have made an impression in the struggling profession of America, and it may be said that he has held every post of honor that was within her gift. As editor, teacher, author, medical officer, associationist, and practitioner, he distinguished himself by his great learning and his devotion to her interests, and his death has cast a long shadow over the profession of the country.

Personally, Dr. Huidekoper was a companionable and genial gentleman, who made friends easily and held them firmly, by all of whom his death will be sincerely regretted.

EUROPEAN CHRONICLES.

TUBERCULOSIS is more than ever the subject of writings, of experiments, and of records of cases of contagion since the question has received a new impulse at the Congress of London, and scientific papers are more or less filled with articles on the subject, whether on human, bovine, or even aviary tuberculosis.

In reference to this last, and to the relation that it has to the disease of many mammalia, I find in the *Giornale della R. S. et Academ. Veterin.*, of Turin, a contribution of Dr. Garino, with the object of adding material to prove the relation of both diseases.

The question is important, and the advocates of both opinions—that the disease is essentially different, or not—belong to the highly scientific world. Devillers, Lenglen, Johne, Nocard, Mollereau, and others have affirmed the possibility of the transmission of the disease of man to fowls, and consequently have admitted the etiological identity of the two forms of tuberculosis. On the other side, Rivolta, Maffucci, Strauss, Gameleia, etc., have advanced a different opinion and consider the two affections as essentially different.

The guinea-pig takes the human disease easily, but is considerably resistant to that of fowls, and that almost natural immunity is considered as a differential character of importance by those who deny the identity of the disease; and Dr. Garino informs us that to determine the value that can be attached to some differential characters between the various forms of tuberculosis he has made several experiments.

To 35 guinea-pigs he has injected cultures of aviary tuberculosis; in 10 under the skin, and 25 in the peritoneal cavity. The first did not develop a generalization of the disease; an abscess with pus, containing bacilli at the point of inoculation, a small ulcer, healing more or less rapidly, and a noticeable loss of weight until the ulcer has begun to cicatrize—that was all. In the others there was progressive loss of flesh until death, and tuberculosis of the omentum and mesentery was found, the tu-

bercles containing bacilli. The other organs were free from disease.

The conclusions derived from this are to show that, after all, the guinea-pig is not so rebellious to aviary contagion, that it takes it as it does the human, and that the relation of both affections are certainly not different.

* * *

But to come back to the new point raised by Prof. Koch. Our friends know that a Royal Commission has been appointed by the English Government, and there is no doubt that with the names that are given of the members, much valuable work can be looked for. Our English colleagues are, besides, taking much interest in the question, and at the recent openings of the veterinary colleges allusions of importance were made, among them those of Prof. Crookshank, the celebrated professor of comparative pathology and bacteriology, and he took the position of agreeing fully with Prof. Koch on the question of infection to man, viz., that "if it occurs at all, it is of very rare occurrence," but was of an entirely different opinion on the subject of human tuberculosis being inoculable to cattle. Koch by his experiments seems to be justified in denying it ; Crookshank by his in refuting it.

But how can such contradictory results be explained? No doubt various opinions will be advanced. Nocard expressed his ideas to the Congress ; Crookshank gives his ; and, after all, it appears likely to prove merely a question of soil. The Professor says : "Man is not the natural soil of bovine tuberculosis. The attempts to transmit human tubercle to cattle would not be uniformly successful." The natural resistance of the tissues may vary, and "an animal may be markedly susceptible to infection with the virus from a foreign soil," by peculiar circumstances, diseased condition or otherwise.

Question of acclimation, question of resisting power, question of soil—all will evidently be carefully considered and studied by all those who are now engaged in the solving of the problem.

I must in connection with this subject mention only to-day that in France the subject has also stimulated the attention of scientists and of practical men. A commission has just been called npon by the Société de Medéciné Veterinaire Pratique (the same body which made experiments on the incubation of tuberculosis, made mention of by me some time ago, and whose report was translated and published in the REVIEW by our friend, Dr. Winchester). The Commission has had a seating, a programme has been laid out, and I hope some day to send you a report of its findings.

* * *

In the meantime, practical records seem to find their way into scientific journals against the theory of Koch. Among them, I may mention the experiments made by the proctor professor of pathology at Owens College, Prof. Sheridan Delipine, who experimented upon four calves with a mixture of several tuberculous sputa, representing several types of human tuberculous sputum. Two of these animals died shortly after the inoculation and could not have been infected by it. The other two lived long enough to allow the definite results to be obtained, and both contracted tuberculosis by the injection of human tuberculous sputum.

Another practical case is also found recorded in the *Progres Veterinaire*, and, although deprived of scientific evidences, is not without interest. A four-year-old steer having shown symptoms of pulmonary and abdominal tuberculosis, was tuberculined, and the diagnosis confirmed. This steer had been raised by the owner, who still had the mother, kept in a barn with two other cows. These three animals being tuberculined answered sound. The great mother of the steer had also been tuberculined, and was sound. How did the steer then get the disease? According to the author, from the son of the owner, who was tuberculous, and who, when taken with violent spasms of coughing, would go into the barn and expectorate. Where? On the bedding of the steer, then a young bull, which doubtless ate the bedding and also the tuberculous sputum of

the young man, whose family and all ancestors had been healthy.

* * *

Now, to close this already long chronicle on the subject of tuberculosis, a few suggestions which I find in one paper, and which I give for what they are worth :

Rules for the regulation of the means for controlling the disease are the order of the day, and the efforts of those who work in that direction are worthy of success. The injunction not to expectorate in public conveyances (stages, omnibuses, tramways, etc.) has been followed by an urgent request to the people, by little bills posted all over the city of Paris, not to spit on the sidewalks. These measures have in them a certain amount of good reason ; but what of the law which, it is said, will be asked of the government, and which among its clauses has this : No spitting shall be allowed in government buildings by the functionaries under penalty of dismissal ; dry sweeping of the offices shall be replaced by wet cleaning obligatory in all governmental buildings ; every official functionary shall have a clean sanitary record ; annual statistics shall be made of all functionaries as to their morbidity and mortality, etc., etc.

Of course, the law will never be passed ; will it ever be proposed ? But, at any rate, it shows to what absurd extremes some may be carried, and be serious in their errors.

* * *

Vaccination Against Dog Distemper.—In one of my last chronicles I wrote briefly in relation to Dr. Physalix's mode of vaccination against dog distemper, and told of the appointment of a commission to test the value of the new discovery. Experiments were started several months ago, and a meeting of the commission was called recently to discuss the value of those experiments and prepare a report for the Société Pratique. A very serious discussion took place and a somewhat unfavorable interpretation might have been the result had it not been shown that the experiments were not entirely exempt from criticism,

that they had been carried out under unfavorable circumstances, and, besides, to condemn the method in its practical object required a greater number of animals than those that were used. Notwithstanding, if the experiments of the commission, made in contagious kennels, have caused disappointment among the members, the results which have been obtained by Dr. Physalix in private tests are much more satisfactory. Out of 256 dogs which were vaccinated, 13 only have died, a mortality of about 5 per cent. Those tests have been carried out among dogs belonging to packs of private gentlemen. No doubt the principal point is to find out if, in packs of dogs or among breeders, death or permanent invalidity is in the proportion of a third or of half of the pups affected. A comparison will then give the value of the method, which, after all, cannot be absolute in its success no more than any other operation of a similar nature.

At any rate the commission is still at work, and we may hear from it later on. A. L.

A SERIOUS MENACE TO VETERINARY PROGRESS.

It is infrequent that a writer or speaker upon the history of veterinary medicine does not enlarge upon the progress made in the last forty years. Certainly this short period will encompass all the material advances so far as the subject refers to America, for it has in that time sprung from virtual charlatanism to an enviable position among the advanced sciences. To the small private college, which sowed good seed, ripening in various States of the Union and bearing excellent fruit, and to the chair of veterinary medicine in the agricultural college, we owe our first obligations. Later on the institutions which came into being as a result of private enterprise, became populous veterinary colleges, with faculties made up of the most successful practitioners of the country. Gradually the cause of comparative medicine in America became a matter of governmental concern, and many of our best schools of to-day are de-

partments of universities, with the same facilities for teaching veterinary science as for human medicine.

Nor did progress confine itself to the education of the individuals of the profession; but the legislatures of various States were asked to enact laws regulating its practice, with the object of finally excluding all those who possessed not a diploma from a recognized college. If our memory is not faulty, the first law recogniziug the veterinary diploma was passed by the State of New York fifteen years ago, in 1886, and steadily one State after another has adopted similar measures, most of them creating veterinary examining boards, which in many instances not only pass upon the proficiency of the candidate for license, but take into serious consideration the quality of the school issuing the diploma, and if the latter does not fulfill the requirements of the board, the candidate is rejected or not examined.

In the various steps leading up to this satisfactory condition of veterinary education at the beginning of the twentieth century, the Empire State has ever been the leader. Not only has she thrown about her profession all the safeguards enumerated, but she has placed her veterinary colleges under the university system, and their matriculants must be satisfactory to the Board of Regents of the State as to the amount of education possessed by them at the time of their entrance upon the study of this profession. When the preliminary requirements are satisfactory the student must spend three sessions of six months each within the walls of one of her colleges, and should he graduate and receive the diploma of the college, he is then in condition to present himself to the Board of Examiners for their license to practice the art to which he has devoted so much time and study. It is by no means a foregone conclusion that this board will ratify the action of the college, as we know of a number of instances where the candidates have been successively rejected, while the character of their *alma mater* was perfectly satisfactory. Graduates of colleges requiring only two sessions cannot, of course, be entertained, and such men who are not already registered in this State cannot practice within he rconfines. All these

elements of veterinary progress have been secured by the efforts of the members of this profession, and when their last bill became a law it was felt that all necessary safeguards had been thrown around the public and the profession, and that quackery and charlatanism would be banished from the realm on the termination of the lives of those who were registered "by affidavit."

The stringency of the requirements to obtain license to practice in New York State has had the effect of greatly reducing the number of those applying for that privilege; there were not more than half a dozen at the last session of the examiners. While this effect is everywhere manifest, information keeps reaching the REVIEW from various sections that men are opening up and practicing veterinary medicine and surgery without diploma, registration, or any other qualification than cheek and a sense of security from molestation.

The REVIEW for September, 1900, brought this subject to the attention of its New York readers, and in October of the same year the writer presented the matter as vigorously as possible to the New York State Society, making certain suggestions as to a means of thwarting the steady growth of these charlatans by energetically prosecuting them. The law is very clear upon the offense, and it only needs the vigorous application of the penalty in a number of cases, and generous vigilance over suspects, to put an end to it. The State Society discussed the subject in a half-hearted manner and disposed of it by directing its Executive Committee to prosecute such offenses. This committee is made up of private practitioners who have neither time nor disposition to travel over the State in search of violators, and the matter had just as well have been tabled as to make such a disposition of it.

It is a standing menace to the integrity of our laws and to our much vaunted progress that men of this character are allowed to pursue their course with perfect freedom, and until it is taken hold of by the State Society in a spirit to accomplish something it will continue to increase.

The REVIEW will be glad to print the views of its readers

as to the best means of dealing with the subject, and will guarantee to bring the matter before the Society next September, embodying the best of these suggestions.

VETERINARY PROGRESS IN THE PHILIPPINES.

There has been organized at Manila the Philippine Veterinary Medical Association, and the very good working basis of fourteen members have signed the constitution and by-laws. Dr. W. R. L. Best, was elected President; Dr. J. A. Tucker, Vice-President; Dr. M. H. Meekie, Treasurer, and Dr. W. W. Richards, Secretary. A number of committees were appointed, and we may soon expect some interesting literature upon the diseases of this new possession of Uncle Sam's. The REVIEW has been publishing from time to time articles upon the peculiar diseases found by our veterinarians among the horses and mules which are native, and which are contracted there by those brought from America, there being in this number a valuable one from Dr. John G. Slee, of the Manila Board of Health. Dr. Coleman Nockolds, of the U. S. Cavalry, located at Batangas, has also furnished a number of papers for the benefit of our readers. Recently he described the disease "Surra," as he found it, and we have in hand awaiting publication in the February nnmber, a further study of this malady. With the advent of the new association, a more systematic study of the etiology, pathology, and treatment of these and other affections found among the animals in that country can be undertaken, and by that interchange of experience and observation which can only take place through the discussions of such an association, a correct and rational estimate of the characteristics of the morbid processes can be arrived at. We congratulate our brethren upon this wise step, and wish to assure them that the REVIEW will be ever ready to assist them in so far as lies in its power.

BACK NUMBERS OF THE REVIEW.

We would be very much pleased to have our subscribers read the notice at the foot of the last page of reading matter in

this number of the REVIEW, entitled "REVIEWS Wanted," as the publishers are very much in earnest in their efforts to secure the numbers sought, since it is to fill orders for many highly-esteemed members of the profession who are anxious to have their volumes bound. We trust, therefore, that those readers who may have duplicate copies of certain numbers of 1900 and 1901 will send them in to the office of publication, and we shall be only too glad to forward the amount offered in the notice referred to.

"SOCIETY MEETINGS" is a well-filled department of the REVIEW this month, and the secretaries have vied with each other in making their reports of value to the reader, since they have summarized the proceedings in such a manner that the valuable scientific and practical points stand out in a comprehensive manner. If we can only keep this good work up, a bound volume of the REVIEW will constitute a perfect history of the work of the associations of the country for the year. The secretaries are asked to regard the pages of this journal as their property, and to remember that they are largely the makers of contemporaneous veterinary literature.

DR. J. V. LADDEY, of Arlington, N. J., will present an important communication to the Veterinary Medical Association of New Jersey, at the meeting which occurs at Trenton, on the 9th inst., entitled "The X-Ray as an Aid in the Diagnosis of Tuberculosis in Cattle." The doctor has done considerable experimentation along this line, and has met with very satisfactory results, the story of which is told in a series of photographs and radiagraphs. The REVIEW will publish the paper, with full illustrations, in the February number.

THE SWINE BREEDER'S ASSOCIATION OF NEBRASKA announce a paper for its annual meeting to be held in January, by Dr. S. Stewart, of Kansas City.

ORIGINAL ARTICLES.

PRACTICAL ANTISEPSIS IN SURGERY.

By G. A. Johnson, D. V. M., Sioux City, Iowa.

During the last quarter of the 19th century surgery has made such rapid progress that now major and difficult operations are taken as matters of fact and have ceased to be the wonder of the times; especially is this true in surgery of mankind.

This marvellous progress is very largely due to a better knowledge of the rôle played by micro-organisms in the process of wound repair. Medical literature is replete with treatises ranging from the short essay to the voluminous text-book, upon the subject of antisepsis in its various forms. While the surgeons of the human school have succeeded in gaining a position nearer that of perfection than have those of the veterinary school, it is not to be understood that veterinary surgery has not made great progress.

We have naught but commendation for the veterinary surgeon, who, being desirous of advancing his profession and establishing a reputation for himself, by attempting to follow the methods and *modus operandi* of the eminent surgeon of mankind and counselling his colleagues to go and do likewise, nor is it strange that in so doing he should at times have been carried beyond the essential landmarks of his profession by the swirl of "the pace that kills," in attempting to get similar results where conditions are so materially different as they are between the human and the brute patient.

From a clinical view point we may consider wounds as surgical or accidental; surgical wounds are such as result from surgical operations,—all others as accidental.

While it is not within the province of this paper to enter into a discussion of the physiological or pathological phenomena of the process of repair, a short discussion of the classification of these phenomena may not be out of place.

From a physiological view point there is no material difference in the phenomena that take place when a wound is immediately closed and normal relations are resumed in a few days, without the formation of pus, and in one that remains open and pus is formed. The difference is one of degree rather than of kind.

From a pathological view point there are two classes of wounds: aseptic and infected. Surgeons of the human school are quite generally agreed to use the pathological classification, whereby all wounds are considered to heal by primary or secondary intention. That is, all aseptic wounds are said to heal by first intention, primary or immediate union, no matter how much time may be required for the completion of the process of repair provided it is accomplished without the formation of pus, while all infected wounds, that is, wounds where the process of repair is accompanied by the formation of pus, are said to heal by secondary intention or granulation. But from a clinical view point are not veterinarians justified in dividing class one into two subdivisions, thereby having three classes of wound repair? Thus, in class one we would have healing by first intention, primary or immediate union, where the aseptic parts are brought into close apposition and the normal functions are resumed in a few days. In class two, or healing by secondary intention, where the parts of an aseptic wound cannot be brought or kept in close coaptation, but where the process of repair is carried to completion without the formation of pus; and class three, or union by granulation, where the process of repair is accompanied by the formation of pus. Thus we would have two classes of repair in aseptic wounds and one class in infected wounds.

While this classification is purely an arbitrary one, I believe its retention will give lucidity, hence its use in this paper.

It should be the desire of every surgeon to have all of his cases recover as rapidly and with as little inconvenience to his patient or its owner as possible; that is, to have all of his operations terminate by primary union when possible.

This being the pinnacle of perfection, let us briefly consider the conditions that are necessary for its success. Healing by primary or immediate union depends upon three conditions, namely: Asepsis, coaptation of the parts, and physiological rest. The healing of a wound by primary union might be likened to the erection of an edifice upon a tripod; if one or more of the legs of the tripod are broken, down comes the structure. Asepsis, coaptation and physiological rest form the tripod that sustains healing by immediate union, and the least defect in either of them renders such an union an impossibility.

The conditions necessary for healing by secondary intention is that the wound be kept aseptic.

The surgeon of the human school can usually acquire an aseptic wound through the use of a disinfected operating room, sterilized instruments and dressings, close attention to the disinfection of the person of the patient, its clothing, bedding, etc., and of himself and his assistants; by means of position, ligation, torsion and wiping he can control hæmorrhage, free the wound of blood clots and serum; and with sutures, buried and otherwise, he can usually coapt the parts; uniting muscle to muscle, tendon to tendon, and bone to bone. And through the submissive and usually assisting disposition of the patient supported by bandages, splints, etc., he can generally secure the necessary physiological rest. But veterinary practice presents a field strikingly in contrast to that of the surgeon of mankind.

The veterinary surgeon may be so fortunately situated as to have all of the accessories to his work as favorable to good results as the surgeon in human practice, but when it comes to the patient, instead of having a usually submissive and assisting subject, he has a defensive combatant from start to finish. But to the ordinary veterinary surgeon, with his patient cast on the windy side of a barn upon some old musty hay or straw, or, as more frequently is the case, on the bare ground, which is either muddy or dusty, with no opportunity for properly disinfecting the body of his patient, with dirty assistants and the gentle

zephyrs scattering germ-laden particles of dust in all directions, an aseptic wound means much.

But let us presume that he has succeeded in performing an aseptic operation, the impossibility of securing and maintaining coaptation of the parts, in most wounds, precludes healing by first intention, while on the other hand, if he has succeeded in getting good apposition of the parts of an aseptic wound, can he control the patient so as to secure physiological rest, except in a few special regions?

Accidental wounds are usually infected, and it is only by strict observance of the principles of antisepsis that surgical wounds are kept aseptic.

In operating, I usually follow as closely as circumstances will permit the following lines:

(1) Proper dieting of the patient.

(2) Cleansing and disinfecting the field of operation, (*a*) removal of the hair, (*b*) washing the parts with soap and water, (*c*) washing with a disinfectant. For this purpose I prefer crude (full strength) creolin, well rubbed in over the field of operation and allowed to remain from three to five minutes and then washed off. If allowed to remain too long it will produce too much irritation, resulting in œdema of the parts. After the first application of the creolin has been washed off, I usually apply a very small quantity of creolin to the wet surface and allow this to remain until I am ready to operate.

(3) Such sterilized instruments as are likely to be needed during the operation are placed in a tray containing a 1 per cent. solution of formalin.

(4) (*a*) Confining the animal by casting or otherwise, (*b*) giving the parts a final washing with sterilized water or a weak solution of creolin. I usually apply a very light coating of creolin over quite a surface surrounding the field of operation with a view of preventing hands or instruments from becoming infected by accidentally coming in contact with these parts.

(5) Disinfection of the hands; usually I rub my hands

with some crude creolin, then wash them, seeing that the nails are well cleaned, then wash with a 1 per cent. solution of formalin.

(6) The operation, including hæmostasis.

(7) Dressing the wound, remove all blood clots, shreds of tissue and stop seeping as much as possible by gently wiping with pledgets of cotton or gauze. The further dressing depends very largely upon the location or character of the wound. If the wound is such that the parts can be brought into close apposition and retained thus, I put into the cavity a limited quantity of some non-irritating, prohibitive antiseptic, as boracic acid or iodoform, that will not interfere with immediate union, but that will have a tendency to arrest the development of any germs that may have accidentally found lodgment in the wound. Then fix the parts by means of aseptic sutures, cover the parts with some of the same or similar powder as used in the wound and over this apply a quantity of gauze or absorbent cotton, upon which has been applied a goodly quantity of a similar powder, and retain this in place with bandages.

If the wound is such that the parts cannot be brought into apposition or be kept so, but where the edges of the skin may be brought together, fill the cavity thus formed with a non-irritating antiseptic powder and suture the skin, and if practical, apply a protective dressing of gauze and bandages.

But if the gauze and bandages cannot be applied, a coating of antiseptic collodion or wound gelatin may be applied over the wound.

Remove the dressing and sutures as soon as there is any evidence of the sutures giving way or that the wound has become infected; cleanse the wound and repeat the treatment as at first.

To illustrate, I will cite the treatment of a case of scirrhous cord in a horse. The horse having been dieted for a couple of days was cast and operated upon under chloroform anæsthesia with antiseptic precautions, as above outlined. An egg-shaped tumor about 6 inches long by 4 inches in diameter was

removed, leaving a cavity so large as to preclude coaptation of the parts. The wound was cleansed of blood clots, shreds, etc., and seeping partially checked by means of wiping with gauze and a powder composed of about three drachms each of boracic acid and acetanilid was put into the cavity and the wound in the skin closed with sutures, and the parts well dusted with some of the same powder as used in the wound. The animal was allowed to get up and was placed in a box stall in a large boarding barn and placed upon a light diet for a few days. The case made a rapid and complete recovery; was driven on the tenth day after the operation.

Following the operation there was no fever, loss of appetite or swelling of the parts, other than a slight œdema of the sheath; no pus was formed except some around the sutures about a week after the operation, notwithstanding the fact that on the second day after operating I introduced my finger between the sutures, breaking down the adhesions to allow the escape of a small quantity of serum that had collected in the cavity. The only other treatment used was the daily application of cold water from a hose attached to a city hydrant.

The same *modus operandi*, except the dieting, was followed in the castration of a cryptorchid, and in the removal of a tumor from the breast of a horse; the tumor case made a rapid recovery, leaving but a slight scar, but I never heard from the castration case after the operation.

In wounds, where there is a large cavity, but where the powder and sutures cannot be applied with a reasonable assurance of success, pack the cavity with antiseptic gauze or absorbent cotton. I prefer the gauze, as it is easier to introduce, it is retained better and can be withdrawn with less trouble; the desired amount of liquid or powdered antiseptic can be applied to, or within the folds of, the gauze. This packing should be changed as frequently as the case demands, usually once a day or every second day.

I have treated two cases of fistula of the withers and one abscess of the shoulder by this method with good results.

In wounds where a large quantity of skin has been destroyed disinfect the wound and dust freely with some desiccating antiseptic powder, frequently enough to secure healing under a dry crust or scab. For this purpose Dr. Frick recommends a powder composed of iodoform and pulverized sugar, equal parts.

In the treatment of open joint, the opening should not be allowed to close until the interior of the joint has been rendered aseptic. This may be accomplished in ordinary cases, where the destructive process has not advanced sufficiently to destroy the articular cartilage, by thoroughly washing out the joint with proper antiseptics and protecting the external wound with a powdered antiseptic, reinforced by a dressing of gauze and bandages when practical.

For this class of cases I prefer a corrosive sublimate solution (one to from 1000 to 5000 parts).

If the wound cannot be thoroughly cleansed through the original opening, make one or more other openings that will admit of this being accomplished. Other accessory treatment, such as internal medication, splints for immobilizing the parts, slings, etc., should be used according to the indications of each case and the temperament of the patient.

In treating infected wounds, the first step should be to thoroughly wash the parts (wound and surrounding region) with soap and water, and cleanse with an antiseptic solution, then by means of a knife, scissors, or curette, remove all foreign bodies, shreds, necrosed or lacerated tissues, exuberant granulations, etc.

Then wash the wound with an antiseptic solution until the contaminating germs are destroyed. Then treat according to the indications of the case; in other words, render the septic wound aseptic and treat accordingly.

I am of the opinion that we frequently fail in our attempts to cleanse infected wounds, because we do not apply active germicidal remedies for a sufficient length of time to destroy all germ life. But better results will follow the application of a solution of medium strength for a longer time, than of a stronger

solution for a shorter time. On the other hand, it is of very little practical value to render a wound aseptic and permit it to immediately become reinfected.

It is quite generally agreed by veterinary surgeons that it is impracticable, if not impossible, to obtain sufficient immobility of the parts to secure healing by primary union, except in a few regions, as the lower part of the extremities, the inguinal region, the face and the ears.

But this should not deter us from employing the principles of antisepsis, but we should bend our energies toward making the theory apply to the case, rather than trying to make the case fit the theory. There is no question but that we should attempt to secure union by first intention when and wherever practical. But when this cannot be reasonably expected, we should try to secure union by secondary intention, that is, healing by granulation without pus, for the formation of pus indicates a destructive process, and its presence always retards the process of repair.

Judging from results so far obtained, I am led to believe that a majority of wounds that domestic animals are subject to, may be healed by secondary union, through the use of large quantities of non-irritating antiseptics in the form of a powder or gauze packing. By the use of a sufficient quantity of a preparation that will not interfere with the process of repair, but that will check the development of, if it does not destroy, pathogenic organisms, we not only prevent the introduction of germs, but also arrest the development of such as may have found lodgment within the wound.

As a rule, a dry dressing is preferable to a liquid dressing for wounds that are expected to heal under a scab, because it will form a better protection by remaining upon the surface better and longer.

While surgeons are quite generally agreed that hydrargyri bichloride cor. stands at the head of the list of chemical disinfectants, the selection of the agent used will ever remain largely one of personal choice of the surgeon. Personally I prefer creolin

for disinfecting the field of operation, especially in practice out side of a hospital, because of its easy application, not requiring so many vessels to properly carry on the work.

For packing large cavities we need a prohibitive germicide, that is cheap, that is light and bulky, that will not irritate the parts, that is not too astringent, that will not act as a foreign body, that will not dissolve too rapidly, that will not produce unfavorable systemic disturbances, but will prevent germ development.

A combination of boracic acid and acetanilid will prevent germ development, but it dissolves too rapidly and it has a tendency to stimulate a serous exudate in the wound. Iodoform is too expensive, too heavy and may produce too great systemic disturbances when used in large quantities.

I am of the opinion that a combination of two or more drugs of this class that have different degrees of solubility and systemic action, will give better results than any one remedy that is on the market at the present time, although I have not as yet had an opportunity to use glutol (a combination of gelatin and formalin), a remedy that has recently come into use in human practice for packing cavities where the parts cannot be coapted, nor iodide of starch, a preparation that seems to have a number of the essential attributes.

Cheese cloth, a thin gauzy cloth, that can be purchased at any dry goods store for from three to five cents per yard, when thoroughly boiled in a solution of sodium chloride or boracic acid, and dried in an oven, will answer all purposes equally as well as the higher priced medicated or surgical gauzes on the market. For sterilizing instruments and dressings such as absorbent cotton, gauzes and bandages, nothing is so efficient as moist or dry heat.

The application of accessory treatment, such as bandages, splints, etc., and the use of sling will depend largely upon the character of the wound and the temperament of the patient.

The objects obtained by this line of treatment are reducing to a minimum of the liability of septicæmic and pyæmic

complications, a more rapid recovery, leaves less scar and requires less care and attention in the treatment of the wound.

This paper has been prepared more especially with reference to the treatment of wounds in the larger domestic animals, but the principles of antisepsis apply equally as well to the smaller animals, differing only in the special application.

In conclusion, a most vital point is, that the surgeon should never lose sight of the fact that while a theory or principle is usually broad enough to cover all cases, no set rule can be successfully adopted, but that each and every case should be treated according to its special indication.

SANITARY ADVANCE IN NEW JERSEY.—At the recent annual meeting of the New Jersey Sanitary Association at Lakewood a Committee on Animal Diseases and Animal Food was established. Dr. William Herbert Lowe, of Paterson, President of the Veterinary Medical Association of New Jersey, was appointed chairman. We are glad to note that the sanitarians of New Jersey recognize the importance of the application of veterinary science in their work and its relation to the public health. Dr. D. E. Salmon, Washington, D. C., Chief of the Bureau of Animal Industry, is chairman of a similar committee of the American Public Health Association, and has just issued a valuable report on the "Relation of Bovine Tuberculosis to the Public Health."

VETERINARY LEGISLATION IN NEW JERSEY. — The Committee on Legislation of the Veterinary Medical Association of New Jersey met in Newark, Dec. 9th, with Dr. T. Earle Budd, Orange, Chairman; Dr. T. E. Smith, Jersey City; Dr. Henry Vander Roest, Newark, and Dr. Wm. Herbert Lowe, of Paterson, present. Dr. Vander Roest was elected Secretary of the Committee. President Lowe submitted a draft of a bill entitled "An Act to establish a State Board of Veterinary Medical Examiners to regulate the practise of veterinary medicine and surgery in the State of New Jersey," which was approved. The Committee will recommend the adoption of this bill at the forthcoming meeting of the Veterinary Medical Association of New Jersey at Trenton, January 9th, and its introduction in the legislature in January soon after the meeting of the State Association. The veterinarians of New Jersey are well organized, and the prospects of securing the desired legislation are good.

PROGRESS IN VETERINARY MEDICINE IN ITS RELATION TO HYGIENE.*

By Dr. William Herbert Lowe, Paterson, N. J.
President of the Veterinary Medical Association of New Jersey.

The progress made in veterinary medicine in its relation to hygiene, as well as in many other respects, during the last few years, has been constant and amazing, and shows that the two great branches of medical science—human and animal—are inseparable. This fact, I believe, is recognized by scientists the world over. The leading veterinary colleges of America are no longer independent institutions, but have become departments of great universities. Cornell and the University of Pennsylvania have each a veterinary department, and New York University has recently established a veterinary department. This department is the result of the union of the two oldest veterinary colleges in this country, viz., The New York College of Veterinary Surgeons with the American Veterinary College and the adoption of the consolidated institution as a school of the New York University, under the title of The New York-American Veterinary College.

Comparative anatomy, comparative physiology, comparative pathology, bacteriology, entomology, animal parasites and parasitism, chemistry, physics, meat and milk inspection and sanitary science are among the subjects found in the curricula of the recognized veterinary schools of to-day.

Harvey's discovery of the action of the heart and the circulation of the blood by experiments made upon living animals; Jenner's discovery of vaccination and announcement that smallpox might be prevented by inoculation with the virus of cowpox are well known examples of the inestimable value to mankind of a scientific study of animal life in connection with experimentation. In fact, it might be said that it was by the student entering the domain of comparative or veterinary medi-

* A paper read before the New Jersey Sanitary Association, at Lakewood, N. J., Dec. 7th, 1901.

cine that many of the now known scientific facts were discovered and demonstrated, and as many of the diseases of animals are transmissible to man the subject assumes an importance of no small proportion when considered from the standpoint of hygiene or public health. Well, indeed, may the New Jersey Sanitary Association give consideration to this subject.

By investigations and experiments conducted by veterinarians on Texas fever of cattle it was found that cattle in the infective district carried in their blood the contagion of Texas fever; that it was due to a protozoan organism, *Pyrosoma bigeminum*, analogous to the parasite of human malaria, and that this parasite was transferred to susceptible cattle outside the infected district by the Southern cattle-tick, *Boöphilus bovis*. The experiments alluded to are interesting to the scientific investigator and make a remarkable chapter in the progress of medical science. They have already led to extensive studies of the part played by insects in the propagation of human diseases and particularly malarial fevers, opening up a new field in medical research, by which it was discovered that mosquitoes are responsible for spreading malaria.

No fact has drawn a closer relation between animal and human diseases or the protection of the public health through domestic animals than the introduction of the antitoxin principles of serumtherapy. The immunizing of animals against fatal contagious diseases; the rapid and certain diagnosis of latent diseases, which cannot be known by physical symptoms, and their early isolation before they have spread their disease germs among their kind, and to the human family; the cure of some diseases by the administration of repeated doses of attenuated virus and the prevention of development of disease by their early administration are phases of veterinary science which make it a great preserver of the public health. Contemplate for a moment the importance of tuberculin used for the diagnosis of tuberculosis in dairy cattle; mallein used for the diagnosis of latent glanders in the horse; vaccine employed to protect mankind from small-pox; tetanus antitoxin employed in

the treatment of lockjaw; diphtheria antitoxin employed in the treatment of diphtheria, as well as other antitoxins employed in the treatment of anthrax, rabies and other diseases. It is impossible to estimate the value of animal serums to mankind employed for diagnostic, prophylactic and therapeutic purposes.

The position taken by Professor Koch in the recent British Congress on Tuberculosis has awakened a great deal of interest in the question of the transmissibility of the tubercle bacillus from animal to man and from man to animal.

The experiments showing the difficulty or the impossibility of transmitting human tuberculosis to cattle in a fatal form cannot be accepted as evidence that the bovine bacillus, which is far more virulent and fatal for many animals, cannot infect man. On the contrary, the greater disease-producing power of the bovine bacillus would appear to make it more dangerous for human beings as well as for lower animals.

The evidence showing the practical impossibility of cattle being infected with human tuberculosis under ordinary conditions is a great encouragement for the eradication of bovine tuberculosis, since it proves that the danger so often feared that cattle if freed from the disease would be immediately reinfected from mankind, does not exist in fact, and need not be considered.

Even if it were true that bovine tuberculosis is not communicable to man it would nevertheless be to the interest of cattle and swine growers to have the disease eradicated as an economic measure; and such eradication would also be to the interest of the public, since it would have great effect as a means of preserving the food supply of the nation and of protecting consumers from the unwholesome products of diseased animals.

The communicability of tuberculosis received its full share of attention at the recent annual meeting of the American Veterinary Medical Association held at Atlantic City last September, and resolutions were adopted expressing the sense of

the association as above. I might state that a number of veterinarians are making a series of experiments at the present time that promise to be of no little value to science and mankind. Some of these experiments, I am glad to say, are being made in our own State by the Public Health Committee of the Veterinary Medical Association of New Jersey.

The last Legislature enacted a pure food law and put the execution of the law under the control of the State Board of Health, and I hope that ample provision is made in said law for necessary veterinary inspection of all food animals as well as animal food products. The qualified veterinarian is the expert on this subject. This association can do much to enlighten the general public on veterinary hygiene and sanitation, and I regard the same as an important function of this organization.

All dairies should be regularly inspected by a competent veterinarian. The cattle should be examined as to their health and the attendants as to their own healthfulness and cleanliness; the stable should have sufficient air space, be well lighted, ventilated and drained; the quality and kind of food is important, and the water supply should be uncontaminated. Milk is often tainted, contaminated or infected after it is drawn from the cow. The whole system of producing, handling and marketing milk, is being revolutionized and great improvement has already been made in many dairies by enterprising producers.

Milk is pure while in the udder of a healthy cow, but the moment exposed impurities soon deteriorate it. It should be conveyed to the milk house as soon as drawn. Care must be taken that the water is not polluted in which the milk cans and utensils are washed, for it is in this way that epidemics of typhoid are sometimes started. No dairyman should give medicine to a cow and allow the milk to be used, especially for children. The use of various preparations of mercury, arsenic, zinc, iron, iodine, purgatives and other medicines easily cause fatal results. I am of opinion that practitioners of human medicine might in certain maladies oft heir patients, especially of children, admin-

ister medicine to their patients through the agency of a cow by her milk.

The importance of meat inspection is becoming more evident every day. A layman or butcher is not qualified to do work of this character. It requires the services of the veterinary expert. The danger is not so much from meat of inferior quality, or even from putrid meat, as it is from fresh meat containing micro-organisms of communicable diseases. Certain parasites (*Cysticercus cellulosa* and *C. bovis*) are directly transmissible to man through the use of meat. The veterinarian with a knowledge of these worms is able to prevent the spread of their tapeworm stage among human beings by condemning the infested meat or subjecting it to processes which will render it harmless. The rigid system of meat inspection in Germany has resulted in an actual decrease in tapeworm disease (by *Tænia solium* and probably also by *T. saginata*) in man and in their frequency of *C. cellulosæ* in the human eye.

Condemnation and destruction of organs infested with cer tain other parasites (*Echinococcus*, *Cœnurus*, *Cysticercus tenuicollis*) will prevent the spread of those parasites in their tape worm stage to dogs, and by that means prevent the reinfection of man (*by echinococcus*), and of domesticated animals (*by echinococcus*, *Cœnurus*, *Cysticercus tenuicollis*); in this case prevention of tapeworm disease in dogs, though of comparatively little importance so far as the dogs are concerned, becomes very important not only in public hygiene (in the prevention of disease in man and animals), but also from an economic standpoint, preventing financial loss to stock-raisers from disease and death in their herds and flocks caused by the worms. The destruction of livers heavily infected with flukes will also result indirectly in decreasing fluke diseases in man and animals. I would refer those interested to an exhaustive work on the subject compiled by the Bureau of Animal Industry, some of the data of which I have incorporated in this paper.

Pork before being put on the market should be examined microscopically for a minute worm called *trichina spiralis*,

which causes the disease known as trichinosis. As a secondary precaution, no pork should be eaten unless it has been thoroughly cooked throughout, so as to kill any parasites which may exist in it. The pernicious and most unsanitary practice of feeding swine with garbage should be prohibited, as it induces disease in that animal whose carcass constitutes a large portion of our food resources.

Cold storage, cooking or salting will destroy the parasites of certain diseases. In other cases the meat should be "tanked" and converted into fertilizer. In each city and town the slaughtering should all be done at one abattoir, and that abattoir should be constructed upon sanitary principles. There should be a competent veterinary inspector appointed as director in every slaughter-house, with assistants if necessary.

Veterinary inspection of meat is now being efficiently carried out on a large scale for inter-state and foreign trade by the U. S. Bureau of Animal Industry. Meat inspection should be carried out along the same lines by every city and town in New Jersey. The State, and every city and township board of health, should have at least one veterinarian officially connected with it. Veterinarians should be appointed on boards of health as well as physicians and others, for no small part of preventive medicine and sanitary science belong essentially to the veterinary profession.

I take a deep interest in this association, because it brings together members of several professions interested in a common cause.

THE NEBRASKA STATE VETERINARY ASSOCIATION holds its next meeting at Lincoln, Neb., January 23d.

A VERY CHEERFUL SIGHT to Brooklyn veterinarians is the transformation of a very large storeroom on Bedford Avenue from a "busted" automobile wareroom to a successful harness and horse goods bazaar.

THE class of 1903 of the N. Y.–A. V. C., have adopted a new class pin, having a horse's skeleton head, surmounted by two crossed femurs, upon the red cross of medicine, and with the University purple as a background.

CLINICAL OBSERVATIONS ON ROARING.

By W. L. Williams, Professor of Surgery, New York State Veterinary College.

In the Review for July, 1900 (Vol. XXIV, p. 240), Dr. Liautard presents a brief *résumé* of discussions upon the question of the heredity of roaring by such eminent scientists as Nocard, Lavalard, Cagny, Barrier, and Labat. The latter of these clings to the belief in a hereditary predisposition. Much confusion has been caused by including under the term "roaring" all cases of disease resulting in a loud roaring noise during exertion, a heterogeneous collection of maladies of the greatest possible variety and scarcely related in any way.

For our purposes we shall restrict the term to the predominant pathologic condition causing this symptom, consisting of paralysis and atrophy of the muscles supplied by the left recurrent laryngeal nerve, and which upon investigation show no sufficient cause for the paralysis, such as the pressure of a tumor on the nerve or the separation of the nerve, owing to a traumatism.

In the article above quoted the query is put, "Why should 'Ormonde,' himself a roarer, produce roarers when in England and when taken to America *not have one* roarer to his credit?" Other cases of confirmed roarers used as breeders without producing roarers are cited. The query concerning "Ormonde" is significant. Why did his British progeny "inherit" his defect and his American produce remain free? If we admit "heredity" as the ruling factor we should have to conclude that there was a hereditary predisposition in the American mares against roaring which was greater than "Ormonde's" pro-roaring tendencies. But the American mares were probably from British stock in which roaring has been common throughout history, and the question arises then whether the mares in South America had acquired an immunity against the malady.

This at once raises the question of climatic influence on roaring, and unfortunately we have no statistics at hand to affirm or deny such suggestion. In the writer's observations, how-

ever, climate does seem to exert a powerful influence, though no exact data have been preserved. During 12 years' practice in central Illinois in an agricultural region largely devoted to horse breeding and chiefly to heavy draft horses, roaring was rarely seen, probably one case a year was presented. In Montana, in a location where there were a great many horses, three roarers can be recalled during a period of as many years. At the free clinic of the New York State Veterinary College, 25 roarers have been presented among 3500 surgical patients.

These figures are suggestive, but may be faulty. If true, they argue against heredity, for, so far as the writer can judge, the belief in heredity and the care exercised to prevent transmission is most evident where the disease is most prevalent.

If heredity is the prevailing factor in producing roaring, it would seem it should appear often at birth, and the frequency of advent should decline with age, but not wholly cease, but in practice we see it occur between 3 and 6 years, and rarely outside this range.

Heredity should not, it seems to us, have any great preference for one sex as against another in case of a disease affecting an organ having comparatively slight sexual attributes, or if the sexuality has much to do with the heredity then the desexualization should act as a barrier against the disease. The 25 cases entered in our clinic were as follows: Geldings, 17; mares, 5; stallions, 3.

	Number of cases which would result if all sexes were equally susceptible.	Actual number of cases occurring.	Ratio of cases occurring to an equal occurrence without relation to sex.
6000 mares.	15	5	1:3
3950 geldings.	9.875	17	2:1
50 stallions.	.125	3	24.1
	25.	25	

The proportion of stallions, mares and geldings per 1000 in this community can only be estimated, and the following

would, perhaps, be approximately correct: Mares, 600; geldings, 395; stallions, 5.

If we assume for purposes of study that our 25 cases would exist among 10,000 horses then the following table would show the inequality of vulnerability to roaring as influenced by sex:

These very brief data may be quite misleading, but they are in our judgment in accord with our prior observations where no statistics were preserved, unless that the ratio of stallions affected is too low.

If roaring is hereditary, environment should play little, if any part, in determining the absence or presence of a disease, but in our observations *we have never seen roaring in an unhoused horse.* This is interesting in conjunction with the data above given as to sex. Stallions are as a rule constantly stabled. Geldings are used for work purposes only, and are largely sold into cities and quite constantly stabled, while a large proportion of mares are kept on farms and are more largely allowed the freedom of the pasture.

These, to us, are the chief arguments against the heredity of roaring, while probably the chief, if not the only weighty evidence for heredity, is the frequent occurrence of roaring among the progeny of affected parents, but if climate and housing exert a distinct influence upon its cause or prevention, then it must largely destroy the value of this fact as a proof of heredity. If given climate, food, housing or other environment causes or prevents roaring, then if these conditions be present roaring naturally ensues if parents be roarers, and equally so if they are not roarers, and the strongest suggestion of the probable advent of roaring in a young horse would be that his sire or dam contracted the disease under the same conditions in which he is placed.

The question needs careful study. In horse shows stallions which roar are excluded from competition, but their progeny, shown without their sire, are eligible! If the disease is hereditary the action is hypocritical, if not hereditary much injury is done by damaging the repute of excellent sires.

Another point of interest in relation to the diagnosis of roaring has been developed in our clinic. In differential diagnosis veterinary writers rely upon the peculiarity of the sound when a horse is exerted, the absence of tumors, constrictions etc., of the air passages, and finally for a definite decision upon the use of the costly and complex laryngoscope or even to laryngotomy and direct ocular observation. We have discarded these in our clinic and rely upon external digital exploration, our technique being as follows: the surgeon approaches the horse, say, first on the left side and places himself beside the animal's neck, looking in the same direction as the horse, the patient's head being held moderately extended by an assistant. Place the palm of the right hand against the left lateral surface of the larynx, the index and second fingers close together and pressed tightly against the larynx, the third and fourth fingers separated from these and passing loosely out of the way toward the ear, while the thumb extends downwards and forwards outside the angle of the inferior maxilla; press the index and second fingers forward along the larynx until the upper or anterior border of the wing of the thyroid cartilage is reached and passed, when if the posterior crycoarytenoid muscles are atrophied a cavity is felt and the arytenoid cartilage is readily pushed inwards, offering no elasticity but being shoved away as an inert body. For comparison pass to the *right* side of the horse, and now use the *left* hand in the same manner as above directed for the right hand, when if the parts are normal there will be distinguished a fullness over the arytenoid region, and while the cartilage can be pushed inwards it does not so readily pass and reveals a distinct elastic resistance. A very little practice renders the examination easy and the conclusion safe. This method of diagnosis offers numerous advantages:

1. It is quicker and much less spectacular.

2. It avoids much trouble frequently by doing away with the necessity for galloping a horse which possibly is unbroken or for some other reason is impracticable or inconvenient. The

horse can be examined safely in stable or paddock by day or night.

3. Perhaps the most potent reason for this method of examination will be found to lie in the probability that hemiplegia and atrophy exists for months in many cases before repeated severe exertion develops the dyspnœa and hence our ability to detect the disease by the usual means, while digital exploration will detect the malady in its earlier stages.

We make our diagnoses and prepare for operation upon this digital exploration alone and if the patient is exerted at all it is merely to test the intensity of the dyspnœa as a matter of curiosity rather than of scientific importance.

SUIT AGAINST A VETERINARIAN.—English clients hold their veterinary advisers to strict account, if we may judge by the frequent litigations which they are called upon to defend. A cab proprietor owned a mare which became choked upon a potato which she was seen to take from a basket in the stable yard. Drinking water returning by the nostrils when administered and inappetence for food caused the owner to send her to his veterinarian's infirmary, Arthur Ellison, of Harrogate, who administered oil, etc., without success. He then passed the probang, which obstructed in the thoracic portion of the œsophagus, and he could not dislodge the object. The same was done the next day, with similar success. He then decided to allow nature to take its course as the mare appeared better, and returned her to the owner, who also considered her improved. That night she was worse. Again the probang was passed, this time with the corkscrew stiletto, and succeeded in removing the potato; but told owner it was too late as patient had septic pneumonia. Another practitioner was called in, who, when she died, held a post-mortem, and found not only septic pneumonia, but a ruptured œsophagus. Dr. Ellison was not invited to the autopsy. Owner sued Ellison for £50. Jury returned verdict for defendant, with costs and allowances for scientific experts. A point of the prosecution was that the horse should have been "cast" for the operation of passing the probang. (!)

DR. W. L. WILLIAMS, of the New York State Veterinary College, has been appointed by by the Mayor of Ithaca a member of the Municipal Board of Health. We understand that the honor of the position is far in excess of the salary.

A RETROSPECT OF THE CONTROVERSY REGARDING THE EFFICIENCY OF THE TUBERCULIN TEST.

By J. C. Burneson, Veterinarian, Ohio Agricultural Experiment Station, Wooster, Ohio.

That the tuberculin test is a "bone of contention" among many herd-owners is a universal fact. Every good thing which has been brought before the people since the beginning of the world has had its pessimistic alarmists ready and willing to cry it down, regardless of the many virtues which it may possess. This "bone" (if I may here use the term) appeared to have an inexhaustible supply of nourishment for some, if one may judge by the continuous gnawing which it is receiving through, and by some of our leading stock journals. These journals, which claim to always have the best interests of the stock-owner at heart, but which, nevertheless, decry the endeavors of a conscientious body of workers to eliminate from the herds the worst scourge with which human and bovine are afflicted.

Is there any substantial basis upon which the herd-owner can place his side of the controversy? Some have said many bitter things regarding the use of tuberculin, placing at its door many things, which, viewed from an unprejudiced standpoint, could not in any way be substantiated. The proper and only standpoint from which to view the tuberculin testing of cattle, is to give to it all credit which a careful test will always merit. It is an absolute necessity that the truth or falsity of these assertions be established in order that the wheels of progress, in this line of work, may move without hindrance. The recent defense of this work, so energetically carried on by Dr. Salmon, is to be admired by all who are in favor of the inspectors' side of the argument.

The veterinarian has received his full share of condemnation; and is this condemnation in all cases wholly unwarranted? I regret to say that it is not, but is warranted in many more instances than one hardly dare believe.

I dare say that it is no uncommon thing with other inspec-

tors as with the writer, to be told of some veterinarian (self-styled, or otherwise) going about testing herds by many different methods, some of which are veritable revelations. One must blush with shame at the many unscrupulous methods practiced by some, with no other purpose in view but to increase their earnings. Nor do I have to confine myself in my assertions to the self-styled veterinarians, but can remain within the ranks of the graduate. I do not hesitate to say that tuberculin tests (?) are made by those who have never seen a drop of tuberculin. It is no uncommon thing to hear of herds having been tested (?) by one visit of the veterinarian, by looking over the herd (or fence) and passing judgment, or taking the pulse and respirations and possibly the temperature, and pronouncing them tuberculous or not tuberculous. Not long since I was told by a reputable dairyman of one of the leading dairy districts in the State of Ohio, of the test (?) of his herd by the municipal dairy inspector—a graduate of one of our very reputable veterinary colleges, a man who, no doubt, was placed in that position by virtue of his professional calling. He visited the dairy, recorded the pulse and respirations on the side of the barn in the rear of each animal, drenched them with tuberculin (?) and in a few hours the pulse and temperatures were again recorded and judgment passed upon the herd. The dairy inspector was given the tuberculous (?) cows (two in number) as he wished them for experimental purposes. Several weeks after, it was learned that he had sold them to another dairyman. Of course, after such a profitable experiment, the cows were allowed to be milked by their new owner and the milk sold as before. This dairyman really believed that his herd had received a thorough tuberculin test until I informed him to the contrary.

Again, cattle are tested and pronounced non-tuberculous and upon being shipped to neighboring states, or another country, are retained at quarantine, or being tested and pronounced tuberculous arrive at quarantine and pass into a state or country which strictly forbids the entrance within its boundary of tuberculous animals.

I read with much interest in the *Veterinarian* an article by Prof. Duncan McEachran, of McGill University, Canada, in which he relates the polluted condition of affairs once in vogue, regarding tuberculous cattle in the live stock industry between Europe, Canada and the United States. Is it to be wondered at that the tuberculin test is condemned? Does this not give the dealers in cattle ample opportunity for the denunciations which they have uttered? Can we expect to make any progress with such unscrupulous pretenders within our midst? This "scull-duggery" must be acknowledged and is to be deplored. The tuberculin test rightly carried out in every particular is beyond just condemnation.

The test cannot receive the credit which its merit justify by any of the above-mentioned *modus operandi*, neither by the taking of two, three or four temperatures during the entire test. The right way is the only way, and by the right way I mean not less than five or six temperatures before injection and seven or eight temperatures, or more if necessity demands, after injection, and the confining of all animals under proper conditions and close observation of all which might act as a disturbing element during the entire test.

A proper test can be relied upon to give proper results. The herd-owner in some instances has some base upon which to place his shaky opinion of the tuberculin test, because he has been imposed upon; while on the other hand, I acknowledge my belief that many attacks are made upon it by unscrupulous persons having no other object in view but malicious destruction of the conscientious work of others and the furtherance of their own selfish motives.

ONTARIO VETERINARY COLLEGE GRADUATES.—At the recent Christmas examinations the following were granted diplomas: Wilson A. Bisbee, Cleveland, Ohio; Alexander Doherty, Ellesmere, Ont.; J. Leonard Faragher, Lorain, Ohio; Albert T. Ford, Neustadt, Ont.; A. P. Lubach, Boonton, N. J.; John L. McCoy, Sussex, N. J.; William D. McMullen, Chilton, Wisconsin; Arthur E. Melhuish, Toronto; T. C. Neff, Jun., Long Glade, Va.; R. J. Norton, Owen Sound; J. A. Royce, Lincoln, Neb.

NOTES ON A NEW DISEASE OF HORSES.

By John G. Slee, D. V. S., Assistant Veterinarian, Board of Health, Manila, P. I.

During the past season a disease of a febrile type has been noted by the veterinarians affecting the foreign and native. horses.

The history was at first very obscure, the disease usually being far advanced when first seen, the death rate large, and treatment unsatisfactory.

The resident veterinarians and horse owners had noted the same conditions in former years, which they described as "Calentura," or fever, but did not think it had been so widely spread or the mortality so large as during the present season. Dr. H. H. Muecke, veterinarian of the Land Transportation Corral, says he had not noted it during the past two seasons, but was able to give much information concerning the disease, as it appeared this season in the government horses.

That the disease was widespread was evident by the reports to the Board of Health, which upon investigation showed it to be generally present in the Island of Luzon, and in one place all the native horses had died, while of the government stock about one-half were affected.

The first cases in native horses came under notice about the first part of June and presented swellings of the sheath, legs, and pads under the belly, in many respects similar to those of purpura, the membranes colorless, hæmorrhagic spots on the membrana nictitans, but no petechial spots on the schneiderian membrane, as in purpura; these were not seen in the foreign horses. There was always a temperature, very irregular—from normal at times to 105. In the native horse the disease would not run a very long course, anorexia appearing in the final stages, followed by death.

When the horses in the corrals became affected, the symptoms could be more easily noted, this being simply due to the fact that the native never notices that an animal is sick until it

is past recovery. I have seen horses being used with a well advanced case.

In the corral, the sick animal at first showed a temperature of from 103 to 107, pulse full, breathing increased and abdominal, appetite variable, from poor to good, but never entirely lost, the membranes slightly injected, but no hæmorrhagic spots, as noted in the native animal. The swellings of the belly, sheath and legs soon appear, in some cases may not be present, emaciation taking the place, but in the native horses, it seems to be always a marked symptom. At this point the temperature is variable, of an intermittent character, and is not controlled by any of the febrifuges; may be higher immediately after giving medication than before. Some of the cases last for a long time, being in the hospital for two or three months, ending in recovery or death. If the swellings suddenly disappear, death soon follows in the native horse, but this is also a symptom of recovery in the foreign horse.

As the disease progresses towards a fatal termination, the animal grows very weak, particularly in the hind legs, weaves from side to side when walking, may go down and be unable to rise.

The fæces are of a normal character, no marked constipation nor diarrhœa being present; the urine seems to be increased in quantity, but as to color or changes have been unable to note.

Post-mortem.—No special lesions are found, the organs and tissues showing an ânæmic condition; in some cases abcesses were noted in the stomach and abdominal cavity. The pericardial sack and pleural cavity are always full of a serous fluid, but no appearances of inflammatory changes; ante-mortem clots are found in the heart.

As there were so many cases, it was supposed to be of a contagious type, but this did not seem possible, as in a stable of several horses, one would be affected and the others remain healthy, the horses standing side by side and eating out of the same manger.

The character of the disease being so much like malarial fever, the infection was looked for from some other source, and a parasite in the blood was suspected. Upon examination of the blood of a well-marked case, an animal parasite was discovered, which also was found in all the cases examined. In the new cases the parasite was seen, and as the case progressed they increased in number, but towards recovery grew less, and finally disappeared.

The parasite is an animal organism, a spirillum, rather blunt at one end with a flagellum at the other. In advancing, the tail seemed to advance, becomes entangled with the corpuscles, and he drags himself forward; he can go backwards, but the most of his movements are with the tail, advancing. They are of different sizes, the smaller seemingly a male, the larger a female; they often come together, the blunt ends being attached, and the flagellum moving very rapidly.

That they have some action on the red blood corpuscle is very evident, as the blood count is diminished, and the leucocytes increased.

Where the parasite comes from, his life history, will probably necessitate examination of the fly and mosquito. The disease is so widespread and the affected animals are fed and watered in many ways, the Filipino depending upon grass and rice, while the government stock have hay and oats, would in a measure exclude feeding as a source of infection.

To Stop Docking in the District of Columbia.—Senator Gallinger, of New Hampshire, taking his cue from President Roosevelt, introduced a bill to prevent the docking of horses' tails on December 9. If his measure becomes a law, all owners of docked horses in the District of Columbia must register their animals within ninety days of the passage of the act. It shall be unlawful to bring a docked horse into the District of Columbia after the measure becomes a law, and all persons owning or driving unregistered docked horses shall be deemed guilty of a misdemeanor, and shall be liable for a fine of from $100 to $500, or a term of imprisonment of from one month to three months, or both.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

A CASE OF THROMBOSIS OF THE PULMONARY ARTERY.

By E. L. QUITMAN, M. D. C., Chicago, Ill.

During the evening of September 27th, 1901, I was called to the stable of one of my clients to see a mare about nine years old, weighing in the neighborhood of 1100 pounds, which was thought to have been "foundered."

The history of the case was that the mare had been idle for about four weeks, but had been at work for the past four or five days. Previous to this time she had never been sick or ailing during the time of her present ownership, which was over three years, her idleness being due to the owner having no use for her.

She was noticed to be stiff in the morning, but I was not called until evening. On coming into the stable the attendants were found trying to move her, and my first impression, gained from her attitude and apparent disinclination to move, was that I had a case of laminitis, myositis, or muscular rheumatism, to deal with. But upon examining the pulse, which was my first step in the examination, I saw that I had something "unique" instead, and immediately put on my thinking cap. I found a pulse which was at least one-half inch in diameter, extremely resistant and beating like a trip-hammer. This in an exaggerated sense also suggested lymphangitis. The accompanying vein was also immensely distended, but more compressible.

I next examined all superficial blood-vessels and found all *extremely* distended and firm. Especially noticeable were the larger blood-vessels on the inner aspect of the limbs, both hind and fore, which seemed, at least, an inch in diameter. The mucous membranes were slightly injected, respiration rapid, about 50 to 60 per minute. Occasionally there would be muscular contraction of the trunk, as though affected with "shooting pains," lasting but a moment.

Surface temperature was apparently normal, or higher than normal, temperature per rectum 104½° F. The limbs were warm and lung sounds normal. There was apparently an *inability* for motion, but upon forcing the animal this proved to be a *disinclination* rather than an inability. On first attempt the mare would settle back on her hind quarters as if badly foundered, then getting started would act as though the front

limbs were cramped (or "asleep") and after getting headway, always under force, would walk fairly well. Her countenance showed no signs of pain nor distress except for a moment, when the "shooting pains" occurred. The bowels were normal and the appetite excessive rather than lessened.

After carefully weighing all facts and excluding apparent ailments, particularly rheumatism, for want of completing symptoms, I made a diagnosis of thrombosis of some large internal vessel, even mentioning the pulmonary artery as the probable seat, on account of the increased respirations. I felt reasonably sure that it was not in the femoral or axillary arteries (which are the most common seats) onaccount of all four limbs showing trouble, with possibly more marked manifestation of the ailment anteriorly, but there was no coldness, and the symptoms did not abate after rest. The quickened and increased respirations suggested the pulmonary artery, or at least the anterior aorta, though this would occur (but to a less extent) in thrombosis of the posterior aorta.

Prognosis was unfavorable. I put the animal under treatment, consisting mainly of iodide of potash and carbonate of ammonia, alternated. The temperature varied from 103° to 105° during the progress of the ailment. No organic or inflammatory disease was manifested until the last four or five days of the animal's existence. Then gangrene of the lungs made its appearance without any preliminary symptoms of pneumonia. The animal never coughed, even after the 26th or 27th day, when I detected a most fœtid odor of her breath. I then depressed her head, which would cause a profuse flow of a very fœtid sero-purulent, slightly bloody fluid from her nostrils. I then informed the attendant that gangrene of the lungs had set in, and that her end was not far off. Emaciation progressed from the start, though she ate full rations, even finishing a full feed of oats the evening preceding her death, which occurred during the night of October 20th, 1901, 23 days after the commencement of her ailment.

I should add that on about the tenth day she showed an improvement to such an extent that it seemed that her recovery was assured, but after a couple of days of this apparent improvement, she relapsed into her former condition without material change until the pulmonary gangrene set in.

Post-mortem.—I have never before seen so many pathological conditions in one animal. It was simply remarkable that the mare lived so long. In the abdominal cavity there was

found some effusion, patchy peritonitis, bowels congested, kidneys enlarged, stomach congested, spleen empty, flat and flabby and beautifully mottled with hæmorrhagic infarcts. The ovaries were normal. The liver had an old cicatrix on it about one and a half by one inch in size, and a number of small elevations of Glisson's capsule, as if gas had forced it out into minute elongated pouches.

Upon opening the thoracic cavity a considerable amount of very fœtid gas escaped. There was also some serous effusion here, patchy pleurisy and a pericarditis. The heart was enlarged and contained antemortem but recent clots. The lungs were *filled* and distended with a very foul sero-sanguinous fluid, which ran out when the lungs were cut and could be squeezed out like water from a sponge. There were large and innumerable areas of gangrene, and were emphysematous.

Upon opening the pulmonary artery I came upon my object of search. There we found a thrombus of a yellowish or grayish-white color, which I caught hold of and gently pulled upon, and was rewarded by drawing out a clot which showed the distribution of the blood vessels most beautifully and minutely. I spread this out nicely on white paper and the clot shows the main trunk which represented the pulmonary artery and the right and left branches into both lungs and further subdivisions until it became as fine as the finest hair.

It seemed almost impossible that a clot could get so tough as to have strength enough to allow it to be drawn out of the most minute blood-vessels. This toughness proves its age and in my opinion leaves no doubt as to the diagnosis made on my first visit.

In conclusion, I will say that I based my diagnosis almost entirely on the very great distension of the blood-vessels, together with a lack of completing symptoms of other apparent ailments, or, in other words, I diagnosed "by exclusion." I figured that nothing short of a mechanical obstruction could cause such a condition of the blood-vessels and pulse; along side of which a typical laminitis pulse, which I believe is our largest pulse, becomes a small wiry pulse in comparison.

REMOVAL OF A CALLOSITY.

By J. A. McCrank, D. V. S., Plattsburgh, N. Y.

A few years ago Dr. W. purchased a driving mare. She was gentle, easily handled, perfect in every respect, barring a callous cicatrix on the front of the ankle on one hind foot,

caused by the calk of her shoe. The mark was elliptical, about three inches long, three-eighths of an inch wide at the widest part, and about one-fourth of an inch thick. He wished very much to have it removed, but I discouraged him, because my experience in such operations was not at all satisfactory; but he was persistent. He being of a mechanical turn of mind soon caused me to volunteer to operate; so we adopted the following method (new to me, but possibly not to more experienced professional brothers):

The hair was shaven back from the edges of the cicatrix about three inches, two pads of cotton felt were made, about one-fourth of an inch thick, placed parallel with the wound. These were thinned back to an edge, and glued to the shaved dry skin. To the sloping sides of the pads were glued a strip of leather with holes punched for the easy passage of a needle. This took about two hours of patient work. Now the cicatrix was dissected from the edges of the hair, blood prevented from flowing by the use of a solution of the sulphate of copper. Iodoform was next dusted over the wound, and with a shoemaker's waxed thread the edges of the wound were drawn together by drawing the two pads together. A strong bandage was used and the beast turned into a box. On the ninth day we examined the wound to find it clean and healed by first intention. It was bandaged again for fifteen days, when every sign of a cicatrix was gone. The bandages were readjusted and removed after twelve days, when the pads were taken off by means of warm water, etc. The cure was perfect.

I make this report because I never saw such an operation recorded, and some of the REVIEW readers might benefit by our work. I do not claim any credit for the ingenuity used. It was Dr. W.'s mechanical genius.

TWO CASES OF TETANUS SUCCESSFULLY TREATED WITH ANTITETANIC SERUM.

By Dr. D. W. MACK, Appleton, Wis.

I recently treated two cases of tetanus with antitetanic serum (Parke, Davis & Co.), with results that convince me of its specific value in this once fatal disease.

Case I.—A farmer drove a gray gelding up to my office on July 22, 1901, and said his horse was acting very peculiarly. He wished me to examine the animal, which I did, when I was at once able to make a diagnosis of tetanus. I considered the disease to be idiopathic, inasmuch as I could find no point of

infection, as a puncture of the foot or wound of any description. The horse was placed in a large box-stall away from the street, when on removing the bridle I found it difficult to extract the bit. The muscles of the head and neck were very rigid and the pulse-rate was 55. I immediately administered hypodermatically one ounce of Parke, Davis & Co.'s antitetanic serum. The next day, July 23, the area of muscular rigidity had extended backward over the whole body; the teeth were firmly set and the pulse-rate had risen to 60. The dose of one ounce of antitetanic serum was repeated.

On the 24th I found my patient unable to drink. There was rigidity of the whole muscular system, elevation of the tail; the membrana nictitans would pass over the eye very quickly upon the least noise or excitement; the pulse-rate was 68. I administered another dose of antitetanic serum. July 25 I found the patient worse: there was a profuse salivary discharge from the mouth, and he was drawn up in the flanks; pulse-rate 72. On this date I gave a dose of antitetanic serum morning and evening. This condition continued, with elevation of the pulse-rate to 85, until July 29. Each day I gave the horse two doses of antitetanic serum. Upon the 29th I found the patient better; he was not so nervous as he had formerly been. There was a slight grating of the teeth, and the pulse was 78. I gave him a dose of antitetanic serum. July 30 I found the patient improving, although there was a continual grating of the teeth; the pulse-rate was 70. Again I administered a dose of antitetanic serum. July 31 the patient was able to drink a little thin gruel and seemed very hungry. Upon this date I gave him the last dose of antitetanic sernm. He continued to improve, and on August 8 I discharged him from the hospital cured.

Case II.—On August 19 I was called to attend a horse that had received a puncture-wound of the foot upon a nail. I pared the hoof out thoroughly, treated the wound antiseptically, and in four days the horse was working. Ten days later I was again called to see the animal, when the owner said that something was wrong with his eyes. The membrana nictitans passed over the eyes quickly upon the least excitement, although the horse was able to eat naturally. The pulse-rate was 45 a minute. I diagnosed the case as one of traumatic tetanus, treated the wound in the foot, and gave a dose of antitetanic serum. The next day the patient was worse, although still able to eat. The wound in the foot appeared to be doing nicely; the pulse-rate was 52. The second dose of serum was administered. August 31 the

patient's teeth were set; he was very excitable; naturally he is a very nervous horse. The masseter muscles were rigid; pulse-rate 65. I administered a dose of antitetanic serum. September 1 I found my patient worse. There was complete rigidity of the whole muscular system and the tail was elevated. There was also a profuse secretion of saliva which was discharged from the mouth. The pulse-rate was 74. I gave the animal a dose of antitetanic serum both in the morning and evening. From September 2 to September 8 he grew gradually worse, and was terribly drawn in the flanks. He would rest heavily with the back parts against the stall, until it became necessary to use a pad to keep him from injuring himself. The pulse rate gradually rose to 110. The treatment consisted in the continued daily administration of two doses of antitetanic serum. September 28 I found the patient was not quite so nervous, but still grating the teeth a little; his pulse was 100. I gave the usual doses of antitetanic serum. The animal continued to improve, although the severe grating of the teeth did not cease; the pulse-rate became lower, until on September 14 I deemed it prudent to stop using the antitetanic serum and discharged the horse as cured, but the most emaciated patient I ever attended. I would say that this horse had been kept in an underground barn, in a box-stall under a driveway over which hacks, 'busses, express wagons, etc., were going in and out of the barn. This made the conditious much worse, as the noise kept the horse excited and nervous most of the time he was under treatment.

In conclusion, I would state that during sixteen years' experience in practice, if I was able to save 4 per cent. of horses suffering from this diseaee I considered I was doing well. Now, however, with antitetanic serum as a weapon, I think I can cure 95 per cent. at any rate. Therefore I heartily recommend to my fellow-practitioners the use of Parke, Davis & Co.'s antitetanic serum in all cases of tetanus.

HAIR-BALLS IN CALF'S STOMACH—HOW DID THEY GET THERE?

By E. W. Brumter, V. S., Alliance, Ohio.

A short time ago Mr. Lilly (a farmer) sold a calf to the butcher, which was killed and delivered the next day. The contents of the abdominal cavity were thrown out for the chickens. About a week after the calf was killed Mr. Lilly in passing the place where the intestines were thrown noticed what he took to be balls of hair, and wondering where the balls of hair came from started an investigation, and decided they came

from the calf's stomach. He cut one in two and found it contained nothing but hair, the hair being the same color as the calf's; the balls were all very compact. Having never heard of anything of the kind before, he brought the balls he had found and what was left of the stomach (the chickens having picked it considerably) to me. I examined what was left of the stomach and found quite a number of balls, there being fourteen in all, ranging in size from a large walnut to one 8 inches in circumference. The calf was one day short of four weeks old when killed, of Durham breed, and dressed 115 lbs. Mr. Lilly said the calf was apparently in perfect health, and was as fine a calf as he ever raised. There were no other cattle near it; the calf was kept tied and left to the mother morning and evening just long enough to suck.

Taking the age of the calf, the number of balls (14), and the fact that it was near no other cattle into consideration, the question is, how did they get there? My opinion is that they were congenital. If not congenital, how did they get there? I would be pleased to hear the opinion of any members of the profession on this case. I think I am safe in saying that this calf had more hair on the inside than it had on the outside.

RABIES AND THE DIFFERENCE IN PERIODS OF INCUBATION.

By E. W. Brumter, V. S., Alliance, Ohio.

January 16, 1900, a dog, which afterwards proved to be rabid, entered the stable of Mr. S. Three boys, who were in the stable at the time, began to play with him, but the dog did not seem inclined to play, and either bit or scratched one of the boys on the cheek; the skin was broken, but the boy being scared could not tell whether the dog bit or scratched him. The boys, after seeing the dog snap at several cows, endeavored to drive him out of the barn with forks, but did not succeed in doing so until the dog had gone the full length of both horse and cow stable. Nothing was thought of the matter until rabies showed in cow No. 1, February 26th. The different cases showed up as follows:

Cow No. 1, February 26, 1900.
Cow No. 2, February 27, 1900.
Cow No. 3, *March 1, 1901.*
Horse No. 1 (driving mare), March 16, 1900.
Horse No. 2 (draft gelding), March 19, 1900.
Horse No. 3 (draft gelding), May, 14, 1900.

The first and last cases were let run their courses, which

resulted in death in a few days. The others were killed to end their sufferings.

Cow No. 3, you will notice, showed nearly 14 months after cow No. 1. Cow No. 3 had a better developed case than either Nos. 1 or 2. The horses all had well developed cases. The boy was sent to Chicago and received the Pasteur treatment.

CASTRATION OF A COLT WITH A SCROTAL HERNIA.

By WILHELM SCHUMACHER, M. D. V., Stevens' Point, Wis.

The subject, a yearling colt, presented a unilateral hernia about the size of an infant's head, which had been noticed since birth. The colt had been treated by the local blacksmith, who had made a truss of leather and iron, which did not fit well and caused swelling, abrasions, and would not stay on. A quack, pretending to be the State veterinarian, applied some rattlesnake oil (for which he charged $2 per ounce), apparently a blister, without success. The owner after this experience was willing to submit the animal to a radical treatment; so the colt was cast, rolled on its back into a hole and banked with earth so that the hind part was elevated about a foot. The scrotum and neighborhood was then washed with a hot 10 per cent. solution of lye, then with water, and finally with wood alcohol. After dividing the skin it was found that the tunic adhered to the skin and had to be dissected away for about six inches. The external ring proved to be wide enough so the hand could pass in, allowing an easy reduction of the hernia. Passing a string around the sac and testicle it was drawn up as far as possible, and a clamp 10 cm. long applied as high as it could be placed, but before closing the clamp the sac was turned once around its axis. The clamp and its groove had been painted with biniodide of mercury in gum arabic, and then dried. A pair of open extracters serving as clamp forceps. The whole wound was then rinsed with a 1:500 bichloride solution, tamponed with oakum soaked in the same solution. The external wound, about 7 inches long, closed with two stitches and the animal allowed to get up. The stitches and tampon were taken out after three days and the scrotum ordered to be washed once daily with a hot creolin solution until the clamp would fall off, instructing the attendant to pull gently on the string hanging from the clamp. Three weeks later the owner sent word that the wound had almost healed up, but that the clamp had not come off.

On arrival I found the colt in fine condition, and the clamp could be felt through the skin. The skin was thoroughly

divided on the standing animal and the clamp removed. It had grown in so tightly that it proved quite a task to get it loose. The wound was cleansed thoroughly and healed within two weeks.

This operation brought two more and both were successful. On the second one the clamp was taken off after six days, but with considerable hæmorrhage, necessitating tamponing and stitching and followed with extensive swelling.

The third case was treated like the first; the clamp came off after 17 days, when the owner pulled the tie string with some force.

DEPARTMENT OF SURGERY.

By L. A. and E. Merillat,

Chicago Veterinary College, 2537-39 State Street, Chicago, Ill.

SURGERY OF THE EYE, EAR AND UPPER AIR PASSAGES.

(*Continued.*)

Evisceration or Exenteration.—This operation has its indications and contra-indications. There are numerous cases that will do better by enucleation than by evisceration, especially when there is danger of sympathetic ophthalmitis. Nevertheless there are cases in which the importance of the operation should not be overlooked. The appearance of an animal can be greatly improved by the introduction of an artificial eye (*prothesis oculi*). Although this is not a common procedure in veterinary practice, it is one which may at times be of some value to owners of favorite and valuable animals. The indications for evisceration are:

1. Staphyloma.
2. Suppurating corneitis.
3. Suppurating choroiditis.
4. Accidental wounds.
5. Opacity of cornea.
6. Injuries from heat or chemicals.

1. *Staphyloma.*—All cases of staphylomata which are complicated by conditions that will favor infection and extension of inflammation to the meninges or to the other eye, must be considered contraindications for the operation; but, such staphylomata as are generally observed in the lower animals, and which cannot be successfully treated by other surgical intervention without destroying the eyeball, may be considered favorable cases for evisceration. However, if there is danger of infection,

it is necessary to resort to all possible means to determine the nature of the condition and the danger of metastasis.

2. *Suppurative Corneitis.*—Any condition of the cornea which will not yield to treatment and which is surrounded by a state of things that will engender sepsis, may require a removal of the eyeball or evisceration. Perforations of the cornea whether due to trauma or disease are most invariably followed by loss of sight; and in many instances leave an unsightly eyeball, unless treated by proper surgical means. If the septic portion of the eyeball can be removed without resecting too much of the eyeball, evisceration is the proper operation to adopt; but, if too much of the globe is involved, it is safer to remove it. Such surgical interference must never be undertaken unless all palliative measures have failed.

3. *Suppurative Choroiditis.*—All the conditions in suppurative corneitis, such as extension of inflammation to the other eye, the meninx, or meninges, are contraindications for evisceration in choroiditis. In general, choroiditis is a more serious condition than a corneitis of the same pathological nature; that is, a septic choroid coat is more dangerous than a septic cornea, when evisceration is the operation in question.

4. *Accidental Wounds.*—Accidental wounds to the eyeball are always more or less serions. Slight wounds that simply perforate the cornea and open the auterior and posterior chambers are often followed by grave conditions. The complications in such instances are generally due to the infection of the eye by the object which inflicted the wound. These wounds may not injure any part of the inner structures of the eye and yet terminate very unfavorably. If the eye is treated from the time of the injury, it is necessary to learn the nature of the object which produced the wound, and if there is any danger of infection, it must be controlled from the beginning; but, if the infection cannot be prevented or the septic process arrested, it is a wise plan to eviscerate before the eyeball has become too badly involved.

Wounds that penetrate the eyeball are always more serious than those above mentioned. The danger of infection is greater; and, the damage may be so great that it is impossible to repair the injury done to the structures within the ball. In wounds of this nature, evisceration should be the surgical treatment selected before septic infection has made any progress.

Rupture of the eyeball may also be an indication for the operation, especially if accompanied by prolapse of the iris and

lens. All ruptures however, are not indications; some can be treated and the sight restored, while others cannot. Ruptures without dislocation or prolapse of iris or lens are sometimes treated by palliative methods with good results; but, when the iris is ruptured, the lens dislocated and the contents of the ball expelled, evisceration is the proper treatment.

5. *Opacity of Cornea.*—Opacities of the cornea are usually due to an inflammatory process which fills the interstitial spaces with a product that becomes organized; the effusion may become connective tissue which is not transparent, and which is not absorbed by the lymphatics of the cornea. The most favorable cases of opacity generally leave streaks in the cornea. There are various intensities of opacity; the lighter forms are known as *nebulæ*, and the denser forms as *cukomata*. When the cornea is only slightly disfigured, the appearance can be improved by tattooing with India ink; but when the entire cornea is discolored, the contents of the ball may be removed and an artificial eye inserted. The only advantages gained by evisceration is in the reduction of the size of the eyeball, which facilitates the adjusting of a shell in prothesis. In opacity of the cornea, there is but little gained by prothesis; in fact, we can see no advantages over tattooing, even when the entire cornea must be tattooed. By tattooing the cornea, the danger of septic infestion is much less than in enucleation or evisceration; aud it must therefore be of more value to the veterinary practitioner than either in removing the unsightly appearance of opacity of the cornea.

6. *Injuries from Heat or Chemicals.*—Injuries of this nature have already been mentioned in a previous number of the REVIEW under "Enucleation."

When injuries of this kind destroy the coats of the eyeball, the injured part is exposed to infection and in such instances the eyeball should be eviscerated; or, if the wound has been neglected and badly infected, it should be enucleated.

Operation.—The operation must never be undertaken if there is any danger of sympathetic ophthalmitis. When the other eye is already affected or shows disturbance due to metastasis, the procedure must be deferred until the patient can be properly prepared for the ordeal.

Instruments.—The instruments required are needles, sutures, speculum, forceps, small, knife, scissors and curette.

Technique.—The conjunctiva is dissected from the cornea from the equatorial region of the cornea in both directions.

The cornea is excised with a knife and scissors; the contents of the eyeball are evacuated, and the inner coats curetted. The hæmorrhage is controlled by mild astringents and hot water; the cavity is cleaned with a 1:3000 or 4000 bichloride solution; the edges of the sclerotic coat are sutured with catgut suture, and the conjunctiva is sutured with silk.

After-treatment.—The patient should be kept in a clean quiet place; the wound should be bathed with hot water for at least twenty-four hours; and dressed every day for the next four or five days.

Mule's Operation.—This is a modification of the operation just described. After the ball has been eviscerated, a sterilized glass ball is inserted into the cavity, and held in place by suturing the sclera and conjunctiva. The after-treatment is the same as in evisceration.

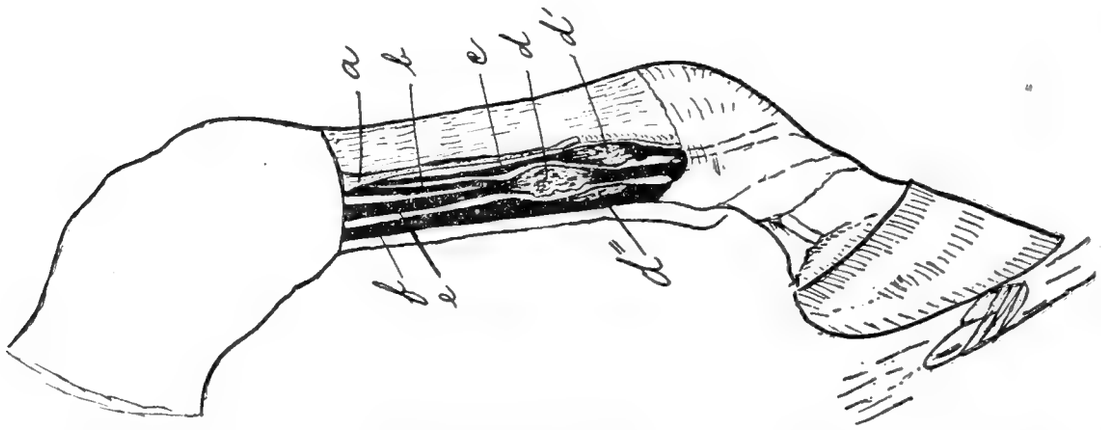
Complications.—The operation is often followed by undesirable and alarming conditions; such as œdema of the conjunctiva (*chemosis*); œdema of the eyelids (*blepharedema*); inflammation of the eyelids (*blepharitis*); and, in neglected cases, the eyelids are sometimes enlarged (*blepharoncus*), or abnormally closed (*blepharocleisis*). The operator that can successfully pilot such an operation to a favorable termination, demonstrates to his client and his profession, that he understands *introtechnics*.

SURGICAL ITEMS.

NOTE.—We owe Dr. Richard, of the post graduate class of the Chicago Veterinary College, an apology, for omitting his name after the article entitled "Sclerotomy," which appeared in the "Surgical Department" of the December number of the REVIEW. We are always very glad to receive articles from professional men who are willing to devote part of their spare moments in the preparation of something relating to veterinary surgery.—(*E. M.*)

Ossification of the Tendons (?).—During the December dissections at the Chicago Veterinary College, one of the subjects was quite old (abont 18 years) and it had been very lame in both front and one hind leg. When the legs were dissected, bony deposits were found in the white fibrous structures of both front and right hind leg. The accompanying cut illustrates the location of the bony or calcareous deposits. This is the second subject with osseous deposits in the tendons and ligaments of the leg that we have found in the dissecting rooms;

the first subject came to our notice last winter during the dissecting session. Have inquired of old practitioners whether this is a common condition or not; and have learned that the veterinary profession knows but little of the condition. The medical profession, however, is more familiar with the condition, and usually refer to it as an ossification of the tendons. For the benefit of the profession we would ask demonstrators of anatomy of veterinary colleges, to report (1) the number of similar cases that have come to their notice. (2) To ascertain whether the condition is osteogenic or calcareous.—(*E. M.*)



A, small metacarpal bone; *B*, check ligament (inferior); *C*, suspensory ligament; *D D' D''*, osseous deposits in tendons and ligament; *E*, perforans tendon: *F*, tendon of perforatus.

The Hands in Surgery.—The danger of infecting wounds with the hands and the importance of rendering them harmless during surgical operations has received much attention among human surgeons during the past few years. In the earlier days of antiseptic surgery the surgeon's hands were considered safe when they had been scrubbed with soap and water and freely immersed in a potent antiseptic solution. Recent research, however, has proven beyond question that the hands, no matter how energetically scrubbed, nor how freely bathed in antiseptics persistently, harbor organisms sufficiently numerous and virulent to defeat the surgeon's purpose in many instances. Scrubbing the hands is now regarded as detrimental in that it brings more organisms to the surface, and hot water washing is said to open the pores and induce a perspiration with the same results. A scrupulous surgeon will now frequently postpone a capital operation for days after having polluted the hands with septic matter of a highly virulent character, recognizing the difficulty of disinfecting them safely, and no honest surgeon will now attend a case of parturition after having manipulated a

patient suffering from erysipelas, nor would a careful surgeon undertake a laparotomy immediately after having polluted his hands with the putrid discharges of a wound. The veterinarian must sooner or later recognize this feature of clean surgery. To cope with a putrid after-birth in the morning and then castrate a cryptorchid before the day is over must eventually be recognized as inconsistent and dangerous. That the hands of the busy veterinarian are seldom clean enough to perform operations in the internal cavities can hardly be denied in the face of recent investigations regarding the flora of the skin. The human skin is particularly well constituted to harbor organisms which will defy removal, and as the veterinarian's hands are continually brought in contact with septic matter this subject deserves the most carefui attention. Some of our best veterinarians are particularly unfortunate with their castrations, while a non-professional castrator in the same community seldom has a casualty. Is it not possible that the hands are the cause? Have we not frequently observed that a number of castrations performed on a single day have all been followed by an unaccountable amount of swelling and perhaps one or two fatalities, while on other days every case progressed favorably? Might not the contaminated hands be the cause? Few veterinarians have skilled assistants to execute the preparatory steps of their operations, and hence must secure the patient, clip, shave and wash the seat of operation. The casting harness of a veterinarian is continually being soaked with pus and blood, and as they must be handled by the operator he finds, at the very outset of the operation, his hands in a condition that would make the human surgeon shrink from operations for a week, and as this circumstance cannot be obviated it remains for us to adopt methods that will render the hands less harmful, viz.: (1) *Avoid digital manipulations of surgical wounds.*—It is indeed seldom necessary to *paw* over our surgical wounds. Metallic instruments that have been sterilized should be used instead of the fingers, whenever possible. It is evident that this one precaution will accomplish more in the prevention of wound infection during operations than any other, and henceforth, the technique of our capital operations must be arranged with this end in view. (2) *The use of gloves.*—Gloves are useful in many veterinary operations in protecting the patient against infection as well as the surgeon himself. Gloves, even the light rubber variety, are somewhat cumbersome and in a measure impede delicate manipulations, yet, in certain septic

operations, the veterinarian is justified in wearing them, as they will serve to keep the hands pure for other operations in which asepsis is an indispensable feature. The chief use of gloves, however, is in casting and securing the patient and in preparing the operating field. If used for this purpose the subsequent steps can then be performed with normally clean hands which otberwise would have been dirtied beyond restoration. (3) *Avoid capital operations after having performed septic ones.*—Operations of the internal cavities, castrations, etc., must not be thought of immediately after having removed a putrid fœtus or operated upon a fistula or abscess with the bare hands. Such operations, unless performed with gloves, render the hands unsafe for operations during several days following. (4) *Disinfection of the hands.*—The hands of a surgeon must be free from long nails and finger rings and the arms should be bare to prevent the coat sleeve or cuff from interfering with the work and coming in contact with the wound. In cold weather rubber sleeves are useful and in fact indispensable. The first step in disinfecting the already clean hands is to wash them well in soap and tepid water and then immerse them freely in a solution of mercuric chlorid 1-500, repeating the latter frequently during the operation. Suitable solutions of lysol or carbolic acid also merit consideration in this connection.—(*L. A. M.*)

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By Adolph Eichhorn, D.V.S., Bureau of Animal Industry, Milwaukee, Wis.

The Entrance of the Tubercle Bacillus and its Localization in Man [*Prof. P. Grawitz*].—The new theory of R. Koch, regarding the non-transmissibility of bovine tuberculosis to the human race, excited surprise all over the civilized world, when it is considered the extensive hygienic measures, humane and sanitary regulations that are enforced. The few experiments performed on cattle and hogs will not suffice to overthrow all these existing conditions, and to shake the foundation of the adopted precautions. B. proved that chemicals free from bacteria, as nitrate of silver, turpentine, etc., have an entirely different action on the different kinds of ani-

mals; further, it is known that actinomyces in man produces suppuration, while in cattle tumors. He further states that the intestinal mucous membrane does not belong, by any means, to the prædilectic places for tubercle bacilli, as it often remains intact, when the mesenteric lymph glands are extensively affected, and also often, when through a number of years, the sputum containing the bacilli and expectorated from the lungs is swallowed. G. in his demonstrative courses, continually called attention to the great importance of the tonsils as entering place for the tubercle bacilli, and found that in tuberculosis the tonsils not only contain residues, but also fresh tubercles with giant cells, without noticing a change in them from their external appearance. From the tonsils the bacilli reach by the way of the lymph circulation, the cervical lymph glands, and from here they infect the lungs and even the pleura and pericardium. *Therefore a child may die from tuberculosis, without showing the slightest affections of the intestines, or the mesenteric lymph glands, and at the same time the food being the carrier of the infection.*—(*Deutsche Med. Wochenschr.*)

Tapeworms in Dogs [*Schiel*].—To expel this worm is often accompanied with great difficulty. All the single anthelmintics for tapeworms have the disadvantage that before their administration the animals must be prepared by fasting, and they also must be followed by a cathartic. Therefore, preparatory, worm and after-treatment is required. A complicated treatment of this kind can be adopted in a hospital, but is very often impracticable for the busy practitioner. It is also well known that to obtain satisfactory results in most cases, one cannot depend on the clients for the administration of the anthelmintic and cathartic. The best anthelmintic doubtlessly is kamala, even in cases where the species of the parasite is unknown. But after the administration of kamala, in most cases, only a few segments of the worm will leave the animal, as generally dogs will not retain the medicine. The author has had considerable experience with dogs affected with tapeworms, and obtained remarkable results from the following prescription:

℞ Seminis arecæ, gm. 20.0
Kamala, gm. 10.0
Butyr. cacao. q. s. f. pilulæ No. xxv.
Obduce ceratino.

As soon as the presence of worms is established, or even if they are suspected, in all circumstances, whether fed before or not,

these pills are administered. Smaller dogs receive 10–15, while large dogs all the 25 pills in one dose. One hour after the administration the action begins, without causing the dog to vomit. *Two to three hours after, the dog expels the tapeworm with head and segments.* The author thinks the combination of the kamala with the semen arecæ brings about the remarkable effect, and to his knowledge this never was tried before. (One can have a smaller number of pills made from the same prescription, for more convenience in administration.)—(*Berl. Thierarzt. Wochenschr.*)

THE HÆMATOMES OF HORSES AND THEIR TREATMENT [*Hennig, Berlin*].—Hæmatomes in horses are by no means rare occurrences, notwithstanding the opinions of veterinary surgeons regarding their nature differ, as they are taken by some as hæmatomes, while by others as lymph extravasations. To enlighten this difference in opinions Hennig undertook very extensive experiments, of which the results can be concluded in the following: All the 75 examined blood cysts represented as a fact hæmatomes. The experiments further demonstrated, and principally the hæmatomes produced in an experimental way that their contents after long standing undergo such changes in its physical and chemical consistency that by this they are mistaken for lymph extravasates. Smaller hæmatomes terminate in resorbtion; middle sized may also be resorbed, but in this the resorbtion remains incomplete. Large hæmatomes are not resorbed; on the contrary, at their periphery there will a condensation of the connective tissue take place, by which the contents completely become incapsulated. Should the hæmatomes become infected with pus cocci, they may suppurate and form abscesses. A putrefactive decomposition of their contents is very rare, and then the cavity contains a fœtid, dirty fluid. Further terminations are their organization to connective tissue, calcifications aud ossifications. Their causes are: contusions resulting from beating, blows, falls, kicks or slips. In the last two cases they occur, very likely, from the violent contraction of the muscles and rupture of some deeper blood vessels, giving rise to the formation of the hæmatome. The prognosis is always favorable. In their treatment, first of all their opening is to be considered, which should not take place too soon, the proper time being from the fifth to the eighth day after their formation. As the blood tumors represent aseptic cysts, therefore irrigations should be avoided, by which they may become infected. All that is essential is to take care of the incised

wound by cleansing the same with an antiseptic fluid.—(*Monatschr. f. pr. Thierh.*)

BELGIAN REVIEW.

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

TWO CASES OF LYMPHADEMIA IN COWS [*E. Lienaux*].—This affection is not rare in cattle. In the first animal there was first an enlargement of the prepectoral lymphatic glands, which being suspicious of abscedation, was punctured without result. Later on this tumefaction of the inferior border of the neck had reached the size of the head of a child. The jugulars were very large, and bulging under the skin. The prescapular tumors which had not been punctured were as large as the fist, ovoid, elastic in consistency. They make one think of secondary adenitis, of malignant tumor or primitive abscess. The enumeration of the white globules shows a marked lowering of the red corpuscles. There is an absence of leucæmia. The general condition is bad, although the functions act normally. After three weeks of observation the precrural glands become hypertrophied and form elastic tumors, vertically elongated and painless. They project on each flank. Tympanites, intermittent in character, soon makes its appearance; the animal loses flesh and dies. The post-mortem confirmed the diagnosis of lymphademia, which had been made by the hyperplasia of the glands above mentioned, as well as by that of the bronchial and mesenteric glands. The lungs were the seat of verminous bronchitis. *Case II.*—This was more interesting on account of the greatest number of lesions and the specific alterations of the skin. The formation of adenoid tissue in the skin has been observed in man; this case is probably the first recorded in veterinary medicine. With this subject lesions were very peculiar. It was a three-year-old cow, which had a singular aspect. She was bosselated, and at first sight seemed covered with warts. There were numerous tumors, spread more or less all over the body, except the lower end of the legs; they were on the head, the neck, the back, the croup, the tail, the perineum, and the mammæ, where they were in greater number. These tumors protruded under the skin more or less; there was no villous or papillar aspect, no fissures between as in warts; they were flat, with hairs more or less erected, sometimes they were hairless.

They were not pedunculated, but elastic without softness; they were not painful. Other tumors existed, formed by the superficial lymphatic glands, the parotidians, subglossals, retropharyngeal, prescapular, precrural, and supramammary. Rectal exploration revealed their presence in the sublumbar glands. Microscopic examination of one of the tumors revealed its nature—that of lymphadenoma. The post-mortem confirmed also the diagnosis. In both of the animals the spleen and Pyers' patches were free from hypertrophy.—(*Ann. de Bruxelles.*)

SYMMETRICAL AND ENIGMATICAL COLD ABSCESS IN A COW [*E. Lienaux*].—These two adjectives are applied because of the similar form and aspect of the swellings which occurred, and also because no cause for the development of the morbid process could be found. A young cow, without apparent sickness, one day had the outside of both thighs swollen. These slowly enlarged, and three months later they were perfectly symmetrical, beginning immediately above the stifles; greatest size about the superior region of the thigh, and gradually diminishing to the external border of the croup. From forward backward each swelling covers the horizontal surface of the thigh. It is uniformly rounded, the skin excessively stretched over it; the cellular tissue under it is normal and free from infiltration or induration. The consistency of the deep structures is irregular—here hard, and there with imperfect indication of fluctuation. Any movement is painless, no lameness, and perfect locomotion. What is the true nature of the trouble is difficult to make out. The animal is killed. At the autopsy three or four abscesses are found between the deep face of the superficial gluteus and facia lata and that of the triceps cruralis. Those abscesses form isolated pouches, about as big as a child's head, containing 10 litres of pus. Their walls are fibrous, not thick, smooth. The pus is white, thick, and under the microscope contains staphylococci. There is no change in the cellular tissue which unite the various abscesses.—(*Ann. de Bruxelles.*)

POST-MORTEM OF A TUBERCULOUS HORSE—SPECIFIC LESIONS OF THE MUSCLES AND SUBCUTANEOUS CELLULAR TISSUE [*M. Fally*].—The animal had been condemned for an incurable affection of the sheath, and killed for the butchery, when he was condemned as tuberculous and seized. The following is a brief account of the lesions: General appearance of the meat fair; numerous whitish granulations on the pleura, where they appear translucid. In passing the fingers alongside the ribs a great number of these granulations can be felt,

although they cannot be seen. The lungs were filled with miliary tubercles. The auricles were cretified. The lymphatic glands of the thorax and abdomen were full of tuberculous lesions. There were tubercles in the liver, in the spleen ; nothing to the naked eye in the kidneys. Then, finally, tubercles as big as a millet-seed were in the subcutaneous connective tissue, specially in the regions of the chest, of the ribs, shoulders, and loins. The muscles underneath this diseased connective tissue were also tuberculous, especially the pectoral muscles. * * * The history of the foregoing subject previous to its being killed is interesting. Some time before he had been presented to Mr. Lienaux, who had found him with a large swelling of the sheath, producing a complete phymosis, which was supposed to be an indurated œdema of the sheath, which it was decided was to be operated upon by amputation. The animal had been castrated, having healed well and regular. By the operation—removal of the cylindrical part of the sheath—this organ had about resumed a regular aspect, and it was supposed that after healing the animal would be useful. At first everything seemed satisfactory, but after a while the tumor of the sheath returned larger than before, and as successful treatment was out of the question, the horse was killed, with the result above described. Now came the question, was this tumor of the sheath tuberculous? It seems not, as careful examination of the sheath showed that the animal had typical funiculitis on both sides (scirrhus cords), distinct from the cutaneous cicatrix by schlerous tissue ; there were in them abscesses of all sizes, containing botryomyces, without tuberculous bacilli, says Mr. Lienaux. At any rate, it is interesting to note the presence of the funiculitis without fistula. The presence of the two different bacilli is, of course, purely accidental.—(*Ann. de Bruxelles.*)

FRACTURES OF THE VERTEBRAL COLUMN [*Prof. Hendrickx.*]—The author records four cases of fractures, which all presented this important peculiarity that, although the lesion was very serious, the animals were able to travel quite a long distance, and one of them worked for several days. *Case No. I.*—A horse, partly anæsthetized, is cast, secured, and fired along the tendon. He struggles severely towards the end of the operation. Released, he got up with some difficulty, moved stiff-with back somewhat arched. He walked away for fifteen min, utes, stumbled, and dropped to rise no more. At autopsy a fracture of the body of the second lumber is found. *Case No. II.*—A four-year-old is thrown and castrated without anything

abnormal apparent, except when up he shows stiffness behind. First, he was to be left at the place where he had been operated upon, but two hours later the owner called for and took him to his own barn. An hour later he was found down, and unable to get up. Post-mortem: Comminuted fracture of the body of the fourth lumbar. *Case No. III.*—A horse to be docked is placed in stocks. At the end of the operation he struggles desperately and throws himself violently on the front bar of the stocks. In backing out of the stocks, stiffness behind is noticed. He is placed in a box-stall sixty feet distant. Three-quarters of an hour later he is lying down and cannot get up. Post-mortem: Comminuted fracture of the body of the third lumbar. *Case No. IV.*—This eight-year-old heavy draft horse has never had an accident and never been ill. All at once he refuses food, has slight colic, and is laid up. He has all the appearances of an animal suffering with painful sickness. He paws, scrapes the bedding under him; the abdominal muscles are hard, the flank contracted. His back is stiff, and every time he moves he groans loudly. It is the same at the time of defecation and micturition. In walking the movements are stiff, and when made to turn short it is with difficulty, and the loud groan he gives indicates great pain. Fearing a fracture by exclusion, the owner was advised to bring the horse to the college, where the same condition was observed and the diagnosis confirmed. After twenty-four hours the horse was unable to get up, and was killed. At the autopsy a comminuted fracture of the seventeenth dorsal was found. Can such a lesion be cured? asks the author.—(*Ann. de Bruxelles.*)

FRENCH REVIEW.

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

ERUPTIVE AFFECTION IN THE HORSE DUE TO TICKS (IXODES REDUVIUS) [*G. Joly*].—Have these insects something to do with the icterus of Leblanc? Such is the question asked by the author, when contemplating the eruptive disease which has appeared on several horses which had been grazing in the forest of Fontainebleau last May. *Case I.*—An officer's saddle horse has a skin eruption on the head, neck, and the four extremities; it looks like horse-pox. No itching nor fever; the buccal and nasal membranes are healthy. There are numerous papulæ varying in size, with a yellow secretion, gluing the

hairs together; is easily raised with the epidermic layer, which exposes a little cavity. The dermic surface underneath is a pale rose, and shows embedded in it a blackish little parasite. With strong pressure and fine forceps it is extracted. *Case II.*—A horse has his legs covered with pimples from the foot up to the knees and hocks. No fever, no itching. The crusts of the papulæ raised show the same little parasite, which when placed on the hand moves away rapidly. Prof. Neumann recognized these parasites as nymphæ of *ixodes reduvius*. The diagnosis is easy, and the treatment consists in the extraction of the insect from the papulæ.—(*Revue Veterin.*)

Pseudo-Meningitis due to Prevertebral Abscess of the Neck [*Prof. Cadéac*].—A six-year-old horse, after suffering with distemper, complicated with facial paralysis, later presented alarming symptoms: loss of appetite, severe constipation, painful action in moving, paresia of the right lateral biped; the right eye was partly closed, ears erect and stiff, jaws contracted; the membrana nictitans covers the eye as soon as the hand is passed before it. There is contraction of the neck, and the skin of that region is the seat of severe hyperasthesia. The animal rebels against exploration of the poll. Lockjaw was at first suspected, when a fistula appeared on the superior border of the neck, from which abundant suppuration escaped. The horse was thrown, the fistula freely opened, and masses of necrosed cervical ligament were extracted. Very rapidly the horse improved, and all symptoms disappeared. These meningeal manifestations seem to have been entirely due to the pressure of the pus upon the roots of the nerves of the rachidian opening.—(*Journ. de Med. Vet. and Zoöt.*)

Tetanus: Contribution to a New Treatment [*Dr. G. Fontibasso*].—This mode of treatment had already been tried by M. Trelut, who obtained a recovery by it. The author having a severe case in a six-months-old colt, due to a mild puncture of the foot, in which the symptoms were exceedingly severe, decided to experiment with the treatment of M. Trelut, viz., hypodermic injections of blood from the sick animal. After shaving and disinfecting the skin, the author extracted 50 grammes of blood from the left thoracic vein, and injected 5 grammes on each side of the neck. The balance (40 grammes) is kept in a dark, cool place in a sterilized bottle. The next day injections of 5 grammes of the serum of that blood, mixed with 5 of tepid sterilized water, are made. In the evening another bleeding of 10 grammes, the serum from which is injected

the following morning. After these first two days, there is marked improvement. Same treatment third and fourth days. In five days the animal takes milk easily, and in three weeks he was in perfect health. Lockjaw is so severe an affection that it justifies all therapeutical audacities, and perhaps the two successes obtained by this mode of treatment may be tried by others.—(*Journ. de Med. Vet. and Zoöt.*)

RUPTURE OF THE BLADDER FOLLOWING A CASE OF HÆMORRHAGIC CYSTITIS DUE TO VEGETATIONS IN A COW [*P. Bitard*].—This is the case of a six-year-old cow, seven months pregnant, which about a year previous had presented all the symptoms of acute cystitis, from which she seemed to have recovered. For several months she was well, until toward her six months of pregnancy, when it was noticed that her urine was cloudy, thin, bloody, micturition being at first difficult and afterwards taking place only with violent efforts. She had some colicy pains. Briefly the author was called, and after close examination, rectal exploration, etc., he was at first perplexed as to his diagnosis, but at a second visit, after a vaginal exploration with the manifestations presented by the cow, he made the diagnosis of rupture of the bladder. At the autopsy all the symptoms of cystic peritonitis were observed. In the bladder the mucous membrane shows extensive ecchymosis covering a tissue of new formation, assuming the form of rounded nodules as big as an almond, having the color of black asphyxiated blood, and having the aspect of black berries. These characteristic vegetations of hæmorrhagic cystitis existed on the anterior cul-de-sac and floor of the organ, and in larger number and bigger size at the seat of the rupture and the vesical neck.—(*Progrès Veterin.*)

IMPROVED METHOD OF THE OPERATION OF NEUROTOMY [*R. Bissauge*].—After reviewing many of the complications which are likely to follow the operation, the author describes a slight modification of the *modus operandi*, which he believes for him has been the means of avoiding the sequelæ sometimes met with by the old method. He proceeds as follows: After the usual antiseptic cares and the ordinary first steps of the operation, the section of the nerve is made with the smallest blade of the zoo-cautery. The section must be made quite slowly; it is accompanied by severe struggling of the animal, but is nevertheless easily made, when the nerve has been well isolated. Of course the first section is made upwards. The remainder of the operation is as in other operations. The cutaneous wounds

heal by first intention. This section with the cautery has several advantages; it secures complete antisepsy of the two nerve ends, a sufficient cauterization to prevent their reunion and the return of sensibility. While all accidents may not be prevented, it is certain that they will be less frequent by this mode.—(*Rec. de Med. Veterin.*)

RUPTURE OF THE SPLEEN IN A HORSE [*M. Pruneau*].—A four-year-old received a kick on the right hypochondriac region. Swelling as big as a hen's egg, growing gradually, and soon extending to the abdomen and left side of the chest are the consequences. A few days later, while being tied up, he pulls backwards, the rope of the halter breaks, and he is violently thrown back, and after getting up falls down again, and remains unable to rise. Then his breathing is slow, loud; there is abundant perspiration; the mucous membranes are pale; the pulse cannot be felt; the pupil is dilated; the beatings of the heart strong but separated; rectal temperature 36.8° C. Internal rupture following fracture of the vertebral column is the diagnosis. After a time, and with much difficulty, the horse gets up and presents the following symptoms: Head and neck hanging, hind legs kept apart, hind quarters trembling; respiration very loud, anus open. The animal died an hour and a half after the accident. At the post-mortem, extensive subcutaneous ecchymosis in the cellular tissue. On opening the abdominal cavity 12 or 13 litres of blood are found. The spleen is quite large, and large clots of blood on its internal face, one of which was oozing through a laceration involving the external coats of the organ and the superficial splenic pulp. This laceration existed along the border of insertion of the suspensory ligament.—(*Rec. de Med. Veterin.*)

SYNOVIAL CYST OF THE KNEE IN HORSES [*M. C. Lesbee*].—This case shows that synovial cysts may appear not only at the hock, but also on the carpus and everywhere when a synovial *cul-de-sac* exists, with a narrow opening, and when the entrance and exit of the synovia is permitted only with limited motions of the parts. A seventeen-year-old mare has, for several years, presented on the external face of the left knee a small tumor, as big as a small orange, situated about the suscarpal bone, between the radius and the flexor tendons of the metacarpus. The anterior face of the knee is free from swelling or tumor. The walls of the cyst are much stretched when the horse has his leg at rest. There is no lameness. The classical treatment by injection of tincture of iodine is resorted to and performed

with the animal standing. Several hours after the operation there is warm and painful swelling of the region. This lasted 48 hours; then resolution started in and was completed in fifteen days.—(*Journ. de Med Vet. and Zoöt.*)

BIBLIOGRAPHY.

SIXTEENTH ANNUAL REPORT OF THE BUREAU OF ANIMAL INDUSTRY FOR THE YEAR 1899. Washington, D. C.

This volume reached me quite late, and could not be noticed before. As many of its predecessors, it forms quite a large volume, nearly 800 pages, and contains many illustrations relating to several of the interesting subjects which are presented to the reader. Of course, the 16th Annual Report is made under the direction of the Chief, Dr. D. E. Salmon, and that is saying enough to assure our readers that all the documents which the volume contains have passed under his close observation and criticism.

The volume begins with a kind of introduction by the general report of the Chief Meat Inspector with many statistics, the inspection of pork, of vessels, of export animals, of Southern cattle, the prevention of scabies, black-leg investigations, Texas fever at home and in the West Indies, etc., etc. The preparation of tuberculin, mallein, serum for hog cholera and swine plague, and many other points relating to various divisions of the Bureau are considered by Dr. Salmon, who concludes the general report by a number of special recommendations for the coming year, important among which I read the following, which are most interesting to our colleagues: That the meat inspection force be increased, that measures for excluding sheep affected with scabies from the channels of interstate commerce be rigidly enforced, that the distribution of black-leg vaccine be continued, that representatives of the State experiment stations be instructed in the manufacture and use of antitoxin for hog cholera and swine plague, etc.

What may be considered as the first chapter of the report relates principally to experiments with Texas fever and Southern cattle ticks. It contains from E. C. Schroeder, M. D. M., and W. E. Cotton articles on "Growing of non-infected ticks and afterwards infecting them," on "the vitality of the Southern cattle ticks," on "the persistency of the Texas fever organism in the blood of cattle," and on "Experiments with blood

and serum injections in connection with Texas fever investigations."

After this I find from Dr. Salmon, occupying nearly 50 pages, a masterpiece entitled, "Some Examples of the Development of Knowledge Concerning Animal Diseases." Introducing the subject by remarks upon the progress made during the closing century in the domain of animal diseases, and making a clean distinction of the means of study and observation which had been used during the 18th, and up to the beginning of the 19th century, the author is brought to the consideration and comparison of the effectiveness of observation with and without experimentation. First, it is the efforts made to discover the circulation of the blood by observation as done previous to Harvey, and then the experiments which this great physiologist undertook, and which allowed him to explain and to prove how this important function was performed.

From this one may gather what the balance of Salmon's article is going to be: A plea for experimental studies in their application to contagious diseases. Glanders and farcy open the march, and, after considering the long-lasting difference of opinion among the highest authorities in veterinary medicine, relating to the contagion or non-contagion of those diseases, how the question was settled by experiments. Variola is then considered, with the discovery of Jenner, which gives mankind a preventive of small-pox. Small-pox, cow-pox, and horse-pox then gave rise to series of experiments to the effect of establishing their relation. Pleuro-pneumonia, anthrax, blackleg, Texas fever, rabies, and others since have all given to scientists opportunities for investigations by experiments, and it is by those that the cause, nature and prophylaxy are known to-day in a manner which observation alone could never have given.

Although Dr. Salmon's article refers only to those few contagious diseases his reasoning applies to all, and is one of the strongest arguments in favor of experimental research that I have read since the day of Bouley's work, "Le Progrès en Médecine par l'Expérimentation," published in 1882.

After this article there are several communications of interest, among which stand those of Dr. E. A. de Schweinitz, on culture media for biochemic investigations, on examination of milk; of Dr. V. A. Norgaard on the seventh international veterinary congress, and on the nature, cause, and economic importance of ovine caseous lymph adenitis; of Dr. Ch. W. Stiles and Dr. A. Hassall on parasites; a short article on three trema-

todes, flukes, which they have had opportunity to study. One, a muscle fluke, found in the muscles of swine; another, a lung fluke, found also in swine and had already been observed in man, tiger, cat, dog, and other animals; the third is the cervical fluke (*amphistoma cervi*), found in some cattle slaughtered in the United States. Mrs. Louise Taylor, B. A., M. S., of the Zoölogical Laboratory, gives an article on the kidney worm of swine (*sclerostoma pingincola*), relating to the present knowledge of the parasite. This is also well illustrated.

The volume is completed by the rules and regulations of the Bureau of Animal Industry and the State laws of sanitary medicine relating to the control of contagious diseases. A. L.

CORRESPONDENCE.

THE BANQUETS OF THE A. V. M. A.

ITHACA, N. Y., Dec. 12, 1901.

Editors American Veterinary Review:

DEAR SIRS:—On page 596 of the REVIEW for October of this year, in speaking of the response of Dr. Salmon to the toast "National Sanitary Work," regret is expressed that it could not be placed in enduring form—"the pity is it was extemporaneous." It is a far greater pity that more of these responses are not worthy of preservation. The regret expressed in reference to Dr. Salmon's response was possibly the first instance of the kind in the history of the association, and it is possibly the first case where such expression was preëminently proper.

The banquets of the A. V. M. A. habitually fall below the intellectual standard which should prevail, and do not properly represent the intelligence of the veterinary profession in America. Our association contains plenty of men capable of voicing sentiments worthy of remembering. Our toast *menu* is too dry and our food *menu* at times shows a tendency to be too wet.

So far as most members are concerned, the toast list is prepared in secret by a secret committee, the *personnel* of which the general members do not know, and a toastmaster selected and toast-list prepared and printed, but not distributed, nor its contents made known until the banquet table is reached. For the average veterinarian to discover his name on the toast-list, when he reaches the banquet hall, destroys in a large measure the anticipated happiness of the occasion; his thought must

continually stray from the desired conversation with his associates to the task set before him, of replying in a creditable manner to a toast, perhaps not relevant to his aptitude or training, and if far down on the list, he cannot well prove a profitable listener to the responses of others for like reasons. As if this were not enough, the toastmaster usually feels called upon to spring some surprises toward the end by unexpectedly calling upon some member to respond to a toast wholly out of harmony with his position or attainments. This is at times construed as the toastmaster's wit, at others it is suggestive of a deliberate attempt to put an enemy in an embarrassing position.

The training, the daily life of most veterinarians does not fit them for creditable extemporaneous speaking. It is not necessary, nor even advisable, that members should appear with written responses to toasts, but if each respondent knew days or weeks in advance what would be expected of him, he could go to the banquet table mentally prepared and be left free to enjoy the pleasures sought, and when called could express his thoughts more concisely and render our banquets infinitely more enjoyable from an intellectual standpoint. If the speeches at our banquets could be made uniformly clean, concise, thoughtful and inspiring we could without fear of small attendance return to the usual custom of placing it at the close of the meeting and letting it serve as a happy benediction after the more arduous labors of the convention. W. L. WILLIAMS.

COMMITTEE OF DISEASES, A. V. M. A.

Editors American Veterinary Review:

DEAR SIRS:—The committee has had outlined for its work for the present year, the study of "anthrax" to determine accurately the prevalence of the disease, its differential diagnosis, bacteriological investigation, efficiency of, and dangers attending, vaccination, modes of transmission, post-mortem appearances, and all data pertaining to this violeut scourge.

It is the earnest desire of this committee to have reports from every reader of the REVIEW in the hope of adding to the summarized report some phase of the problem and means of combatting this disease. The authors of these reports will be given due mention in this report, which will be published in the proceedings of the A. V. M. A. Answers to the following questions will be welcomed by the chairman of this committee:

1. To what extent is anthrax prevalent in your vicinity?
2. What has been your experience in treating this disease?

3. Have you used anthrax vaccine? If so, what has been your method and what have you accomplished by its use?
4. What other diseases, in your opinion, are similar in general appearances, and how do you make differential diagnosis?
5 How do you dispose of the carcasses and give your opinion as to the very best practical method?
6. Have you noticed how long the vaccine protects against the disease, or how long a mild attack renders the host immuned against a subsequent one?
7. Have you noticed any differences in the virulence of the disease which could be attributed to climatic conditions?
8. What, in your opinion, is the greatest factor in the transmission of the disease?
9. While making post-mortems did you notice any distinct features or conditions which were contrary to the general text book description?

The committee will be pleased to learn of anything relating to this disease which is original with the practising veterinarian or bacteriologist and any suggestions will be welcomed relating to the various theories in the hope to establish a good general outline for the profession to follow in preventing and combatting these outbreaks.

Committee { E. M. RANCK, *Chairman*, Phila., Pa.
JAMES LAW, Ithaca, N. Y.
A. T. PETERS, Lincoln, Neb.
L. FROTHINGHAM, Boston, Mass.
R. R. DINWIDDIE, Fayetteville, Ark.

BROMHYDRATE OF ARECOLINE.

ATTICA, OHIO, Dec. 7, 1901.

Editors American Veterinary Review:

DEAR SIRS:—Referring to article in REVIEW for September, Vol. XXV., No. 6, page 405, entitled "Azoturia—New Treatment—Bromhydrate of Arecoline," will you please state through your next journal where this drug can be obtained. Our druggists know nothing of it. Yours respectfully,

ANDREW FREY, V. S.

[ANSWER.—It can be supplied by Merck & Co., or Eimer & Amend, New York; or Parke, Davis & Co., Detroit, Mich.—EDITOR REVIEW.]

OBITUARY.

RUSH SHIPPEN HUIDEKOPER, M. D., VET. (ALFORT.)

This well-known veterinarian died at the Presbyterian Hospital, Philadelphia, Pa., Dec. 18, at 6.30 A. M., after an illness of nearly two months, pneumonia being assigned as the immediate cause of death, though he had been suffering from a complication of diseases.

The deceased was born at Meadville, Pa., May 3, 1854, and was educated at the Phillips Academy, Exeter, N. H., and the University of Pennsylvania, from which he graduated with the degree of M. D. in 1877. Dr. Huidekoper's grandfather was Harm Jan Huidekoper, who came to this country from Holland in 1796, and settled in Meadville, where he organized a Unitarian Church and founded a theological school. Edgar Huidekoper was the father of our deceased colleague, and he was a writer of note upon theological subjects, while his mother was a daughter of Judge Henry Shippen. He is survived by his widow, who was Miss Anne Preston Morris, of Media, and by his brothers, General H. S. Huidekoper, of Philadelphia; F. W. Huidekoper, of Washington, D. C., and his sisters, Mrs. Frank Wells and Mrs. H. P. Kidder, of Boston.

After graduating from the medical department of the University of Pennsylvania, he became coroner's physician for a short time, and was with the National Guard for twelve years, rising to the rank of division surgeon in 1892, when he removed to New York City and severed his connection with it.

With the exception of the time he served as coroner's physician, assistant surgeon to the University Hospital, and on the staff of the Philadelphia Dispensary and Children's Hospital, it is not known that Dr. Huidekoper practiced human medicine, his fondness for animals giving him a decided preference for veterinary medicine. With the object of attaining a thorough veterinary education he entered the National Veterinary School at Alfort, France, where he graduated about the year 1881. Desiring to place himself in the very front rank of his new profession, he sought the famous laboratories for the study of bacteriology, then just dawning upon the medical world, and successively studied under Virchow, Koch, Chauveau, and Pasteur.

When he returned to America, discarding the offer of a professorship from Harvard Universisy, he set vigorously to work

to build for his *alma mater* a veterinary department, and to this great undertaking he threw his whole energetic nature, his wealth of name and fame, for while the University of Pennsylvania was willing to accept the new department as one of its schools, it flatly declared that it would not expend a penny toward accomplishing that object. Not dismayed by the lack of financial support from that source, Dr. Huidekoper succeded in interesting the late J. B. Lippincott, the publisher, in the enterprise, as well as Joseph E. Gillingham, the extensive lumber merchant, the former of whom gave $30,000 and the latter $10,000. With this sum the handsome buildings in which the veterinary branch of the University has its location were erected. The grounds at 36th and Pine streets, which were donated by the city, occupy a space about two blocks in extent. Even in their embryonic condition the buildings had a street frontage of over 250 feet, and comprised a commodious amphitheatre and museum, an anatomical or dissecting room, a histological laboratory, a blacksmith shop with eight forges, a pharmaceutical laboratory and several large stables for hospital purposes.

Through a disagreement with the Trustees of the University, Dr. Huidekoper severed his connection with the veterinary department in 1892, and removed to New York, engaging in private practice and holding a lectureship on sanitary medicine at the American Veterinary College for one session, resigning at its close, when he became a professor at the New York College of Veterinary Surgeons, becoming associated in practice also with Dr. H. D. Gill, who was at that time dean of the school. He continued teaching and practicing in New York until the outbreak of the Spanish-American war, when he was appointed by President McKinley as Chief Surgeon of the First (General Brooke's) Army Corps. At Camp Thomas, Chickamauga, he was called a " horse doctor " by General Sanger. Dr. Huidekoper afterwards proved his competence and showed that the stigma sought to be attached to him had its origin in the fact that he had been a veterinary surgeon as well as a regular surgeon and physician.

At the close of the war, the doctor espoused the cause of the army veterinarian and worked very hard to secure favorable legislation. During the session of Congress of 1899-1900 the pay and allowances of second lieutenant were secured, and in the spring of 1900 a veterinary corps bill was successfully engineered through the Senate, then through the House, but was defeated on its resubmission to the Senate. While all the credit

of these successful *coups* is not due to the deceased, his share was a very large one. Last fall while he lay in bed at Washington, suffering from an acute attack of pneumonia, he continued to keep up a fusilade in behalf of the Army Bill, having a stenographer constantly at his bedside, and a messenger in easy call, sending letters to every one where he thought a vote could be secured.

After the failure of the Army Bill, Dr. Huidekoper returned to Philadelphia, where he became a partner in practice with Dr. W. Horace Hoskins, with whom he had been associated in an editorial capacity for a number of years.

There was scarcely an honor in the gift of the veterinary profession of his country and locality which has not been his. Thrice President of the United States Veterinary Medical Association, President of the New York State Society, of the Veterinary Medical Association of New York County, the New York Board of Veterinary Examiners, and of the various Pennsylvania societies. He was for many years senior editor of the *Journal of Comparative Medicine and Veterinary Archives;* author of a text-book on the age of domestic animals, a treatise on the cat, editor of the Veterinary Blue Book, and other works of minor note.

He was buried at Meadville, Dec. 20, and a large delegation of his Philadelphia colleagues accompanied the remains to their last resting place.

[*From the Journal of Comparative Medicine and Veterinary Archives for December.*]

RUSH SHIPPEN HUIDEKOPER.

A great leader has fallen. The mantle of death has closed the earthly career of a strong man; strong in that which is best remembered of men's lives. His may be classed among those who are said to have led strenuous lives, clothed by nature with great physical strength, remarkable will power, great force of character, and endowed with a goodly share of worldly wealth; a man of the highest and best ideals in all that he elected to do, successful in a remarkable degree along lines that are too seldom counted as the highest winnings of the world. He touched nothing that he did not leave it better than he found it. In veterinary journalism, he raised it to a higher plane; in college work he made it stronger and better than ever before; in State Legislature he aimed always at the highest ideals of professionalism; in State Boards of Examiners he ever advo-

cated a higher plane of work; in the field of association work he strove always to make loftier its aims and purposes; in his masterful leadership for recognition and rank of his profession he never forgot, in the battles he waged, the higher purposes to be obtained for the true growth of his profession. In all of these spheres of work as editor, teacher, officer, practitioner, examiner and leader he gave lavishly of his time, liberally of his means, and spent unselfishly of his wonderful energy and indomitable courage in making successful, in a remarkable degree, these higher ideals that he ever held of what he singled out to do.

Unselfish in all that he did, frank and honest in all his dealing with his fellow-man, unresentful of any blows aimed to do him harm, and with the utmost confidence in all whom he met, such was the life of Rush Shippen Huidekoper, who has passed from our midst too soon.

DR. THOMAS F. BARRON.

On November 20 Dr. Thomas F. Barron, of Baltimore, Md., died from heart failure, as a result of acute gastritis, in his fifty-ninth year. He had been in rather poor health for a few months, but his death was not anticipated until a few days before its occurrence.

The deceased may be said to have been a pioneer in the profession, having been in active practice prior to the attainment of his majority; his father (who was a self-made man, there being no veterinary colleges in this country in his day) having been a skillful practitioner, and amassed quite a comfortable fortune from it. His son, the subject of this sketch, succeeded to his father's large business, and was even more successful than his sire. He was a student of the best professional literature, and possessed a well-chosen library of standard text-books and contemporaneous works.

He was a member of the Maryland State Veterinary Medical Society from its earliest days, and was also a member of the American Veterinary Medical Association, having joined it in 1887, and regularly attended its meetings when possible.

At a meeting of the Maryland State Veterinary Medical Society, held on Thursday, December 5, 1901, the following minute was adopted:

Inasmuch as Divine Providence has removed from our midst our late associate, Dr. Thomas F. Barron, one of the pioneers of the veterinary profession in Maryland, we desire to record the deep sense of our loss of

the gentlemanly attributes and the proficient professional ability possessed by him and accorded to all; and, further, to express to the one who mourns most deeply his decease our sincere sympathy and condolence. WM. H. MARTENET, D. V. S., *Secretary.*

SOCIETY MEETINGS.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular monthly meeting of this association was held at the regular meeting place, N. W. corner Broad and Filbert streets, Philadelphia, on October 8th. Dr. Carter, acting as chairman, called the meeting to order at 9 o'clock, when the following members of the profession were present: Drs. Schreiber, Marshall, Adams, Harger, Lintz, Huidekoper, Carter, Mahaffey, Hoskins, Rhoads, Eves, Gardiner, and Ranck. The minutes of the previous meeting read and approved. There being no regular papers prepared, Dr. Harger made an elegant address on raw, pasteurized, and cooked milk, taken from Bulletin No. 77 of the Maryland Agricultural Station, published August, 1901, and compiled by C. F. Doane and T. M. Price, the conclusions of which were:

(1) Raw milk is more easily digested when fed to calves than either pasteurized or cooked milk.

(2) Contrary to theory, cooked milk when fed to calves used in these experiments caused violent scouring in the majority of trials.

(3) A majority of physicians in charge of children's hospitals corresponded with, favored the use of raw milk for infants when the milk is known to be in perfect condition, but favored pasteurized milk under ordinary conditions.

(4) With one exception, all the physicians corresponded with discourage the use of cooked or sterilized milk for infant feeding.

(5) Skim milk was found to be as digestible as whole raw milk.

This valuable talk was freely discussed by Drs. Adams, Hoskins, Schreiber, Lintz, Eves and others.

An interesting question was proposed by Dr. Hoskins in relation to a condition existing on a valuable dairy farm in which contagious abortion has appeared, and the puzzling part of it is, how are we to meet these conditions when found? The question brought forth many suggestions from the members present.

Next in order was the lunch, which fortunately did not menace the literary part of the programme.

Election of officers came next, with the following results:

President—Dr. W. L. Rhoads.

Vice-President—Dr. J. W. Adams.

Secretary—Dr. E. M. Ranck.

Treasurer—Dr. C. J. Marshall.

Directors—Drs. W. Horace Hoskins, H. P. Eves, A. F. Schreiber, B. M. Underhill, and J. D. Houldsworth.

Promises were given for the preparation of papers from Drs. Adams and Harger for the November meeting.

A general experience meeting followed, in which every one present promised to do the best he could to make this season's meetings successful, after which the meeting adjourned at 11 P. M.

The regular monthly meeting of this association was held on November 12th, 1901, at N. W. corner of Broad and Filbert streets, with the following members of the profession in attendance: Drs. Bunting, Carter, Drake, Fuller, Flood, Gavin, Gorman, Kooker, Lintz, Marshall, Hoskins, Pearson, Williams, Rhoads, Ridge and Ranck. Also about fifteen students of University of Pennsylvania, Veterinary Department. The minutes of previous meeting were read and adopted. Communications were read and acted upon separately, one of which was from one of the oldest and most active members, Dr. Jas. B. Rayner, of West Chester, who wished to resign, owing to impaired health. A motion to accept his resignation was carried, as was also a motion to elect him to honorary membership. The rules and by-laws having been suspended, he was unanimously elected an honorary member.

A very interesting paper was read by Dr. Bunting, of New Jersey, in which he cited numerous cases of failure from the tuberculin tests, also a peculiar affection of the heart, which he attributed to the tuberculin. This paper elicited a great amount of discussion, in which all the members participated, and was finally closed by Drs. Pearson and Hoskins. A vote of thanks was extended Dr. Bunting by the society for his interesting paper.

The other essayists being unavoidably absent, the Chair asked for reports of cases, in which the topic of "The most humane and efficient methods of killing animals" was propounded by Dr. Williams. This again brought forth many different

methods, but the majority present seemed to favor chloroform for small animals, while for cattle and horses strychnia sulphate in sufficient doses intravenously seemed to be the best method. This topic is one of great interest, and should be discussed by other veterinary associations, so the profession throughout the country could be properly instructed.

Dr. Kooker reported an interesting case of purpura hæmorrhagica, which developed marked symptoms of azoturia, and, strange to say, is getting better, and a complete recovery seems certain.

Dr. Hoskins, who was the Pennsylvania representative on the Committee of Arrangements for the last annual meeting of the A. V. M. A., reported that he has a balance of $30 after all expenses had been paid, and asked what the members suggested. He stated that a certain member of the profession was in need of money, and, being an invalid, had no earning capacity, and furthermore, this member had been for many years a very earnest worker and active practitioner, so he suggested we donate to him one-half of the above sum.

The Secretary suggested that probably the next in turn to be a beneficiary, who was also in urgent need of funds, was the Keystone Veterinary Medical Association, and upon the suggestion a motion was made and carried, that the remaining $15 be donated to this association.

Dr. Pearson offered the following resolution:

Resolved, That the President of the Keystone Veterinary Medical Association is hereby authorized and requested to appoint a special committee of five to investigate and report upon matters pertaining to the milk supply of Philadelphia as follows: (1) To what extent are the claims of Philadelphia milk dealers in respect to the sanitary and veterinary inspection justified? (2) What precautions are used by managers of hospitals to procure pure and wholesome milk for the use of the persons under their care?

Interspersed with the above business the entertainment committee, under the leadership of our President, Dr. Rhoads, furnished us with a delightful luncheon with the necessary *addenda* to make the meeting something more than a dry, dull, business affair.

The Secretary announced the programme so far as could be determined at this time, after which we adjourned at 11 P. M.

E. M. RANCK,
Secretary.

The December meeting of this association was held at

north-west corner of Broad and Filbert streets, December 10th, 1901, with the following members of the profession in attendance: Drs. Houldsworth, Pearson, Eves, Goentner, Hoskins, Marshall, Rhoads, Underhill, Ridge, Williams, Powell, Lintz, Sellars, Harger, Carter, Gilliland and Seidel of veterinary profession, and Dr. M. P. Ravenel of medical fraternity. About 35 students of the Veterinary Department of University of Pennsylvania were also in attendance. After the regular business was transacted Dr. Pearson delivered an address on "Observations from Foreign Veterinary Colleges," giving all the details of the buildings, business management, students' homes, as well as the connections with State or Government. He took as a basis the Berlin school, which is the oldest in Germany, being founded 110 years ago. It stands on the ground on which it was founded, a tract of ground 25 acres on the outskirts of the town, but since its foundation the city has grown so that residences and stores are built all around the college. They are at present building a new structure to be used exclusively for teaching anatomy. On the first floor are rooms for janitor, storage and freezing. On second floor are rooms for dissecting; these rooms are supplied with large skylights and stationary tables. The third floor is used for a museum of anatomy. Another new building is used for department of hygiene under Professor Ostertag, who teaches meat and milk inspection and bacteriology. Every appliance is to be found here, and this department is directly under the Professor and six assistants. Connected with this building stable accommodations for experimental animals for antitoxins and other diseases not due to bacteria, helminths, etc. A large dog hospital also on upper floors, used as a pharmacy, contains rooms for clinic, operating and ward. A large cow stable built on model plans for 40 cows of the most improved types and breeds. This is kept and managed as a model dairy and the milk is sold to the neighborhood. The clinics and hospitals for large animals are all one story buildings arranged in a court, consist of blacksmith shop, operating room, clinical rooms, special rooms for surgical cases, riding school, exercise rooms, isolation wards; there is also provided a ward for animals suffering from internal and infectious diseases. The courtyard is covered with soft sand, through which horses are led to test for soundness. The capacity of hospital is about 100 horses. From twenty to fifty animals are treated in clinic daily. A large dormitory building for m litary students is provided and supported by the government.

These students must serve as long in the army as they spend in the college.

The other schools are on general plan very much as Berlin, some teach special branches to the detriment of others. The Hanover school is the newest equipped. The Dresden school is hampered for room. The Munich school has been recently re-equipped. At Stuttgart is to be found the well known Hoffman table for operating on horses, on which 1200 horses have been operated upon in two years, without an accident.

The Budapest (Hungary) school is comparatively new, having been built about 15 years ago. This school is supported by the government. It must be admitted that schools supported by governments are better equipped than those which are not, this accounts in a large measure for our inferior schools here in the U. S.

The London school founded by Bell in 1792 stands on leased ground and supported by friends of the school and students. The examinations are conducted by a committee appointed by the Royal Veterinary Society and graduates who pass this examination are admitted to this Society. Before concluding this valuable discourse Dr. Pearson drew some valuable and interesting comparisons with our schools and pointed out their advantages and disadvantages but thought they were gradually developing toward continental systems.

Dr. M. P. Ravenel, bacteriologist for the Pennsylvania Live Stock Sanitary Board, having been abroad as a representative from this Board, at the "Tuberculosis Congress at London" was the next speaker for the evening. Dr. Ravenel was one of the first men to take issue with Prof. Koch's statement as to the communicability of tuberculosis from cattle to men. He says in part that Koch's statement was entirely too sweeping and too radical; he overlooked the statistics of other pathologists; he was irrational and unreasonable; for the following reasons: First, that no animal is absolutely immune to tuberculosis. Second, several cases definitely known, and many cases not clearly proven have been placed on record in which the infection was traced to the bovine species. Third, it has been definitely proved that any infections or contagious disease which attacks three species of animals, is also transmissible to man. Dr. Ravenel then explained that all the findings and experimental work brought forward by the Tuberculosis Congress were nothing new, for under the plans which Dr. Leonard Pearson formulated for experimental investigation for the S. L. S. S. B. of Pennsylvania

on tuberculosis, covered all the essential features and in fact some of them were entirely new to foreign experts. Dr. Ravenel thinks that this agitation will bring good results, for, although there is now a storm of protest it will also result in vast experimentation all over the world and thus end in some definite scientific conclusion.

A vote of thanks was tendered Drs. Pearson and Ravenel by the Association for their well prepared and instructive addresses.

The next in order was a carefully prepared paper on "A Case of Tetanus, with Antitoxin Treatment" by Dr. B. M. Underhill, of Media. The doctor used antitoxin in large doses, which seemed to ameliorate the condition and the horse is evidently making a prompt recovery. This paper caused a great amount of discussion, which was entered into by Drs. Williams, Harger, Sellars, Ranck, Eves, Ridge, Goentner, Pearson, Marshall, Hoskins, Rhoades and others. The consensus of opinion favored tetanus antitoxin as a valuable prophylactic measure, but not always a reliable curative measure.

Dr. Pearson then made a motion to have the President appoint a committee to frame resolutions to be sent to Governor Stone favoring Dr. Hoskins' re-appointment on the State Examining Board. Carried. The committee appointed consisted of Drs. Goentner, Marshall and Ranck. The following committees were appointed by President Rhoads:

Committee on Milk.—W. H. Hoskins, Chairman; H. P. Eves, W. L. Rhoads, W. H. Ridge, Leonard Pearson.

Committee on Diseases.—C. J. Marshall, Chairman; E. M. Ranck, J. R. Mahaffey, J. D. Houldsworth, J. M. Carter.

Programme Committee.—E. M. Ranck, Chairman; James Mecray, B. M. Underhill, W. S. Kooker, A. F. Schreiber.

Press Committee.—J. M. Carter, Chairman; C. T. Goentner, Chas. Lintz, Francis B. Ridge, Thomas B. Rayner.

After the announcement of the above committees the programme committee secured papers for our January meeting from Drs. C. J. Marshall and S. J. J. Harger, the subjects of which will be furnished later. A motion to adjourn was carried, to meet the second Tuesday evening in January.

E. M. RANCK, *Secretary.*

MISSOURI VETERINARY MEDICAL ASSOCIATION.

The tenth annual meeting of this State association was called to order in the lecture rooms of the Kansas City Vet-

erinary College, at 10 A. M., October 22d, 1901, by the President, Dr. F. W. O'Brien, of Hannibal. The following veterinarians were present: Drs. M. McNally, F. W. O'Brien, B. F. Kaupp, W. E. Martin, J. W. Connaway (Missouri Experiment Station), Stanley Smith, R. C. Moore, Chas. Doerrie, S. Stewart, R. H. Carswell, L. D. Brown, F. F. Brown, Walter Warren, W. A. Nixon, H. V. Patterson, E. Brainard, A. G. G. Richardson, E. M. Nighbert, E. Lee, A. D. Knowles, W. A. Thomas, J. S. Grove, J. D. Sprague, J. S. Anderson, J. H. Gain, John Nott, Frank Linscott, Chas. Saunders, C. H. Davies, W. C. Barth, A. Trickett, W. F. Lavery, H. H. George, N. B. Smith, W. R. Cooper, C. A. Clawson, W. R. Pick, A. N. Reber, W. N. Hobbs, W. R. Andress, A. W. Swedburg, A. Plummer (4th U. S. Cavalry), A. T. Peters (Nebraska Experiment Station), A. MacDonald (4th U. S. Cavalry), and others. There were many visitors who were not veterinarians, but interested in the profession, also about 100 veterinary students. The minutes of the previous meeting were read and approved, after which a report of the Legislative Committee by Dr. D. F. Luckey, member of said committee, was read. Mr. J. A. McLane, a representative from Jackson County, gave a good report of the efforts to secure needed State veterinary legislation at the last session of the State Legislature. Moved by Dr. Connaway, seconded and carried, that a committee be appointed by President O'Brien to draft resolutions commending the Legislative Committee for its work. The committee was Dr. Connaway (chairman), Drs. S. Smith and L. D. Brown. The Legislative Committee's report was accepted and meeting adjourned to luncheon, to meet again at 2 P. M.

At 2 P. M. the meeting was called to order by the President, when the following papers were presented: "An Enzoötic Attack of Chorea among Cattle," by Dr. A. D. Knowles; "Sclerastoma Tetracanthus of the Horse," by Dr. W. E. Martin. The doctor gave a good report of some cases and illustrated his paper by demonstrations of the parasite and a portion of the affected bowel. "Pleurisy of the Horse," by Dr. F. F. Brown; "Acute Rheumatism of the Horse," Dr. T. J. Menestrina.

Under reports of cases Drs. L. D. Brown and F. W. O'Brien gave some interesting cases of parturient paresis of the cow, using Schmidt's treatment, which was discussed by Drs. Nighbert, Knowles, Stewart and others.

Dr. F. F. Brown was elected a member of the association.

The following officers were then elected for the ensuing year:

President—Dr. J. W. Connaway, Columbia, Mo.
Vice-President—Dr. Chas. Doerrie, Boonville, Mo.
Secretary-Treasurer—Dr. B. F. Kaupp, Kansas City, Mo.

A motion was then made, seconded and carried, to adjourn to meet at 7.30 P. M.

At 7.30 P. M. the meeting was called to order by the President, when the following programme was presented:

"Immunizing Northern-bred Cattle Against the Southern Cattle Fever," by Dr. J. W. Connaway, of the Missouri State Experiment Station. The doctor gave a very interesting and instructive address, using charts, pictures and instruments to illustrate the present methods used at the Missouri State Experiment Station of immunizing our Northern cattle against the Southern cattle fever.

"Tuberculosis of Cattle and Swine," by Dr. W. R. Cooper; "Actinomycosis," by Dr. H. H. George. These papers brought out a good discussion, which was enjoyed by all present.

Dr. A. Plummer (4th U. S. Cavalry), recently of the Philippine Islands, gave some interesting accounts of the *filaria occuli* in the horse in the islands; he said that it had been noted that the affection occurred in the low marshy part of the country, but was not noticed on the highlands. The operation of paracentesis always resulted in recovery. Operation was performed on inferior part of the cornea, allowing the worm to escape with the aqueous humor. The after-treatment consisted of cold applications and to keep the eye darkened.

It was moved by Dr. Connaway, seconded and carried, that we invite the American Veterinary Medical Association to meet in Kansas City in 1902.

Moved by Dr. Stewart, seconded and carried, that the exact date and place of next meeting be left with the Executive Committee. The meeting then adjourned till Oct. 23.

At 8 o'clock, Oct. 23, 1901, a surgical and dental clinic was held, which was joined in by the twenty-ninth regular meeting of the Missouri Valley Veterinary Association. Dr. E. M. Nighbert demonstrated the excellencies of the new operating table advertised. Dr. J. S. Anderson, of Seward, Neb., demonstrated the operation of hyovertebrotomy for the cure of cribbing; also the operation of aretenoideraphy for the cure of roaring. Drs. W. E. Martin and F. W. O'Brien demonstrated the passage of the stomach tube for gastric tympany, also irrigating and flushing the stomach. The procedure met with marked success, and was highly commended by those present.

After luncheon the veterinarians visited the plant of the Armour Packing Company, where a fine display of pathological specimens, which had been collected and arranged under the directions of Drs. A. G. G. Richardson, W. R. Cooper and other veterinarians of the United States Meat Inspection force at this place. The exhibit consisted of pathological lesions found in cattle, calves, sheep, and swine. Among the specimens of special interest were noted: Tuberculosis of cattle and swine, showing lesions in the carcass (in glands, serous membranes and bone), lungs, liver, spleen, etc.; actinomycosis of cattle, lesions in the head and lungs; cirrhosis, echinococcosis and abscess of liver; distomiasis, lesions in the liver and lungs of cattle; caseous lymph adenitis and nodular disease in the sheep; hog cholera in the carcass and viscera, and many other interesting specimens.

At 3 P. M. the party was conducted by the local veterinarians to the cattle show and sales, where an opportunity was afforded to make a study of judging cattle and hundreds of fine specimens of the best beef breeds, including the Hereford, shorthorn and poll angus, were seen.

At 8 P. M. the local veterinarians entertained about 40 visiting veterinarians at the Kansas City Horse Show, which was held in the famous Kansas City Convention Hall, where all had an enjoyable time, after which the party disbanded, ending one of the most successful meetings in the history of the association.

B. F. KAUPP, D. V. S., *Secretary.*

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

This association held its nineteenth annual meeting at the Sherman House, Chicago, Nov. 14 and 15, 1901. The meeting was called to order by President T. J. Gunning at 10.30 A. M., and the following members were present during the meeting: T. J. Gunning, Neponsett; J. T. Nattress, Delavan; T. H. Ames, Canton; F. B. Rowan, Belvidere; V. E. Frizzelle, La Moille; W. J. Martin, Kankakee; N. I. Stringer, Watseka; R. F. Hoadley, Yorkville; H. A. Pressler, Fairbury; Albert Babb, Springfield; C. G. Glendenning, Clinton; John S. Spangler and W. B. Lewin, Russell; R. C. Mylne, Aurora; Geo. B. Jones, Sidell; E. S. Fry, Naperville; F. W. Kee, Sheldon; Clarence Mills, Decatur; Jas. Smellie, J. H. Crawford, Harvard; J. F. Ryan, W. H. Welch, Lexington: A. C. Worms, C. F.

Griiner, R. G. Walker, A. H. Baker, Jos. Hughes, Jas. Robertson, and E. L. Quitman, Chicago. Visitors: Dr. W. W. Welch, Elgin; Mr. H. A. Cole, of De Vaux Chem. Co., Mr. V. C. Baker, of Pasteur Chem. Co.

The minutes of the last meeting were read and approved.

The following names were presented for membership and on motion were duly elected:

Dr. C. G. Glendenning (O. V. C.), vouchers, Wm. H. Welch and T. J. Gunning.

Dr. Jas. Smellie (C. V. C.), vouchers, E. L. Quitman, T. J. Gunning.

Dr. W. B. Lewin (C. V. C.), vouchers, W. H. Welch, V. E. Frizzelle.

Dr. F. W. Kee (McGill), vouchers, N. I. Stringer, H. A. Pressler.

Dr. J. H. Crawford (McKillip), vouchers, R. G. Walker, Jas. Robertson.

Dr. Geo. B. Jones (O. V. C.), vouchers, T. J. Gunning, E. L. Quitman.

Dr. F. B. Rowan (C. V. C.), vouchers, N. P. Whitmore, E. L. Quitman.

On motion, the society adjourned until 1.30 P. M.

Immediately upon calling the meeting to order Dr. Gunning delivered the President's annual address.

Dr. E. S. Fry, of Naperville, now read his paper on "Azoturia." This subject brought out the usual lengthy discussion and was participated in by Drs. Martin, Quitman, Pressler, Glendenning, Lewin, Jones, Miller, Stringer, Nattress, Ryan, Baker, Newby and Hughes. A new feature in the discussion of this disease was the theory of germ origin.

Dr. T. B. Newby, of McKillip Veterinary College, now read his paper on "The Etiology of Omphalitis." He maintained that quite a number of those cases, as he had proved by post-mortem, were of intra-uterine infection. Discussed by Drs. Stringer, Hughes, Martin, Mills, Welch and Baker.

Dr. Ryan now read his paper on "Trichina Spiralis and the Hog." The discussion of his paper was postponed until Friday afternoon, and was participated in by Drs. Baker, Quitman, Griiner and Mills.

On account of the clinics to be held at the Chicago Veterinary College from 9 A. M. until 12 M. the society adjourned until Friday at 1.30 P. M.

Friday morning the majority of the members availed them-

selves of the opportunity of attending the clinics. These were varied, useful and instructive.

Dr. Hughes, who was on the programme for a paper on "Quittor and Its Treatment," took the opportunity to illustrate the surgical treatment as practiced by himself. Two or three quittors were operated on and from one of them the lateral cartilage was removed. The association now accepted the hospitality of Dr. Hughes for luncheon, after which they again met and witnessed a great many different operations performed by him. Among these were meso-neurectomy, the high and low plantar neurectomies, operation for stringhalt, operation for cribbing and caudal myotomy in all its forms.

It was nearly 4 P. M. when the society reconvened at the Sherman House. Dr. Hughes gave a few remarks on "Quittors" and was excused.

Dr. Babb having been obliged to return home, his paper was held over until the next meeting.

The election of officers now took place, and resulted as follows:

President—Dr. Joseph Hughes, Chicago.

Vice-President—Dr. H. A. Pressler, Fairbury.

Secretary—Dr. W. H. Welch, Lexington.

Treasurer—Dr. R. G. Walker, Chicago.

Board of Censors—Drs. N. I. Stringer, Watseka; J. T. Nattress, Delavan, and A. H. Baker, Chicago.

A vote of thanks was extended to the Chicago Veterinary College, also Dr. Hughes, for the magnificent clinics.

Dr. Hughes now took his chair and thanked the association for the honor bestowed upon him.

Dr. Ryan moved a vote of thanks to the retiring officers.

President Hughes appointed the following committees:

Programme.—Drs. E. L. Quitman, N. I. Stringer and J. T. Nattress.

Arrangements.—Drs. Jas. Robertson and W. J. Martin.

Legislation.—Drs. Albert Babb, T. J. Gunning and W. J. Martin.

Drs. Quitman and Baker spoke on the subject of trying to secure the next meeting of the American Veterinary Medical Association. It was moved and carried that the Illinois State Veterinary Medical Association, through its officers, extend an invitation to the American Veterinary Medical Association to hold its next meeting in Chicago, and that the Secretary be instructed to solicit funds for entertainment.

The following amendments to the Constitution and By-laws were offered and will be acted on at the next meeting :

ARTICLE II. SEC. 1. *Resolved*, That Art. II., Sec. 1, be amended to read "December," instead of "November."

[Signed] A. H. BAKER.
ROBERT G. WALKER.

Amending Article II, Sec. 1, to read as follows :

"The meeting of the Association shall occur annually in Chicago during December, at such times as may be designated by the President and Secretary.

[Signed] C. G. GLENDENNING.
W. H. WELCH.
W. B. LEWIN.

A vote of thanks was given the Sherman House for use of room. Society adjourned to meet in Peoria in February at call of President.

W. H. WELCH, *Secretary.*

MISSOURI VALLEY VETERINARY MEDICAL ASSOCIATION.

On the morning of October 23d the veterinarians in attendance at the Missouri Valley Veterinary Medical Association and the Missouri State Veterinary Association witnessed a surgical clinic, which was held at the hospital of the Kansas City Veterinary College. Dr. J. S. Anderson, of Seward, Neb., demonstrated the operation of myoneurectomy for the cure of cribbing; also the operation of arytenoideraphy, for the cure of roaring. Drs. Martin, of Perry, and O'Brien, of Hannibal, Mo., demonstrated the use of the stomach tube for gastric tympany, by passing the tube and irrigating or flushing the stomach. Dr. E. M. Nighbert demonstrated the use of the rocker operating table, employed at the Kansas City Veterinary College.

After luncheon the association inspected an exhibit of pathological specimens, displayed at the plant of the Armour Packing Company. This exhibit of specimens was arranged by Dr. A. G. G. Richardson and other inspectors of the Bureau of Animal Industry, and proved a most interesting one, as it included a great variety of diseased tissues found in the large food-producing animals. The collection was especially rich in specimens of tuberculosis, as found in cattle and swine, and included a display of carcasses and individual visceral organs, showing the disease in all stages from the involvement of a single lymph gland only, to the invasion of all parts of the body.

Actinomycosis of internal organs was another interesting feature. Numerous cases of hog cholera of various types were shown, including carcass and viscera. In sheep two diseases

were particularly typified by the exhibit of carcass and visceral organs, to wit: ictero-hæmaturia and lymph-adenitis. Much general interest was manifest in a collection of miscellaneous diseases of organs and parts, showing a variety of the diseases of the kidney, liver, spleen, etc., being particularly instructive in the line of parasitic invasion; such as the worms found in œsophagus, stomach, liver, intestines and region of the kidneys.

The association extended an invitation to the physicians and medical students of the city to inspect the exhibit, and were gratified with the very large number who availed themselves of this privilege. Dr. Richardson and his co-laborers were congratulated upon all sides upon the excellence of the exhibit for the visiting veterinarians and others. In passing, it might be well to note that the Packing Company seemed greatly interested in doing their part toward making the exhibit, and to show to the public that they were proud of the fact that all diseased meats were being separated from the wholesome, in their establishment, and that products only wholesome were being offered to the public for consumption.

After examining the pathological exhibit the veterinarians visited the extensive Cattle Show, then in progress at the Stock Yards, and saw a large and attractive display of the beef breeds. They also had an opportunity to observe the methods of judging same.

At 8 P. M. the association went in a body to the Horse Show, which was being held at Kansas City's famous Convention Hall, and it is needless to say they were especially interested in this part of the day's entertainment.

Thursday, Oct. 24th.—Meeting called to order at 9 A. M. by the President, Dr. A. T. Peters. Owing to the absence of the Secretary, Dr. W. Ross Cooper, Dr. S. Stewart was elected *pro tem.* There being no business before the association, the meeting proceeded to the presentation and discussion of papers. The first paper presented was one entitled the "Value of Post mortem Examinations," by Dr. E. M. Nighbert, which elicited free discussion. This was followed by a paper by Dr. A. T. Peters on the subject of "Sorghum Poisoning," which led to a long and instructive discussion by all present, not only on sorghum poisoning, but also poisoning by other forage. Drs. Plummer and Hunter described some interesting cases seen in the Philippines, and numerous reports of cases were made by others present.

A resolution was presented and adopted, inviting the Ameri-

can Veterinary Medical Association to hold its next annual session in Kansas City.

The veterinarians present at the meeting were: *Nebraska*—Drs. A. T. Peters, W. A. Thomas, T. S. Gains, Lincoln; J. S. Anderson, Seward; J. D. Sprague, David City; H. L. Ramacciotti, Omaha. *Kansas*—S. L. Hunter, Fort Leavenworth; A. Plummer, A. McDonald, Fort Riley; Chas. Saunders, Eldorado; O. Stuart, Leavenworth; Nott, Council Grove; C. H. Hobbs, Holton. *Missouri*—Chas. Doerrie, Boonville; E. Lee, Chillicothe; W. Warner, Windsor; J. Brown, Hamilton; A. Trickett, F. F. Brown, R. C. Moore, R. H. Carswell, S. Stewart, E. M. Nighbert and about seventy-five students, Kansas City.

The association adjourned to meet at time and place to be agreed upon by the executive officers.

W. R. COOPER, *Sec'y-Treas.*

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The regular monthly meeting of this association for December was called to order on the evening of the 4th, in the lecture-room of the New York-American Veterinary College by President James L. Robertson, Secretary Clayton recording, and with the following veterinarians present: Drs. Bell, Clayton, Cochran, Du Bois, Delaney, Dickson, Ellis, Parry, Robertson, Ryder, Sherwood, and fifteen or twenty students of the college.

No papers had been prepared for this meeting, as a surgical clinic of sufficient length to occupy the entire evening had been announced; but owing to unavoidable circumstances only one of the subjects was presented—a patient of Dr. Parry's, with a large high bone spavin, upon which the doctor performed tarsal tenotomy.

A general discussion of professional subjects occupied considerable time, while the election of officers and a consideration of matters pertaining to the welfare of the association, made the session a pleasant and profitable one.

The election of officers resulted as follows:

President—Dr. Robert W. Ellis.

Vice-President—Dr. J. Elmer Ryder.

Secretary-Treasurer—Dr. C. E. Clayton.

The President afterwards made the following appointment of committees:

Board of Censors.—James L. Robertson (Chairman), David

W. Cochran, Thomas G. Sherwood, H. D. Hanson, and Cyrus W. Du Bois.

Judiciary.—H. D. Gill (Chairman), Robert Dickson, R. W. McCully, E. A. Parry and Wilfried Lellman.

Programme.—J. Elmer Ryder and Roscoe R. Bell.

As the usual date of meeting for January (first Wednesday) falls on New Year's day this year, it will be held on Friday, the 3d, and a splendid surgical clinic is announced to positively occur, the programme being as follows: Peroneal tenotomy, by R. W. McCully; tarsal tenotomy, by C. E. Clayton; vaginal ovarectomy in a mare, by J. E. Ryder; passing stomach tube, by R. W. McCully; setoning with a new style needle, by J. E. Ryder; intravenous injection of cyanide of potassium, by Roscoe R. Bell.

President Ellis starts out upon the duties of his new office with a righteous determination to use his utmost endeavors to build up this association. Under date of 17th ult., he writes: "I intend sending out some special invitations, in addition to the regular members' notices. We must fill that room this winter, and make our meetings such in reality as well as in name."

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

President James Law announces the appointment of the following committees for the year 1901–1902:

Committee of Arrangements.—Roscoe R. Bell (chairman), George H. Berns, E. B. Ackerman, and James L. Robertson, with Secretary Wm. Henry Kelly *ex-officio.*

Committee on By-Laws.—George H. Berns (chairman), and J. W. Corrigan, with Secretary Wm. Henry Kelly *ex-officio.*

IOWA STATE VETERINARY MEDICAL ASSOCIATION.

We regret to hear that Dr. John E. Brown, for the past nine years Secretary of this excellent association, has been obliged to tender his resignation, and has removed to Chattanooga, Tenn., on account of ill health of his family. Dr. Brown has been an earnest and unselfish worker in behalf of the association, whose interests were very dear to him. The Iowans, however, have been singularly fortunate in being able at once to fill the vacant Secretaryship by so able and representative a man as Dr. John J. Repp, of the Iowa Agricultural College, Ames, and we cordially congratulate them.

The next meeting of the association occurs the latter part of this month.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.

The next annual meeting of the Minnesota State Veterinary Medical Association will be held at St. Paul, Wednesday and Thursday, January 15 and 16, 1902. The clinical part of the programme will be held at the State Experiment Station with Dr. Reynolds. K. J. McKENZIE, *Secretary-Treasurer.*

THE report of the annual meeting of the Ontario Veterinary Association, held at Toronto, 20th ult., has been received from Secretary Sweetapple, and will appear in February REVIEW.

NEWS AND ITEMS.

DR. CHARLES ELLIS, of St. Louis, Mo., has just opened a very complete canine hospital, and it is being very generously patronized.

DR. H. C. BABCOCK, an inspector in the Bureau of Animal Industry, stationed at Sioux City, Iowa, has been transferred to Kansas City.

DR. D. C. THOMAS has resigned his position as inspector in the Bureau of Animal Industry, and has returned to his old home at Rome, Ga., to take up practice.

DR. THOS. W. CARNACHAN, formerly meat inspector at Kansas City, is now stationed at Boston. Dr. Carnachan has recently returned from a visit to his native heath in Scotland.

DR. JOHN FORBES, chief inspector of the Government meat inspection at St. Joseph, Mo., has returned from a four months' visit to Scotland. The Doctor reports a most enjoyable trip for himself and wife.

VETERINARIAN J. EDWARD ROWE, JR., of Summit, N. J., has recently been appointed Health Officer of his city. Summit is the first city in New Jersey, or elsewhere, so far as we have any knowledge, to recognize the advantages of having a doctor of *comparative medicine* at the head of the Health Department.

DR. A. J. SAVAGE, of Colorado Springs, Col., started for South Africa in charge of a British transport of horses and mules, leaving New Orleans about Christmas. This is his third trip, his health (which had been poor) having greatly improved through these transatlantic journeys. He expects to return in from 70 to 90 days.

PRESIDENT WINCHESTER, of the A. V. M. A., was in New York on the 6th ult., in attendance upon the dinner of the alumni association of Amherst Agricultural College, at the Hotel St. Denis. He held up the veterinary end by responding to the toast to veterinary medicine.

DR. W. M. BROADHEAD, a graduate of the American Veterinary College, class of 1885, and later of the Jefferson Medical College, Philadelphia, Pa., and who has practiced veterinary medicine at Media, near the latter city, in that State, for the past sixteen years, visited New York City for a week recently with his wife and family, and made his former classmates glad by calling upon them.

DR. EDWARD C. ROSS, of New Haven, Ct., *en route* to the South on his regular winter trip, stopped over in New York City, and paid a visit to his *alma mater* (the A. V. C.) and some of his former classmates. The doctor is accompanied by his charming wife, and while South will be the guest of his brother, who is a plantation owner there. During his absence from the "City of Elms," the doctor's hospital and practice will be in charge of Dr. H. V. Whitney, assisted by Dr. James Turner.

DR. JUDSON BLACK, of Richmond, Mich., who will be so pleasantly remembered by all who attended the Detroit meeting of the A. V. M. A. for his untiring efforts to add to their comfort and pleasure as one of the Committee of Entertainment, has just resumed light practice after three months of serious illness from malarial fever. The doctor, after six weeks' illness, returned to his duties, but soon suffered a relapse, which threw him back for weeks. His many friends among our readers will be much pleased to know that he is now considered a safe convalescent.

DR. THOMAS F. O'DEA, of Saugerties, N. Y., was appointed by the Board of Regents at their annual meeting in December as veterinary medical examiner in the place of Dr. Jno. A. Bell, resigned. His appointment was made from the old list furnished by the State Society two years ago, and is in deference to an opinion of the Attorney-General, who holds that the list of ten names furnished by the Society from which the Regents selected five, is the source from which vacancies are to be supplied during the tenure of office of those appointed. At the last meeting of the Society a different interpretation was placed upon this point, and two members were nominated to the Regents to supply the vacancy.

THE INDIANA FARRIERS' COLLEGE has been established at Indianapolis, Indiana, and opened its first session December 5, with L. A. Greiner, V. S., President and Treasurer, J. M. Greiner, V. S., Secretary, in the rooms of the former Indiana Veterinary College. The course for master shoers consists of dissections of the feet and limbs for six weeks, the remaining six weeks being devoted to lectures on lameness, shoeing and scientific appliances, the course requiring one night each week from 8 to 10. The junior class for journeymen and apprentices meets twice a week and consumes two hours at each sitting. At the close of three months the journeyman will be examined for the degree of M. F. (Master Farrier), while the apprentice will be required to serve under a master shoer until the next term of school, when he may enter the senior class and compete for the degree at the close of the term. The fee for master shoers is $10; for journeymen and apprentices, $15; diplomas $3 extra.

INOCULATING CATTLE WITH HUMAN TUBERCULOUS GERMS.—The following telegram is taken from the New York *Herald* of Dec. 27: "*Ann Arbor, Mich.*, Dec. 26.—Dr. Victor C. Vaughan went to Detroit Friday and visited the laboratories of Parke, Davis & Co., where he instituted a series of experiments to decide whether animals are affected by the germs of human tuberculosis. He has inoculated seven cows and several calves with germs taken from a human being afflicted with tuberculosis. These animals were placed in special stalls and will be watched with care and every symptom noted. Dr. Vaughan will follow these inoculations with others on horses and other animals, no matter how the first experiments result. Dr. Vaughan became deeply interested in the experiments made upon Miss Emma King, a New York nurse, in an endeavor to confirm Dr. Koch's theory of non-contagion from bovine tuberculosis. Now he proposes to reverse the operation."

DR. CARNEGIE'S MUNIFICENCE.—We have just learned from Professor McCormack, Secretary to the Carnegie Trust for the Universities of Scotland, that if a youth have the following qualifications his college (veterinary) fees will be paid by the Trust for him: "(1) He must be over sixteen years of age; (2) must be of Scottish birth or extraction, or must have given two years' attendance after the age of fourteen at a school or institution under inspection of the Scotch Education Department; and (3) must be qualified by preliminary examination under the Ordinances of the Scottish Universities Commission and the regulations of the Joint Board of Examiners to attend the

classes for which payment of fees has been claimed." We feel sure that there are many young men desirous of entering the profession, but debarred by the unfortunate lack of money from doing so, and to such young men we wish our readers to point out this great opportunity and privilege.—*Vet.. Journ. England.*

WORK OF HORSES' HOOFS.—A Boston automobile enthusiast with a penchant for figures has calculated that a sharp-shod horse pulverizes 24 pounds of road material on a macadamized highway for each mile traveled. He arrived at this result by carefully collecting, with the aid of an envelope and a fine brush, all the material loosened by two of the equine's hoof-beats. This performance he repeated in widely separated sections of the cultured city and collected the material disengaged from the road surface by six hoof-beats, and which is usually blown away in the form of dust. On weighing his material he found that he had .0366 pounds, or .0061 pounds per hoof-beat. Multiplying this by 1000 steps per mile for each foot—4000 steps in all—he found that it totalled 24 pounds. A rubber-tired automobile, he says, makes practically no impression on the roadway, from which he concludes that horses and steel-tired vehicles are the sworn enemies of the automobile so far as good roads are concerned. Some kind of a law to prevent the rapid deterioration of roads under steel hoofs and narrow steel tires should, he thinks, be enacted at once—the sooner the better.

A VALUABLE DOG.—Recently the eight-year old son of Wm. G. Morrisey was playing on the pier at the foot of 21st Street, Bensonhurst (New York City), accompanied by his dog, a large St. Bernard, two years old. "Old Sport" playfully jumped against the boy's breast, causing him to step backward, and in so doing he lost his balance and fell into the water below, which was covered by a thin coating of ice. The lad was a good swimmer but was heavily clothed, and the dog, seeming to understand the situation, plunged in, seized Willie by the collar and swam with him to shore, a distance of 150 feet. They both started on a run for home, the dog arriving there first. Mrs. Morrisey heard something scratching at the door, and on opening it she saw the hero rushing back to meet the frightened boy. Last winter he saved the boy's sister in a similar manner. The facts as above given were verified by Dr. Bell, of the REVIEW, in a personal letter from Mr. Morrisey. We read of many similar cases, but we always suspect exaggeration, and when they can be verified they should be placed on record, as a just tribute to "man's best friend."

PUBLISHERS' DEPARTMENT.

Subscription price, $3 per annum, invariably in advance; foreign countries, $3.60; students while attending college, $2; single copies, 25 cents.

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Alex. Eger, 34 East Van Buren St., Chicago, Ill., Veterinary Publisher and dealer in Veterinary Instruments, Books, and Drugs, is the authorized agent for the REVIEW *in Chicago and the Middle West, and will receive subscriptions and advertisements at publishers' rates.*

WE reproduce below an extract from a letter to the Abbott Alkaloidal Company, from one of New Jersey's most prominent veterinarians, and we have learned that since its receipt, a month or two ago, many *others* in that State have learned to appreciate what that excellent Chicago house has to offer them:

"The Abbott Alkaloidal Company's granules in canine practice should receive a trial by every up-to-date veterinarian. I for one shall give them the test they deserve, and from experience have already convinced myself that they are to be preferred to all other forms of medication in canine practice for one reason alone, which is, that there is absolutely no trouble to administer them, which is certainly a matter of no small importance, in the treatment of the smaller animals.

(Signed) J. PAYNE LOWE, D.V.S."

UNITED STATES EXPERIMENT STATION, CLEMSON COLLEGE, SOUTH CAROLINA.

"I have used Zenoleum as a surgical disinfectant and antiseptic. I have long advocated this kind of preparation. The low price should be an inducement to use it.

G. E. NESOM, V.S., State Veterinarian."

REVIEWS WANTED.

The publishers will give 50 cents each for copies of August, September and October, 1900, issues, and 25 cents each for January and April, 1901, issues. Address, Robert W. Ellis, D.V.S., Bus. Mgr., 509 W. 152d St., New York.

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AMERICAN VETERINARY REVIEW.

FEBRUARY, 1902.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

"HORSE DISEASE" IN MANILA.—If I am to adhere strictly to the title of "European Chronicles," in which I have the pleasure of sending Continental news to our readers, it will be considered strange that I should take for material subjects of American source; but would I be an up-to-date reporter should I ignore them, especially when it relates to something which, by the authority of my informant, is "entirely new to American vets."?

A few days ago, while looking over the mail of all countries, which our friends send us to 14 Avenue de l'Opera, I found a letter from Manila, P. I., written by an old student and friend, reading as follows:

"*Dear Doctor*:—We have a disease in horses in Manila that is something entirely new to the American vets. The symptoms are very well marked; at first a high fever, 103° to 105°, followed by swelling of the sheath and legs, and, more markedly in the native horse, of a pad under the belly; membranes yellowish-white, with hæmorrhagic spots. The foreign horse will stand the disease better than the native. Appetite remains good up to near the end or death of the animal. The heart is early affected; pulse rapid, and at the end feeble and venous. As the pulse fades away the swellings disappear and the animal soon dies. This much for a few of the prominent symptoms. Post-mortem does not tell very much, as there are

no marked changes in the organs. The pericardial sac and pleural cavity are full of serosity; ante-mortem clots in heart; have noticed abscess in stomach in a few cases. Examination of the blood shows in all cases the presence of a spirillum or filaria, which is not known to any of us here. It is a small body, larger at one end than at the other, which has a long moving tail * * * it is exceeding active and motile. Can it be the horse sickness of Africa? The disease has been noticed in the Islands in former years, but never to the extent of the present rainy season. In some places all the native ponies have succumbed to the disease, and here in Manila the U. S. Government has lost many animals."

The question put by our correspondent—"Can it be the horse sickness of Africa?"—was, to my mind, likely to be answered in the affirmative. But it was merely a suggestion, and the question was too serious, and the subject too important for us to be the decisive arbiter. So, we called on Prof. Nocard, who gave us a confirmation of our correspondent's and our suppositions. Nocard wrote in a note: "The disease in question seems to me identical with 'Surra' of India or the 'Nagana' of South Africa. There is no doubt but that the parasite is a trypanosome. I would like to have glass slides of blood taken from the animals. Do sucking insects analagous to the *tsé-tsé* exist in the district? These insects would inoculate the disease with their stings."

Thus we are probably in the presence of a sickness which is parasitic, which, as in other diseases, is due to the same organism, the trypanosome, an organism which seems to give rise to three different manifestations—"Nagana," "surra," and "daurine."

We have sent to our *confrère* in Manila the answers he asked of us; we have told him of the request of Prof. Nocard, and by his further communications we hope to keep the readers of the REVIEW *au courant*.

* * *

COCAINE AND MORPHINE.—A few months ago, in one of my "chronicles," I called the attention of our readers to the

use of cocaine in the diagnosis of lameness, which had recently been brought before the veterinarians of France, a process which has been resorted to for many years by American practitioners. The question of priority has no importance, yet I thought it might be well to establish the facts as they were, without any attempt or thought to take away any of the credit which belonged to veterinarians on this side of the pond. Anyhow, the benefits that can be derived from the use of cocaine were not to be ignored, and, of course, trials were made in various directions. Among the inquirers Mr. Pécus, veterinarian to one of the military schools of France (St. Cyr), was one of the most sanguine. With a certain object in view—viz., to find a practical process to substitute for neurotomy, in obtaining an alteration of the nerve substance—he made numerous researches; but, failing to find what he sought, he became satisfied to use cocaine alone, as a means of diagnosis. On account of the high price of the alkaloid he decided to combine it with morphine, and after a few trials adopted a solution of muriate of cocaine 0 gr. 15, muriate of morphine 0 gr. 10, distilled water 5 grams, and with this quantity, which he uses for one plantar nerve, he obtained results which throw a new light on the use of this compound. Indeed, while this anæsthetical association is not dangerous, it allows the practitioner to make a diagnosis in five or ten minutes, and, besides, its use is generally followed, between one and twelve days after the injection, by a disappearance of the lameness for a period of time varying from zero to forever. A curative action, then, which allows the veterinarian to resort to neurotomy in entirely rebellious cases.

In recording his observations Mr. Pécus divides the injections into two groups. Those that are diagnostic and curative and those that are diagnostic only. In the first class the injections have been diagnostic and certainly curative, because lamenesses of several months' standing have disappeared progressively in a few days and have allowed of the use of the animal for several years (two and three). In some cases, however, the injection had to be renewed, but the final result was

the same. In the second class, the positive result of diagnosis is all that has been obtained, but no diminution or disappearance of the lameness, which always returns to stay after the effects of the injection have subsided. Neurotomy in those cases brought about a satisfactory result.

This point established, Mr. Pécus continued his observations with the two alkaloids, and his general conclusions are:

Cocaine or morphine, separated or associated, in solution, injected on the tract of sensitive nerves, removes for the time being the pain in the peripheric end of that nerve. Those injections can be used to establish a positive diagnosis of the location of painful parts in affections situated between the point of injection and the periphery. They are sometimes followed by an analgesy sufficiently long and complete to be considered as having a true therapeutic action. This curative effect, rare with cocaine alone, more frequent with morphine, is more readily obtained and for a longer duration with the cocaine and morphine mixture. Injections of morphine are as diagnostic as those of cocaine, but possess curative properties more certain.

* * *

TELEGONY—that is, impregnation or infection of the mother—is an expression recently adopted in zoötechny. It relates to an important point already treated by Dr. Debierre in his work on "Heredite Normale et Pathologique," where he puts the question: "Is it true that a first child impregnates its mother to such an extent that the child of a second marriage will resemble the first husband, dead a long time before?" Or, to widen the application, is it true that a thorough-bred female animal, covered by one of equal standing, would continue to give products resembling the first male when served by others of lower classes?

Much has been written upon this important question, and the controversy has been very active, advocates and non-partisans being unable to agree. And how could it be otherwise when the former were satisfied to take the exception for the rule and accept as undoubted evidence cases where ignored sexual con-

nections may have taken place, and cases where impurity of the breed, atavism, and surrounding causes only may have intervened. The question has already received ample attention at the hands of many scientists—Chauveau, Sanson, St. Yres, Menard, and others—and, yet, notwithstanding the negative results which were brought out from their experiments and observations, the idea still remains among some breeders, but probably more among those of dogs, that a pure-blooded animal, impregnated once by a male of lower standing—a pure hound with a mongrel, for instance,—after generations with a thoroughbred male, will give products with some of the characters of the mongrel. For many dog-breeders this doctrine of impregnation has many advocates, and many among them are much disappointed when the first pregnancy of a well-bred bitch is the result of a connection with a common dog; they fear that ulterior products, although the result of a perfectly selected accomplement, may bring forth young ones resembling the first male.

To add to the list, already long, of evidences of the fallacy of this opinion, the eminent professor of zoötechny at the Veterinary School of Bruxelles related, in the *Annales de Medécine Vétérinaire*, published by that school, Mr. Ad. Reul, relates an experiment which he has made. A red sow of Tamworth breed was covered by a boar of her race. She had a litter of young ones of her red color. Several months later, from want of a boar of her breed, she received the services of a white Yorkshire boar, also thoroughbred. This second litter consisted of a dozen pigs, very strong, and all as snow white as their father, a few of them only having a few spots, particularly on their ears, slightly tinted, but these passed away after awhile. Therefore, this sow, with her Irish-setter color, had given by this second union a litter of young ones as white as their father, with some of the characters belonging to his breed. She, therefore, had not been influenced in her second litter by her first connection, although the male then had been one of her breed. Furthermore, a third time the sow was covered,

this time by a Tamworth boar. With him she got a litter of ten little ones, all red and of the same type as father and mother. Notwithstanding the extreme hereditary power of the white boar of her second pregnancy, she had not received any telegonic effect from him.

This experiment has a very great value of demonstration, and comes to increase the long series of evidences already existing against telegony.

* * *

PROFESSIONAL PHILANTHROPY.—At the risk of being taxed with stubbornness in my ideas for recalling suggestions which have not received attention, I once again feel justified in writing on this subject, placing it before our readers, as I have already done in my "chronicles" of February and June, 1899, viz., on the propriety of a society to be formed among the veterinarians of the United States, for pecuniary assistance among the members, similar to that which has existed for years among physicians, which not only assists members during their life, but provides at their death the remaining members of their families with a fund made by the members of the society specially assessed for the purpose. In the articles which I wrote on the subject I called the attention of our readers to the great amount of good which could be done, and it is not necessary to repeat it here. Should such a society be formed I have no doubt that plans of organization and suggestions could be obtained from the New York Physicians Mutual Aid Association, which, after several years of successful existence, is able to give the family of each member who dies *one thousand dollars.*

But why should I again speak of this subject, as long as no one in America seems to have considered it worth noticing, and as not the slightest move has been made in the direction of establishing such an association? Yet it would be so easy for our National Association to take the matter in hand and run the American Veterinary Mutual Aid Society.

The reason which has constrained me to again bring this subject before the profession of America is because that in

France, besides the Association Centrale des Vétérinaires, already in existence, I read of the creation of another in the western districts of France (L'Association Confraternelle de la Charente Inferneure) which is being formed, admitting members for a trifle ($4), demanding from each annual dues of $2 and an assessment of $2 at the death of each member, to go to his heirs.

Those figures do not need to be so high if we compare them with those which are required from the New York Association, viz., $10 on admission and $1 assessment. At present the yearly payment of a member is about $16 or $18. Should a society of veterinarians be formed, there is no doubt that 500 and perhaps 1000 members could be enrolled, and the good that could be done is too evident to require more consideration.

Many similar organizations exist all over the world for professional and working bodies. Why veterinarians could not organize one seems to me paradoxical. A. L.

THE BANQUETS OF THE A. V. M. A.

Dr. Tait Butler, late President of the National Association, and a frequent participant in the delightful social occasions referred to by the caption of this article, contributes an interesting addition to the discussion of this subject in the present number of the REVIEW. While he in the main endorses all that our friend, Dr. Williams, had to say in the previous month's REVIEW, he incidentally finds fault with the sage of Ithaca for his frequent absence from the banquet-table, and, while he does not in so many words charge that this dereliction of his duty is owing to a fear of the pranks of the toastmaster, he intimates that so much is due to the veterinary hosts by virtue of his many desertions of the banquet function that he should be forced to stand up on the next stated occasion and talk for an hour. In defense of the late chairman of the Committee on Publication we have certain knowledge that his abstinence from the delights of the banquet were solely in response to duty, for on several occasions we have found him when the dinner was

breaking up sitting in his room delving deeply into the work of his committee, correcting poor English, expunging irrelevant twaddle, and arranging, inserting, and otherwise preparing the story of the closing convention in a manner that would make it a creditable interpretation of the scientific and practical work accomplished.

But we, for once, must disagree with the conclusions of both our esteemed correspondents, for we fail to appreciate the force of their contention that the speeches delivered on these occasions are unworthy of the most advanced representatives of the veterinary profession. At the Atlantic City meeting we were particularly impressed with their value, both as entertaining addresses and as patriotic and scientific contributions. To our point of view, it is not intended that these occasions should be the opportunity to communicate the results of scientific research, nor for the unloading of abstract medical theories. The convention hall furnished the opportunity for such deliberations, and the banquet has been, so far as we know, regarded as an occasion for pleasant social conviviality, the commingling of old friends and of new acquaintances, while the repast of all that is most delighting to the palate and nerves is intended to place the guest in the best spirit to enjoy the pleasantries of the occasion. When the plates are removed and the master of ceremonies begins his duty of introducing the speakers, every one is presumed to be in humor to listen to short after-dinner addresses upon subjects as various as the speakers are numerous, the topics assigned having some reference to the character or association of the gentlemen designated. Thus there is furnished a variety of subjects, and the serious or scholarly speaker will take occasion to indulge in a polished presentation of his theme, while he of the jocular mind will delight his hearers with a witty handling of his subject that both tickles the fancy and cheers the mind, burdened for the previous few days by the weightier problems of medical science.

The last occasion was rich in variety and lofty in sentiment, reaching out from national legislation down to the work of the

arrangements committee. We fear that our correspondents are not really good critics of the occasion to which we refer, for, while one was absent, the other was probably so engrossed with the very important part which he played in the proceedings that he was not in condition to be a calm and critical observer of the events as they transpired, and as a sufficient refutation of the charge that the addresses lacked anything in polished finish we point to the speech of our late President, which was a patriotic and learned discourse, delivered with the fire of an orator and received with enthusiastic applause.

It may be true that a toastmaster may indulge in a little pleasantry by taking a diner unawares, but the very *impromptu* character of the remarks which are thus called forth is the charm which commends it. It would be cruel, in our judgment, to make the annual banquet an occasion for set speeches, and it is doubtful if any improvement can be made upon our present system unless it be the inclusion of the ladies as guests, in which event the force of these remarks becomes more apparent.

MINNEAPOLIS IN 1902.

The Executive Committee of the American Veterinary Medical Association has decided that the thirty-ninth annual meeting is to be held in Minneapolis, Minn., Sept. 2, 3, and 4, 1902. This is but a just recognition of the claims of this beautiful city of the Northwest, for her loyal sons have year after year extended an earnest invitation to the Association to accept of their hospitality and lend its great influence to the profession of that vast section. But this year she took up the question with an enthusiasm and unanimity we have never seen equalled, and her overtures were simply irresistible—for we verily believe that every citizen at all interested in the subject importuned the committee in behalf of the Minnesota metropolis. While the REVIEW has uniformly opposed the holding of the national conventions in other than central localities, it is convinced that much can be accomplished in the way of strengthening the Association and disseminating its influence for the

good of the cause by a visit to this hitherto neglected section, for the territory to the north, east and west of Minneapolis has many sterling veterinarians who have found it impossible to attend its meetings, and by giving them this opportunity to participate in the programme and to associate themselves with the organization they are likely to feel more disposed to make an effort to be present at future meetings. The association already numbers many of Minnesota's leading veterinarians among her very best members, and we feel assured that much good is to flow from the committee's decision for 1902.

SURGICAL CLINICS.

The "revival meeting" of the Veterinary Medical Association of New York County, Jan. 3, was one of the most gratifying events that has occurred in a long time in the vicinity of Gotham. It shows that a real association is possible if something of practical interest is to be transacted. If one or two enthusiasts can present a programme sufficiently attractive to bring together half a hundred local veterinarians, what a grand association could be built up if each one would contribute his mite, whether it be a paper upon a practical subject or a demonstration of a surgical procedure? Evidence accumulates through such events as this that for busy practitioners the surgical clinic has the greatest charm and that they can least afford to absent themselves from meetings where this is a feature of the programme. We believe, however, that the literary section should not be ignored in local associations, but that the papers should have a bearing upon the demonstrations of the evening. We have frequently observed a little group standing to one side, criticising the methods employed in performing certain operations, and suggesting to each other better ways which they have adopted. Now, if these gentlemen were to discuss these points in open meeting it would be beneficial to all, and by an interchange of experiences, many important points might be brought out. We would suggest that the demonstrations of one meeting be discussed the following

month, the subject to be opened by a short description of the technique by the operator, and if others present employ a different and, as they believe, a better method, the opportunity would present itself for a statement of their objections, and the advantages of their means. This would start a discussion which would be of real service, and greatly enhance the value of the association.

DEPUTY HEALTH COMMISSIONER JOSEPH H. RAYMOND, of Brooklyn Borough, New York City, who has just been appointed to that important office, is not a novice in the conduct of municipal health matters, having filled the post of Health Commissioner of Brooklyn years ago. He has always appreciated the value of the educated veterinarian, having been the first health official in this country to appoint a veterinarian upon his staff. For this recognition he was in 1890 elected an honorary member of the United States Veterinary Medical Association. Since his recent appointment he has expressed a desire to have a conference with the leading veterinary practitioners of Brooklyn, in order to obtain their views with regard to the best methods of dealing with contagious diseases of animals, and for the purpose of securing a thorough understanding and unity of action in bettering the condition of both animal and man. Such men should receive the unstinted coöperation of every member of the profession.

THE Publishers beg to acknowledge the response on the part of the REVIEW readers, to the appeal which was made editorially in the last issue, calling attention to the advertisement which appeared at the foot of this page, in that number, for back numbers of the REVIEW, that were needed by certain of the subscribers, to complete their volumes. So general was the response from those that had duplicates of those numbers that we were able to fill all the vacancies, and have withdrawn the advertisement, except as applying to April, 1901, numbers, a few of which will still be welcomed.

ORIGINAL ARTICLES.

THE X-RAY AS AN AID IN THE DIAGNOSIS OF TUBERCULOSIS IN CATTLE.

By J. V. Laddey, D. V. S., Arlington, N. J.

Paper read before the New Jersey Veterinary Medical Association, at Trenton, January 9, 1902.

The very slow, and in some respects often impractical way of examining cattle for tuberculosis by means of the tuberculin test, has led me to experiment with the X-ray as to the feasibility of detecting the disease in the living animal. I arrived at satisfactory results. The infiltrated calcareous matter, which it seems exists already in the early stages of tubercular lesions, prevents the X-ray from passing through the lesions, thus causing a shadow or opacity. After the successful fluoroscopic test, I decided first to have radiographs made, to ascertain whether it would be practical to go to the trouble of experimenting on the living animal. Being compelled to take expense into consideration, I chose specimens, not with a view to obtain impressive pictures, but to put the idea to a severe test. Accordingly I selected lesions with small tubercles in the early stages, as in Plates No. 3 and 4, arguing that if disadvantageous specimens showed satisfactory results, the better developed cases would be less penetrable to the rays, and therefore more evident. It is obvious from the photographs that if an enlarged tubercular mediastinal gland were to be radiographed, its shadow would be as dense as that thrown by compact bone tissue.

PHOTOGRAPH NO. 1.
Portion of Pleura with Tubercles, spread on cardboard.

Photograph and Radiograph No. 1 present a portion of a pleura with tubercular tumors spread on cardboard. In the upper left-hand corner is the radiograph of a dime exposed

RADIOGRAPH NO. 1.
Portion of Pleura with Tubercles, spread on cardboard.

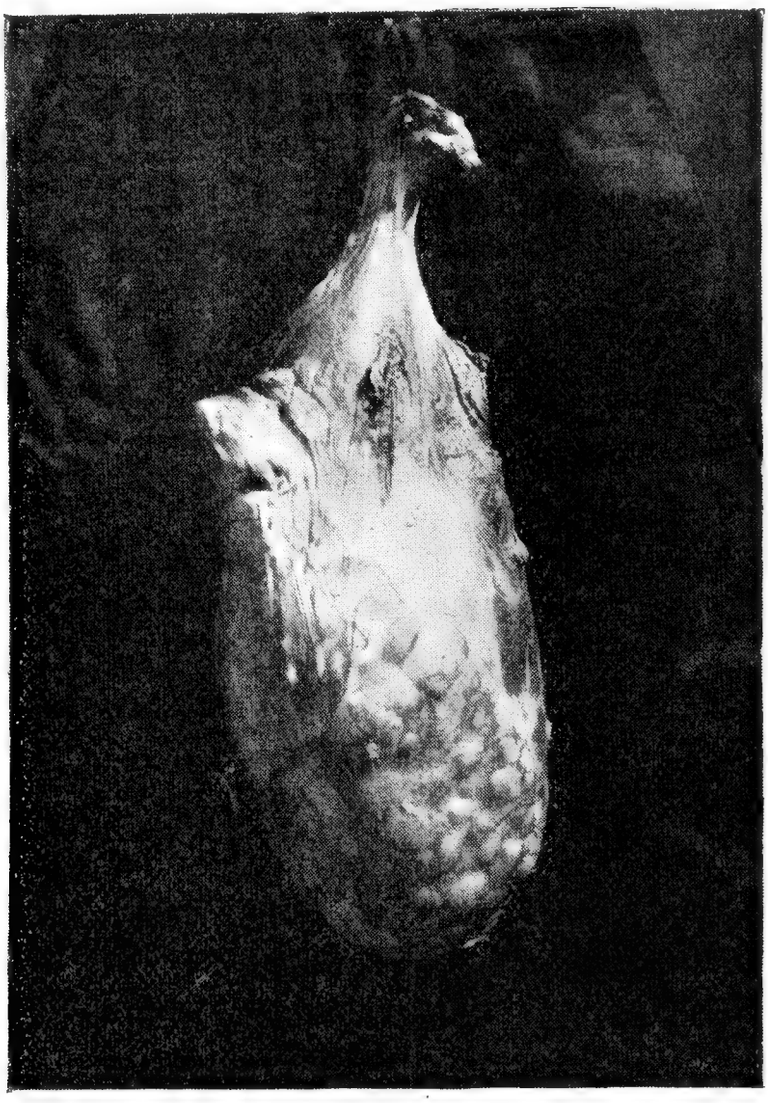
simultaneously with the specimen, to show the comparative opacity of coin and tumors.

Photograph and Radiograph No. 2 show a tubercular abscess of the lung, which is still in the semi-solid cheesy stage, but which, nevertheless, throws quite a dense shadow.

Photograph and Radiograph No. 3 represent a portion of the diaphragmatic peritoneum with tubercular lesions in the early stage, when they have a transparent greyish-pink rounded and granular appearance, but even here there is sufficient calcareous matter present to cast a shadow upon exposure to the rays.

Photograph and Radiograph No. 4 present a portion of the

thoracic wall with lesions also not far advanced. It also shows the relative density of the shadow cast by the portion of the rib and the tubercular deposits.



PHOTOGRAPH NO. 2.
Tubercular Abscess of Lung.

The radiographs showing such satisfactory results, I proceeded to make arrangements for a fluoroscopic examination on the living animal. The examination was made in a dark booth erected for the purpose, with a 12-plate static machine to generate the electrical current. The examination was made on both sides of the animal; an assistant manipulated the Crookes' tube on one side of the animal, so as to have it directly opposite the fluoroscope through which the cow was examined on the opposite side.

For the first examination the subjects were four thin cows, which were selected because they were thought to be of a tuber-

cular diathesis. The observations through the fluoroscope were as follows:

Cow No. 1.—The fluoroscopic view on both sides showed a

RADIOGRAPH NO. 2.
Tubercular Abscess of Lung (cheesy stage.)

few undefined opacities in the posterior portion of the thorax.

Cow No. 2.—Here the fluoroscopic view presented more and somewhat smaller, but less sharply defined shadows, distributed over the entire thorax.

Cow No. 3.—This presented a similar view with an exceptionally dark spot in region of liver.

Cow No. 4 showed a clean unobstructed view, so clear that it enabled me to see the heart in action very distinctly.

My conclusions were that Cows No. 1, 2 and 3 would prove to be tuberculous, and Cow No. 4 free from tuberculosis. The subjects were then killed and inspected by myself and another Inspector of the Bureau of Animal Industry, who had purposely

not been informed of my conclusions. The post-mortem report is as follows :

In Cow No. 1 the mediastinal glands and the posterior por-

PHOTOGRAPH NO. 3.
Portion of Diaphragmatic Peritoneum with Tubercular lesions.

tion of the caudal lobe of the lungs showed tubercular areas.

In Cow No. 2 there existed generalized tuberculosis; there were tubercular lesions in the lungs, liver and over the entire pleura, but the lesions were small.

Cow No. 3 showed tuberculosis of lungs and liver. In this case the lesions existed to the largest extent, and especially so in the liver.

Cow No. 4 was entirely free from tuberculosis.

For a second experiment the subjects numbered three. They were good cows, in good condition, supposed to be healthy, considerably fatter than those of the first experiment. Here I ob-

served that adipose tissue does not decrease the penetrability of the rays. Upon fluoroscopic examination I judged cows Nos. 2 and 3 to be free from tuberculosis, but in subject No. 1, I noticed

RADIOGRAPH NO. 3.
Portion of Diaphragmatic Peritoneum with Tubercular lesions.

a faint opacity near the posterior extremity of the left caudal lobe, and concluded that there might be a slight tubercular deposit in that region, although the shadow was not so pronounced as in those cases of the first test, which were found to be tuberculous. Upon post-mortem examination cases Nos. 2 and 3 were found to be free from tuberculosis, and No. 1 showed in the very spot where I had detected the shadow, instead of tubercular deposits, lesions of a chronic circumscribed pleuritic inflammation with adhesions. The fact that even an indurated serous membrane throws a shadow, somewhat different from shadows of other anatomical parts, demonstrates the possibilities that might be attained by this method. This latter test taught

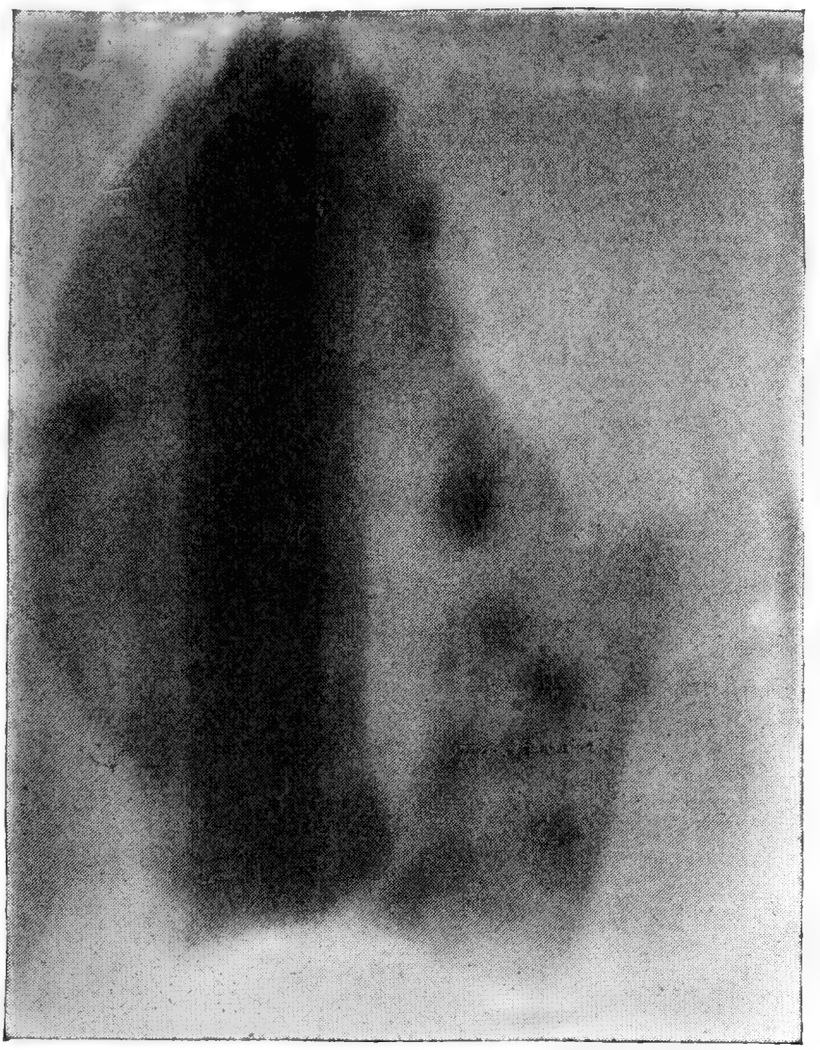
me also that fluoroscopy is an art of no small importance, in which one can only become proficient through practice. I noticed in this test that I was much better able to discern the different

PHOTOGRAPH NO. 4.
Portion of Thoracic Wall (with rib) with Tubercular lesions in the early stage.

shadows, as of the heart, ribs, liver, etc., than in the previous one, and although a case of tuberculosis in its earliest stages, where there is not a sufficiently appreciable calcareous infiltration present, might escape detection by examination with the X-ray in the living animal, an advanced case could not escape detection.

As this mode of diagnosis consumes only from 2 to 4 minutes for an animal at the utmost, it would recommend itself not only for ordinary diagnostic purposes, but particularly in ante-mortem work for meat inspection purposes. It would also be of great

value in diagnosing cases of tuberculosis far advanced, where the tuberculin test has failed to cause reaction; furthermore,



RADIOGRAPH NO. 4.
Portion of Thoracic Wall (with rib) with Tubercular lesions not far advanced.

could it be put to practical use in studying the age and progress of tubercular lesions in the living animal.

A TRADE PAPER devoted to carriages and automobiles states that while the year just closed has been one of marked activity in the automobile world, it has been financially disastrous, marked by failures aud consolidations indicating unsatisfactory conditions. Speaking of the carriage trade, the same paper says the year was one of the most prosperous in the history of the business. Dealers in all classes of horses throughout the country state that trade generally was better than ever before, the only drawback being the difficulty in securing the right kind, which are constantly getting scarcer.

MOLASSES AS A FOOD FOR ARMY HORSES.

By G. E. Griffin, D. V. S., Vet. Artillery Corps, U. S. A., Fort Sheridan, Ill.

While serving with the 5th Cavalry in Porto Rico, 1898 to 1901, it was observed that the natives used considerable molasses in the feeding of their ponies. On inquiring into the reasons we were informed that the corn of the country was small, hard, scarce and expensive, oats had to be imported, hay was an unknown quantity, it being practically impossible to cure grass in a country where the rainfall was so great and frequent, besides, as vegetation flourishes the year through, grass in large quantities was always obtainable, although of a coarse variety and containing 85 per cent. of water.

Grass as fed is cut early in the morning, made into bundles of from ten to fifteen pounds, transported on ox carts to the neighboring towns and there retailed for a small sum to the horse owners. An unlimited supply of this grass is allowed to the horse, it, however, being cut or chopped into short lengths first. In addition to this, where molasses is obtainable (and it is very plentiful in this sugar-raising country) and cheap enough, it is added to the drinking water and the animal allowed to partake of it in large quantities; all of the ponies do good work on this ration and endure surprisingly the hard usage and brutal abuse to which they are subject by the native Porto Rican and the Spaniard, who are seemingly devoid of mercy where horseflesh is concerned. The question suggested itself, why not feed army animals in this manner?

Through the kindness of Colonel Clem, Chief Quartermaster of the then Department of Porto Rico, a money allowance of $80 was placed at our disposal for the purchase of molasses for the purposes of the experiment.

Six troop horses and two private horses were selected for the feeding experiment, which was inaugurated on the first day of January, 1899, and continued until May 31, same year.

In carrying out the experiment I was ably assisted by a de-

tail of enlisted men in charge of Farrier Pagoda, of Troop L, 5th Cavalry.

On the appointed day the eight horses were weighed, pulse, temperature, respiration, secretions, etc., noted and recorded, also the condition of the teeth and general health, all of which were normal; selection of horses was made without discrimination, except that of the two private horses, one of which belonged to the adjutant of the regiment, the other to ourselves.

Commencing with the morning feed on January 1st, the oats ration was gradually decreased, and grass substituted at the rate of three pounds of grass for one of oats. Commencing on the 4th, the hay ration was gradually diminished and its place supplied with grass at the rate of two pounds of grass for one of hay. On the 6th, in addition to the grass, now amounting to twenty-one pounds a day (chopped), there was added, mixed therewith, three pounds of molasses. The hay and oats were partaken of eagerly, also the fresh grass, but that mixed with the molasses was absolutely refused, except by horse No. 2, which was very fond of candy or sugar. He, however, appeared to have trouble in its mastication, when it struck us that the molasses was not sufficiently diluted. At the next feed 25 per cent. of water was added to the molasses, when five of the animals commenced to eat gingerly. By the tenth of the month all of the horses were eating thirty-five pounds of grass and fourteen pounds of molasses daily, without the addition of any other feed whatsoever.

From the 7th to the 18th each horse lost in weight from 25 pounds in the case of No. 2 to 32 pounds in the case of No. 5. Contrary to expectations there was no relaxation of the bowels noticed; in fact, at a late period bran had to be given to overcome a partially constipated condition in all of the subjects; urine was clear and secreted in greater quantity than usual, but on test for sugar no reaction could be observed.

During this time each animal was doing the usual routine work of the garrison—drills, parades, scouts, horse exercise and patrols, amounting in all to about five or six miles a day.

On the morning of the 17th it was decided to give the animals a regular amount of work, consisting of twelve miles a day each, with saddle packed with soldiers' field kit, or its equivalent, which with the man averaged very nearly 203 pounds.

Animals were watered at 6 A. M., fed fifteen pounds of grass and seven pounds of molasses immediately afterwards; at 7.30 A. M. they were all saddled, and the detachment under our own direction (riding No. 2) proceeded thus: one mile walk, one mile regulation trot, one mile walk, one mile slow gallop, two miles walk, one mile fast gallop, one mile trot, two miles walk. Returning to the stable not earlier than 9.30 A. M., unsaddled, placed horses on picket line; water was offered at all of the numerous streams crossing the line of march while *en route*, but was refused except on rare occasions, and then partaken of only by the oldest animal in the detachment, No. 6, fifteen years old; water was offered at noon, but little partaken of; at 4.30 P. M. twenty pounds of grass and seven pounds of molasses were again fed; salt was offered twice a week, and about three ounces partaken of for the week; the molasses was diluted with 25 per cent. of water and mixed with the chopped grass as far as possible; where all could not be mixed it was dissolved in water and offered as a drink, which was partaken of during the night out of the bucket left in each manger.

Commencing with January the 20th all of the horses commenced to pick up, and by the 5th of February all of them had arrived at their original weight, and in some cases, notably No. 2, had surpassed it, with the exception of No. 6, the old horse, which regained his weight slowly. By the end of February all of the horses had increased in weight over the original from 35 to 68 pounds, the former in the case of No. 6, the latter No. 2. This increase was maintained or varied from very little throughout the experiment, except in the case of No. 6, the old horse, which slowly put on 52 pounds over the original. The work was continued daily, rain or shine, Sundays excepted, and in addition to this we were glad to let the horses out to garrison riding parties and for drills and parades, so long as it did not in-

terfere with the regular work, with the understanding, however, that no food should be offered while absent from the stable. In addition to this all of the horses were given a swim in the sea every Sunday afternoon for about half an hour with the object in view of washing off any molasses sticking to the coat. Grooming was only indulged in once a day, and that about four in the evening.

On April 18th No. 3 stumbled on a stone and strained the superficial flexor of the off fore, necessitating his remaining in the stable for seven days; during this time he gained 12 pounds in weight.

On April 29th a barrel of fermenting molasses was delivered in the evening; on the morning of the 30th this molasses was fed at the regular time. As the customary monthly muster was to be held at seven o'clock, the usual work was postponed until later and all of the horses turned out for this function; they behaved in a most scandalous manner, breaking up the ranks, smashing up things at the reviewing point and even dismounted the saddler sergeant, who was an expert horseman. Query: had the fermenting molasses anything to do with it?

Commencing with February 5th it was noticed that the fæces were becoming quite dry and that the animals had difficulty in defecating; to correct this we had to give a little bran on the 11th, which was partaken of greedily; it had the desired effect, and had to be repeated on an average of every two weeks.

It was noticed in Porto Rico that the young horses were those that kept the sick report full all of the time, while horses of seven and over were seldom reported, the trouble was usually of a digestive nature, with its consequent "out of condition" scratches, skin abrasions, etc. Four of these cases were chronic sick report horses and could not be braced with the usual drugs except for a few days. On February 3d all of them were suddenly deprived of their grain and hay and put on a ration of six pounds of molasses and twenty pounds of green grass daily; they refused the molasses for two days, but hunger being a fine stimulant to the appetite, on the morning of the 6th we were

gratified to see that everything had been cleaned up. (No, their teeth were not in poor condition; we are positive of this, as we noted it on the record.) Strange to relate, these animals commenced to pick up immediately, and within ten days they improved so wonderfully that their riders failed to recognize them. These horses did their usual troop work, which was light. After living a month on this ration they were as suddenly returned to their hay and oats. Both of them suffered with indigestion for several days, but otherwise the sudden change was not injurious. We were under the impression that we would certainly have some acute digestive disorder on the sudden change from dry to green feed and molasses, but none appeared that could be observed. We were not surprised at the indigestion on going back to the dry feed.

All of the horses partaking of the molasses, including the four sick ones, improved in spirit, coat, condition, wind and flesh, and looked better than any of the other horses in the garrison. Remembering that they (the 8) accomplished considerably more work and under more unfavorable conditions apparently and that they probably received less grooming, the results as observed are certainly astonishing.

We will not go into the relative nutritive qualities of foods, as we are positive very few of those who peruse this would care to read it, but I will remark that the grass raised on the island of Porto Rico is very innutritious, consisting of little but water and cellulose; as a consequence the pastured cattle are large of abdomen and watery and stringy of muscle; the ox, which is the draft animal of the country, is fed the tops of the sugar cane and in many ways has his ration of the innutritious grasses added to.

On ending the experiment the horses were gradually restored to their usual ration of twelve pounds of oats and fourteen pounds of hay daily, which they ate greedily.

So much interest was shown in the experiment that not a single question was ever asked as to its results, or if molasses was of any value as a food for horses. As this is the first time

the result of the experiment has been put on paper, it may be of some interest to veterinarians. We do not claim originality for this ration, it having been in constant use on the island of Porto Rico from time immemorial.

Conclusions.—Army horses in the West Indies when the regular ration is not obtainable can be subsisted without loss of flesh or vitality on grass and molasses, both of which are cheap and easily obtainable. The average price per day for the grass and molasses ration was fifteen cents, that of the regular ration about twenty-seven cents; the price of molasses depends upon the season, it being cheapest when the cane is being ground.

Thirty-five pounds of grass and from thirteen to fifteen pounds of molasses as a daily allowance is sufficient to maintain a horse of one thousand pounds weight in good working condition in a climate similar to that of Porto Rico.

On this ration animals appear to do more work, condition and coat improve; there is less tendency to perspiration, wind decidedly improved, urine increased but slightly, bowels have a tendency to constipation, which is easily corrected by the feeding of a few pounds of bran at stated intervals.

Sudden change from dry to this ration is not at all injurious and does not derange the digestive apparatus. On changing to a dry ration it should be done gradually or serious consequences may arise.

Molasses attracts insects, notably flies and ants; it sticks to the animal's coat, smears his face and breast, halter and halter strap, soils the clothing and equipment of the men and causes some trouble and delay in mixing it with the grass, which must be cut fine. It is believed that molasses in small quantities in the United States could be used to good advantage in the treatment of sick horses recovering from some debilitating disease, also in cases of animals suffering from dyspepsia, where the coat is rough and skin harsh and tight, as well as in horses with chronic indigestion that will not respond to the usual tonics.

If molasses as a feed or partial feed be used by any of your readers with a therapeutical object in view it is hoped he will place the result of his observations at the disposal of the REVIEW.

SOME FURTHER REMARKS ON "SURRA."

By Coleman Nockolds, 1st Class Vet., 1st Cavalry, U. S. Army, Batangas, P. I.

Since remarking that this disease had broken out among the army transport and cavalry animals, I have been able to investigate it more thoroughly, owing to the immense number of animals that have been attacked and are at the present time suffering from it. Some idea may be formed of the enormous loss of life it has and is incurring when it is known that under my observation alone out of one engineer's train of eighty-five mules, seventy-six have already succumbed and thirty-one out of another train of forty animals have died, and the remainder are seriously affected with this very deadly disease. Besides, there are an alarming number of troop horses and quartermaster's animals that have died or are dying. Horses are not as liable to "Surra" as are mules, as the proportion of deaths is about one horse to ten mules. I am fully convinced that the organism is introduced into the system by the ingestion of grass cut from swampy lands, which is almost the only forage obtainable here at this time, as American hay and grain are scarce. No doubt at some stations the water used for drinking purposes infects animals, but that is not the case here because our water supply is obtained from the ice plant and is free from the organisms. It is certain that flies, and possibly other insects, carry the disease from one animal to another; this has been demonstrated to my satisfaction. That the blood of infected animals contains the specific hæmatozoon is also positive, as I have found them in the blood of many affected animals; also that the blood from infected horses when injected into a healthy animal will cause the disease, I have demonstrated by inoculating a number of monkeys and dogs. The most remarkable thing to me is that of all the veterinarians that I have met out here and that various officers I have conversed with in Surra-stricken districts know nothing of the disease, and confess that they have never heard of it; some have had large numbers destroyed because they sus-

pected glanders; others call it tropical fever and are satisfied. It may be of benefit, especially to those veterinarians contemplating entering the army, to go over the symptoms again. As to the cause, as is well known, it is an infusorian called the *Trypanosoma Evansi*, named after G. Evans, M. D., an inspecting veterinary surgeon in the British service, who first noticed the parasite in the blood of infected horses in India during 1880; so it is not a new disease, although apparently new to many American veterinarians who have not been able to obtain literature on the subject. It is a flagellated infusorian measuring from 20 to 45 micrometers in length and 1 to 1-5 in breadth at its widest part; it has a long, slender and flexible tail and is very motile, going in and out amongst the blood cells, which they destroy with an eel-like movement. The first well marked sign of this disease is an increasing emaciation with loss of strength; all the symptoms of a progressive anæmia are apparent in a few days; in the majority of cases there will be noticed swelling of the under part of the abdomen, sheath and legs, due to œdema; and paroxysms, during which the animal lays down and struggles, and it will be found upon examination that the temperature has risen three or four degrees, averaging 39.4 to 40.5 C.; these last for from a few minutes when first attacked to several hours towards the later stages of the disease; between paroxysms, intermissions occur of comparative quietude, during which the temperature may be slightly elevated, normal or even below normal. One of the most noticeable manifestations is that the appetite is ravenous even during a paroxysm, no doubt because of the parasites assimilating most of the nutriment in the system required for the maintenance of the vital forces. As the disease progresses the countenance assumes a timid, tired expression, while in the standing posture the back is arched and the head hangs low, when attempting to move the legs drag, there is knuckling of the fetlocks and the rump is low. Extreme pallor of the mucous membranes is a constant symptom, and petechiæ is often present upon the conjunctiva and schneiderian membrane. I have not noticed an urticarial eruption mentioned by some ob-

servers, but in some instances small swellings caused by insect bites occur. Blindness, due to the extravasation of blood into the chambers of the eye, is occasionally noticed. The urine is voided frequently, often of a dark red color, again it may dribble away even when the animal is lying down. In most cases the body is covered by small specks of blood due to insect bites. The bowels are normal. Animals may be attacked under any or all conditions.

Post-mortem.—Body much emaciated, muscles pale, large amount of jelly-like exudation in connective tissues, intestines bloodless, but normal in consistency. Liver enlarged, friable and pale. Spleen slightly enlarged and softer than normal. Kidneys enlarged, always paler and in some cases soft, easily torn, mottled and capsule non-adherent, cortex containing pus. Bladder normal. Heart atrophied but apparently larger in size from fatty infiltration. Muscles pale and auricles and ventricles contain large yellow clots, as also do the large veins. Lungs congested, leathery, only partially ærated and mottled by irregular patches of red and yellow hepatization, hepatized portions containing pus and fibrine and are nodular. Stomach is *not ulcerated*, but full of food ; may or may not contain bots, and in most cases there will be seen amongst the food myriads of small thread-like white worms from 10 mm. to 15 mm. long. In the peritoneal cavity there are generally found numbers of white worms 6 cm. to 12 cm. in length, most probably the *Filaria papilosa.* In the cæcum and large colon most probably many of the *Otyuris Curvula* will be seen.

All the parenchymatous organs have undergone fatty degeneration to a greater or lesser extent. There is yet much to be learned as regards the best method of treatment for this disease. I have given Lingard's treatment in a large number of cases without any beneficial result, as the animals have all died ; some that were put on quinine and iron recovered, as did also several that had quinine and iron combined with the arsenic treatment. Injections into the larger muscles, preferably the gluteal, of a solution of mercuric chloride have proved beneficial.

It is of the utmost importance that all infected animals should be placed in quarantine at a safe distance from the healthy animals, because of the danger of transmission by flies and other insects. Of course, no treatment will be of avail unless the feed is changed and water free from the organism be used for drinking or other purposes around the animals.

Shelter at night to guard against the sudden changes of temperature and dew which occur in the tropics. The appetite is invariably good and the animal should have plenty of food of the best quality obtainable. Puncturing the swellings is not of benefit, at least until it is apparent that the patient has recovered from the actual disease.

Anti-parasiticides might be of benefit applied directly to the skin to prevent as much as possible flies or other insects resting there.

IN THE INTEREST OF SCIENCE.—When one's friend is a scientist and given to experiments a little caution may not be out of place before consenting to do him a favor. That, however, did not occur to a certain well-known public man whose experience is related in an Australian paper. He went to the laboratory of an old schoolmate, a Melbourne professor of chemistry, to make a friendly call. The professor was studying a dark brown substance spread out on a sheet of paper. "I say," he cried, when greetings had been exchanged, "would you kindly let me place a bit of this on your tongue? My taste has become vitiated by trying all sorts of things." "Certainly," responded the accommodating friend, and he promptly opened his mouth. The professor took up some of the substance under analysis and put it on his friend's tongue. The man worked it around in his mouth for fully a minute, tasting it much as he might have tasted a choice confection. "Note any effect?" asked the professor. "No, none." "It doesn't paralyze or prick your tongue?" "Not that I can detect." "I thought not. There are no alkaloids in it, then. How does it taste?" "Bitter as gall." "Hem-m-m! All right." By this time the visitor's curiosity was aroused. "But what is it, anyhow?" he inquired. "I don't know. That's what I'm trying to find out. Some one has been poisoning horses with it."—(*Youth's Companion.*)

POLITICAL VETERINARIANISM IN ILLINOIS.

By T. J. Gunning, Neponset, Ill.

Presidential Address delivered before the Illinois State Veterinary Medical Association at Chicago, Nov. 14, 1901.

Gentlemen:—

Another year has passed since last we met together at the annual meeting of this association. The past year, like all other years, has brought joy to some and sorrow to others. It is only a few weeks since our great nation was called to mourn the loss of its chief executive, a man greatly beloved by all except by the Anarchist. Surrounded by his fellow-citizens, vying with each other to show him honor, he was laid low by the assassin's bullet, and the name of Wm. McKinley was added to the list of martyred Presidents. And while we bow in humble submission to the will of the Almighty, and mourn the loss of one so grand and noble, let us not forget to render thanks to Him who doeth all things well.

We have just reasons to be thankful, when we remember that during the past year none of our members have been called from time to eternity and our ranks remain unbroken.

Gentlemen, I wish to acknowledge my indebtness to our worthy Secretary for the able support he has given me during the past year. I can assure you that had it not been for his untiring efforts, his planning, pleading and begging, the programme of this meeting would not present such an array of well-known names, which is a guarantee that we will receive papers of interest to all.

The office of Secretary should be filled by the best man in the association, and I can assure you that there was no mistake made when Dr. Welch was chosen our Secretary, but like some political parties the mistake was made at the head of the ticket, and I trust that you will profit by the present experience and do better in the future in selecting a man to act as your President.

During the past year there has been no serious outbreak of contagious or infectious disease in the State, so far as I have

been informed, unless it be influenza, which has been quite prevalent, but of a mild form, the death rate being quite small, most of the deaths occurring in neglected cases. Where there has been any outbreak of disease it has been confined to a small section of the State. Some of these local outbreaks have not been reported. Many of the stockmen of the State have lost all confidence in the work done by the State the past four years and will not consent to State interference if they can prevent it.

The past year has been one of prosperity for the veterinarian as well as the stockmen of the State. The advanced price of live stock has made owners of stock more interested in caring for their sick animals, and money being quite plentiful the doctor has received more cash for his work and fewer accounts to charge and collect in the future.

The prosperity enjoyed by the profession during the past two years will, undoubtedly, cause many of the young men to start in the work of educating themselves for the profession, notwithstanding the fact that the Governors of this State persist in refusing to recognize the graduated veterinarian. Our colleges will receive more or less benefit from the present prosperity, by a larger number of students, and the colleges offering the most complete course of study and receiving the most public recognition will, without doubt, receive the largest number of students. Our colleges should be the standard-bearers of the profession and should at all times refuse to recognize any man or class of men, who, by word or deed, strive to cast any reflection on the colleges or their graduates.

The work of our colleges and the persistent work of scientific men in the past few years have elevated the scientific knowledge of the profession to a place worthy of the highest recognition of every American citizen.

Gentlemen, as President of this association, I feel that there is a duty resting upon me—a duty that I would gladly shun, if by so doing I could feel that I was doing my duty to our profession. The duty that I refer to is the standing of our profession in this State, and I can assure you that if I did not feel it

my duty to make a few remarks along this line I would gladly pass it by, and I can assure you that what I have to say, I say it with true brotherly love and due respect for all.

I trust that the time is not far distant when every graduate in this State will be bound together in one great professional brotherhood, thinking not of self alone, but the good of all. The profession in this State at the present time reminds me very much of a house divided against itself. What the outcome of this division will be, it is not for me to say; but I trust that the divided parts may again be bound together for the good of all.

Something over four years ago the Governor of this State appointed to the office of State veterinarian a gentleman who was a non-graduate, a gentleman who, only a short time before his appointment, took occasion, in my presence, to denounce the veterinary colleges of this country as unworthy of recognition, and I took it for granted that he did not hold the graduates in any higher esteem than the colleges from which they were graduated. Only a short time after his appointment he was in Chicago knocking at the doors of the veterinary colleges asking them to recognize him, and I have been informed that there was one of the veterinary colleges that gave him the recognition he desired and which, I have no doubt, he so much needed. While the other college was perfectly willing to recognize him as an honorable gentleman, but not as a professional man, and by so doing placed a wreath around it, which neither the scorching sun of summer nor the chilling blasts of winter will be able to wither.

At the time of this appointment it was freely admitted by State officials at Springfield, that if the graduated veterinarians of this State refused to do State work under this appointment the State work could not be carried on, but if enough graduates could be found who would condescend to do State work it would make but little difference who held the office of State veterinarian. Notwithstanding the fact that a large number of graduates refused to do State work, there were plenty who

seemed not only willing but anxious to have an appointment to do State work. The veterinary profession was in no way to blame for the first appointment of a non-graduate, the blame resting with a few of the political wire-pullers of the Republican party, but for the second appointment the graduates who made it possible for a non-graduate to hold the office are alone responsible, for by their work they have made it possible for any man to hold the office that a few wire-pullers may see fit to name.

During the past winter quite a number of graduates came out as candidates for the office of State veterinarian, men who would have been an honor to the office and to the profession, and, after obtaining endorsements of which they might feel justly proud, were each and all passed by without the least recognition. Some of these men had been serving the State for nearly four years, and after four years of work succeeded in doing just what they had been working for, their own defeat, and I can assure you that I regret their defeat perhaps more than they do. It seems to me that if those men had been just a little better posted on politics there would have been very few candidates in the field. For it was a foregone conclusion at the time the present Governor received the nomination that if elected no graduate would be appointed.

There was never any doubt as to where the Democratic party or its candidates stood in regard to the appointment of a State veterinarian. But, strange as it may seem, out of the four candidates of the Republican party, there was only one who dared to say one word as to where he stood on the appointment of State veterinarian, and I take pleasure in saying that the one Republican candidate who spoke with no uncertain sound for our schools and for the veterinary graduates of medicine and surgery was Hon. Judge Carter, of Chicago. And I wish to say to you that if this meeting adjourns without giving a vote of thanks to the defeated Democratic nominee and to Judge Carter, it will adjourn without showing due respect for the men who were ready and willing to give just recognition to the graduates of this State.

It would be a gross injustice to the present State veterinarian to say, as some have said, that he had no right to accept the office. He had the same right and privilege as any other citizen of this State, and just so long as he can find men who are willing to kneel at his footstool he is likely to hold his present office, and I shall be the last to criticise him for so doing.

Gentlemen, let me ask you how long you think the State work could be carried on if every graduate who is now doing State work would refuse to work and all other graduates do likewise? Let me say to you that it would not be forty-eight hours until there would be a few men at Springfield hunting for the point of the compass to find out "where they were at," and during that forty-eight hours the profession would rise to a place of honor and recognition such as it never has known in the State.

Gentlemen, in the course of my remarks I may have said some things that would ruffle the feathers of some brother practitioner, but I believe that friendly criticism will often do more good than cowardly silence. I wish to say to you to-day that just so long as the graduates of this State are willing to submit to the dictates of political wire-pullers, our colleges and our profession will never receive just recognition.

The live-stock interests of this State are ready and willing to do us justice and lend friendly assistance at any time, but we must first show that we stand united and are making a strong pull and a pull altogether for the good of each and all.

I hope that the day is not far distant when every graduate in this State will stand under one banner and take as their watchword:

"We live for those who love us,
For those who know us true,
For the wrongs that need resistance,
For the rights that need assistance,
For the future in the distance,
And the good that we can do."

AN ENZOOTIC ATTACK OF CHOREA AMONG CATTLE.

By A. D. Knowles, Veterinarian, Nevada, Mo.

Read before the 10th Annual Meeting of the Missouri Veterinary Medical Association, October 22 and 23, 1901.

About September 20th, 1900, I was on the farm of a Mr. Arnold vaccinating some cattle, and my attention was called to a grade polled Angus heifer about a year and a half old. She stood among a bunch of cattle on the opposite side of the lot with her head turned toward us; the head was moving from side to side and in a rotary motion; the eyes staring; the front feet extended, as if to prevent falling forward; the hind legs also placed in a bracing position, and the animal was very nervous.

When I approached her she started excitedly stepping high, the front feet almost touching her ears, and after going a few steps she fell on her side in a state of eclampsia; I approached and found her trembling, with eyes rolled back; respiration and pulse very rapid; I did not take temperature at that time, but found on later examinations that the temperature was elevated from one to three degrees. After leaving her for a few minutes, she arose and passed along the opposite side of the lot with that same unsteady gait, frequently falling forward.

I was informed by Mr. Arnold that he had had cattle affected like her for four previous years, that it usually made its appearance in October and lasted several weeks; and that he had never lost one showing the symptoms; he said he had had the services of veterinarians before, but that they had failed to successfully treat the affection.

I was on Mr. Arnold's farm several times during the autumn and winter and saw about seventy-five head of his herd of two hundred and fifty cattle show the symptoms as just described; the affected cattle would continue to eat and thrive, but would frequently fall, while suffering from the spasms, into ditch or creek and be unable to rise until helped.

The only one that Mr. Arnold has lost, while showing the symptoms, was a steer about a year and one-half old, which had fallen into a ditch on the night of the 3d of January, 1901, everything indicated that the animal chilled to death while lying on his back in the ditch.

I held an autopsy about thirty-six hours after death and found the following conditions present:

The body showed no signs of decomposition and there was no tympanites; the post-mortem was held by the field operation, exposing all of the internal viscera as a whole, after which the contents of the intestines, stomach and bladder were exposed; then we examined carefully the external and internal conditions of the heart, lungs, liver, kidneys and spleen.

There was nothing to indicate disease or abnormality until the cranial cavity was reached.

Upon opening that cavity the dura mater and arachnoid showed nothing characteristic, but there seemed to be much more than the normal quantity of the subarachnoid fluid and the vessels of the pia mater were greatly distended with blood; there was nothing else to attract especial attention.

There were a greater number of cattle affected on Mr. Arnold's farm last year than there has been any previous year.

Mr. Arnold has had sheep, which he says have shown the same symptoms, and he thinks some have died from the affection.

The farm referred to lies in the north part of Vernon County, Mo., and is composed of about eight hundred acres of black limestone soil; it is all set to timothy, clover and English blue grass.

The farm is exceptionally clear of weeds and brush, except forty acres, of which I shall speak later; there is a creek running through the farm from south to north, but the cattle receive water mostly from tanks fed by large ponds, and the water supply in the tanks is regulated by floating valves; the ponds are all fenced so that no stock can get to them. The pasture was excellent, and the cattle did not receive any grain or hay until

after the first of January, except two carloads of two-year-old steers which were being fed for the market, but those receiving no grain remained in splendid condition.

The forty acres referred to is fenced to itself and is not used during the summer, but is allowed to grow up in brush and weeds, and is used as a wind-break for winter.

On one occasion about seventy-five head of cows and young cattle got into this enclosure and within three days about twenty head were showing the symptoms; some were not able to stand for a few days, and others had to be pulled from ditches or creeks occasionally; during the time these cattle were so badly affected they continued to eat and digest their food. The cattle were removed from that pasture and some of the affected ones improved rapidly, while others continued in about the same condition for several months.

On March 22, 1901, I accompanied our State veterinarian to the Arnold farm; there were several cattle still affected, and as thorough an investigation as could be made in one day was made by Dr. Luckey.

Plans were laid to gain more knowledge of the affection, but as the grass came on the cattle gradually grew better, until by the first of May there was not an animal showing perceptible symptoms.

The grade polled Angus heifer I spoke of as being first affected did not make permanent improvement until spring, but like all of the others she showed signs of improvement, to be succeeded by periods of the most aggravated symptoms; after the grass was good in the spring she gradually regained her normal actions and was shipped to market about the middle of the summer, apparently having made as good a growth as though she had never been affected.

There was no treatment recommended for the cattle, and none was given, except that Mr. Arnold on his own judgment gave treatment to two cattle similarly affected. One of them received full doses of iodide of potassium, and the other full doses of the bromide, twice daily for a week.

The one which received the iodide, he said, seemed to improve considerably for a week following the treatment, when it grew worse again; the one which received the bromide did not show any change of symptoms. There were other cattle in the same neighborhood affected and showed the same symptoms.

Mr. Arnold has his cattle graded and keeps each grade in a pasture to itself; and a very noticeable fact is that cattle that were on pasture which was used for meadow, *i. e.*, that was mowed and then pastured after the grass came up sufficiently, did not show any of the above symptoms while they were confined on such pasture, but when moved from that on to land which had been used for pasture the entire season, quickly developed the symptoms.

Cattle of all ages were affected, also some of those on full feed of grain, but those on grain were also on grass.

The symptoms developed earlier and lasted longer last year than any previous year.

Mr. Arnold has no cattle affected as yet this year.

I hope this paper will stimulate a discussion which will give new thoughts and more knowledge on the subject.

THE exportation of horses and mules from the port of New Orleans is the largest ever made by any single seaport in the history of the world. From Oct. 1, 1899, to Nov. 30, 1901, the total valuation of horse and mule cargoes was $13,483,052, exclusive of feed, which amounted to $992,619, making a grand total of $14,476,270. The total number of horses and mules was 140,050, about equally divided. The average value of the horses and mules shipped to South Africa will thus be seen to amount to $96.27, and when we reflect upon the market price of horses in this country since 1899 we can judge of the class of animal that has been bought and shipped for "war purposes." We can thus be thankful to the British Government for ridding this country of its "scrub" stock.

A HORSE taken to the Philippines by the United States Government for military purposes costs about $600 when he lands upon that soil. The necessity for the best veterinary care thus becomes most apparent.

SCHMIDT TREATMENT FOR PARTURIENT PARESIS.

By J. C. Callander, V. S., Parkersburg, W. Va.

For some time I have been thinking that perhaps it was my duty to my fellow practitioners that I should record my way of using the Schmidt treatment in parturient paresis, and tell of the success I have had with its use.

I have been in active practice for about 13 years, and have always dreaded the so-called cases of parturient apoplexy. If I was called to a sick cow, a common question for me to ask was: "How does she act?" The owner usually would say: "Well, she was fresh yesterday morning; now she is down and can't get up. Hurry up or she will be dead before you get here." I would say to myself, "I hope she will be." Of course I would go, and use the old line of treatment. Sometimes, to my surprise, she would get better, if she had strength to withstand my treatment and the disease combined. Usually I had to hear the same old song—"She died last night." Now the tune has changed.

I keep a quart sterilized bottle and rubber funnel with piece of tubing attached, and at the end of it a silver milking tube; also one ounce of iodide of potassium in two ounces of distilled water. In another small bottle equal parts of acid carbolic and glycerine. All this I keep in a box in the same place ready for use. When at my destination I ask to have a quart of water boiled. This I put into my sterilized bottle—adding one-half of my iodide solution and two drachms of carbolic acid and glycerine solution. I set bottle in cold water and allow it to cool to blood heat. I then prepare the udder by milking out and washing it with carbolic or sublimate solution. Then I insert tube; have an assistant pour a quarter of the solution into each teat. This being done, I massage the udder fairly roughly for five minutes. Place animal on sternum, with fore and hind feet in natural position, with head turned to side. Give instructions to keep her in that position and turn her from side to side every two hours. Also, to milk all that

they can get every two hours after injection. I catheterize her, and leave, returning in six hours and go through same process. I am not surprised to hear of her being on her feet within the next six hours. If she is not I give the third injection, which with me has always brought the happy result. She gets no medicine by the mouth nor hypodermically. I rely altogether on the udder injection. So far I have not lost a case.

What was repulsive to me once is now pleasant. You will notice, my iodide dose is four drachms, which is double the dose given by the author of the treatment. I also use one drachm of carbolic acid and same of glycerine. The glycerine, I do not claim to have any merit, only it helps to put the acid in a more uniform solution.

I could go over my cases and give you day and data with usual differences we observe in these cases; but they are the same after all, and don't need any other treatment.

In about half the cases, I use but two injections, but about as often need three. Have had no bad effects in udder. They return to normal flow of milk in about a week. In my opinion carbolic acid is as necessary as the potassium.

I hope your readers may find a little that is new and something that is helpful in this feeble article of mine.

THE CHICAGO STOCK YARDS.—In 1866, the total value of the animals received at the yards, was $42,765,328; in 1901, it was $283,955,239. During the past thirty-six years 323,628,855 head of stock of all kinds were received, and 100,487,619 shipped out. The grand total number of head handled by the corporation since the opening of the yards, stands 424,116,474. There are 500 acres in the plant, of which 450 acres are bricked or planked. Pens to the number of 13,000 are available; double-decked or covered pens exist to the number of 8500. The water consumed on hot days reaches 7,000,000 gallons.

AN agitation as to the unclean and unwholesome condition of the milk furnished to New York is now being carried on through the press, and many propositions are being discussed for its betterment. Nathan Straus, who has for some years been distributing pasteurized milk to Gotham's poor, is enthusiastic for that process for all milk sold.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

CLINICAL NOTES ON INHALATION BRONCHITIS AND PNEUMONIA.

By W. L. WILLIAMS, New York State Veterinary College.

I. (3081).—*Inhalation Pneumonia due to Fixation of the Tongue by an Osseous Tumor.*

Patient a small common-bred bay mare, aged 10 years, in bad general condition. The owner had noted from time to time during 2 or 3 years some fetor of the breath and disturbance of respiration, which were attributed to some dental affection. There was also some nasal discharge and dribbling of saliva from the mouth. On March 20, 1901, the patient was driven 15 miles over a bad road in a sleet storm, and on the 21st was presented at the clinic showing the following symptoms. Pulse 60, temperature 102° F., respiration labored, auscultation revealed crepitation in the lower fourth of the right lung, the same part being dull on percussion. The patient responded promptly to ordinary treatment and on April 3d had sufficiently recovered to warrant an examination for the trouble preceding the pneumonia.

The teeth and alveoli were found normal. The tongue was rigidly fixed in the intermaxillary space, the tip was slightly movable from side to side and somewhat extensible, but this mobility was anterior to the frænum linguæ. Palpation of the tongue revealed the presence of a hard body, elongated in form and parallel to the long axis of the organ. Its superior border was located some distance beneath the dorsal surface of the tongue, while the inferior disappeared deeply between the rami of the inferior maxilla. The anterior border was co-extensive with the frænum linguæ, and by raising the tongue apex and turning it backward the hard body projected forward prominently, so much so that it was suggested that it was a foreign body which had entered the lingual tissues at this point and had become encysted. The anterior end reminded one, in its outline, of a butcher's skewer, and projected very prominently, though the mucosa was intact. The hard body could be traced back several inches and seemed immovably fixed in the

lingual tissues, while the tongue and foreign body together could be slightly moved from side to side.

An incision onto the projecting anterior portion revealed, not a foreign body, but an osseous new formation with which the surrounding soft tissues were intimately blended, rendering its separation more difficult from the surrounding parts than in case of normal bone with periosteum. Its separation proved quite tedious, and was finally accomplished by making an incision upward from below through the intermaxillary space about 3 inches long, and through this opening detaching the bone by cutting the soft parts away with a scalpel, and finally withdrew the neoplasm through the inferior opening. Viewed laterally the neoplasm is an irregular parallelogram, 2¾ inches long, 1 inch wide, and $\frac{3}{16}$ inch in diameter. This had developed apparently in the median raphé of the tongue, its long diameter corresponding to that of the tongue, so that it stood up vomer-like in that organ, and being firmly fixed below served to prevent the normal movements in the affected organ, interfering seriously with mastication, because the food could not be guided between the grinders, causing particles of food to remain in the mouth to undergo decomposition; and rendering deglutition difficult and unsafe, leading to the inhalation of food particles, and finally causing pneumonia.

II.—*Cystic Tumor (Retention Cyst) of Epiglottis—Chronic Suppurative Bronchitis—Staphylotomy—Ecrasement of Tumor—Tracheotomy—Atresia of Trachea from Infection of Tracheal Wound—Intubation.*

Patient a sorrel gelding, 16 hands high, weighing 1100 lbs., about 8 years old, presented because of a chronic cough and abundant nasal discharge.

History: The horse had, for several years, been in the hands of cheap horse traders and had changed owners so frequently as to render the securing of any reliable data impossible. There was evidence to show that the malady was of, at least, two years duration. He had been in possession of the party presenting him at clinic for a few weeks, the condition remaining approximately uniform during that period.

Presented on January 3, 1901, the general appearance of the patient was good, the appetite undisturbed, was in fair flesh and competent to perform a moderate amount of labor, but there was an abundant nasal discharge of a rather thin flocculent, muco-purulent character and a frequent cough accompanied by the copious discharge per mouth of the same muco-purulent

character as that emanating from the nostrils. Manual exploration revealed a large firm tumor situated between the base of the tongue and of the epiglottis. The animal was secured upon the operating table, chloroform anæsthesia produced, and tracheotomy performed in order to guard against the inhalation of blood or other substances during the removal of the tumor. The operator, Dr. G. T. Stone, found difficulty in manipulating the tumor, and in order to secure more room, staphylotomy, or division of the soft palate along its median raphe was performed, which greatly increased the room and facilitated the chief operation. The tumor was then removed by ecrasement, the mare spaying ecraseur being found very convenient on account of its length. There was no hæmorrhage worthy of note.

The tumor is spherical in form, three inches in diameter, tense and fluctuating. After fixing in formalin a perpendicular section shows it to be a multilocular retention cyst, the contents of which have coagulated firmly and are easily detached from the cyst walls. The greater portion of the tumor consists of a single cyst about 2×3 inches in diameter with three smaller cysts at the base varying from $\frac{1}{2}$ to 1 inch in diameter. When the animal had recovered from the anæsthesia the trachea and bronchi were freely flushed out with a solution of hydrogen peroxide introduced through the tracheotomy tube.

On January 4 there was moderate febrile reaction after the operation, the temperature reaching 103.5°F., declining daily until on January 8th it had reached 100.8° F. The general appearance of the patient was immediately benefitted, the cough and bronchial discharge abating rapidly. The trachea and bronchi were flushed out daily with hydrogen peroxide solution, using for each washing 5 liters of water at 37° C., to which was added 5 grammes sod. chlor. and 60 cc. commercial peroxide of hydrogen.

The patient was discharged January 12, and on January 18 was returned on account of an abscess at the point where tracheotomy was performed, the pus collecting between the trachea and the sterno-thyro-hyoideus muscle.

The abscess was opened freely, disinfectants applied and the patient returned home.

Patient returned May 1st because of dyspnœa and showing a large, firm swelling 8 to 10 in. long and 5 or 6 in. thick over the tracheal wound. This was opened down to the trachea by means of a median incision as long as the tumor, and reopening

the trachea it was found almost filled up for a distance of 3 or 4 in. from granulations growing from the wound area. The swelling was very hard, indurated and partook of the general features of the so-called botryomycosis. It was accordingly treated with tincture of iodine locally and potassium iodide internally, responding very promptly, the swelling disappearing, and the induration softening.

It appeared, however, that the trachea would again close unless some mechanical obstacle to atresia were permanently fixed in it, and to meet this requirement we had made a silver tube 1¾ in. in diameter and 4 in. long. On the inferior face of the tube two silver strips ⅜ in. wide and 4 in. long were soldered at right angles to the tube, the two strips being 1 in. apart equidistant on either side of the middle of the tube. These strips were attached as a precaution to avoid the possible slipping of the tube up or down the trachea. The silver used was 925-1000 fine. This tube was inserted in the trachea after making a sufficient longitudinal incision, some retaining sutures taken across the tube and the two strips were bent at right angles beyond the indurated tissues. The operative wound closed with moderate rapidity and the horse returned to work on May 25.

On June third the patient was again presented at the clinic, the cough and bronchial discharge had almost wholly disappeared, the swelling at the seat of the tracheal wound had largely vanished, and there was only slight suppuration about the silver bands attached to the tracheal tube. The latter, which were 4 in. long at first, were now cut off close to the skin, about ¾ in. from the tube. The horse was not seen by us after this date, but continued to work and kept in good condition for a time.

The owner related that some weeks subsequently the bronchial discharge and cough returned, and with it a very fœtid odor. Again he was traded, and the discharge and odor creating alarm he was destroyed because of suspicion of glanders.

The case presents many interesting features. The presence of the tumor between the tongue and epiglottis, with its necessary interference with the functions of the soft palate and with deglutition doubtless induced the inhalation of substances which led to the chronic muco-purulent bronchitis. The resort to longitudinal division of the soft palate prior to the removal of the tumor demonstrated quite clearly to the operator (Dr. Stone) the value of staphylotomy as a preparatory op-

eration in cases demanding surgical interference within the pharynx, or far back in the mouth where the soft palate is in the operator's way.

The value of voluminous intratracheal injections in washing out the bronchi was very evident, the muco-purulent discharge from the trachea ceasing very promptly and remaining in abeyance until shortly prior to the destruction of the animal, when new causes arose to bring about a recurrence of the malady.

The danger from tracheotomy in the presence of suppurative bronchitis is strongly emphasized, for while the operation and handling of the wound were accompanied by the usual precautions against serious infection they were evidently insufficient and the ineffectiveness of these ultimately led indirectly to the death of the patient.

An autopsy could not be had, and efforts to recover the silver tube failed, but judging from other data coming into our possession after the operation and death, a serious error was made in the material composing our trachea tube because of its destructability in contact with the tissues, and the consequent irritation to the parts inducing suppuration and ulceration of the contiguous parts, while the discharges therefrom entering the bronchi aroused anew the previous muco-purulent bronchitis and nasal discharge. The silver used in making the tube was represented to us as 925-1000 pure. A somewhat similar tube of the same degree of purity, fixed in the trechea of a horse by us and kept in position for 28 months was found on removal to be greatly eroded, roughened, at some points completely destroyed, losing on the whole approximately ½ its weight. Whether this was due directly to the destruction of the metal or indirectly to the solution of the alloy in the metal has not been determined. Apparently all constituents of the metal have suffered alike. The tube at least shows that silver apparatus 925-1000 fine is not suitable for permanent fixation in the air passages of the horse, as it will gradually erode and irritate the contiguous parts.

ACUTE RHEUMATISM IN HORSE.*

By T. J. MENESTRINA, M. D. C., St. Louis, Mo.

My subject this time is "Acute Rheumatism of the Horse." Quite often we are called to a case of lameness, a very obscure

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one, no history of any kind. We endeavor to find the seat of the lameness and attempt to treat same with fomentation or liniments, only to find the lameness still there or perhaps worse after several days, or about this time travelled to another limb. I illustrate to you, gentlemen, a case and my observations.

A black gelding, 6 years old, a very stylish animal (the owner a very reckless driver), went suddenly lame on right front leg. No history to the case. I prescribed a liniment to be applied to the shoulder, and after a few days the animal was no better. I then applied a seton; after two weeks I found the lameness entirely gone on that side, but the horse went suddenly lame on the other limb. I then came to the conclusion that it was rheumatic. The thermometer ran up to 103°, pulse large; rapid; respiration accelerated. I then prescribed the usual treatment: saline purgative, followed by full doses of belladonna, colchicum, salicylate of soda. I returned the next morning and found the animal down, unable to get up, in a profuse perspiration, temperature 105, bowels very inactive and urine scanty. He got up with a little help, only to remain so for about five minutes. The appearance while up resembled that of a foundered horse. I prescribed antispasmodics again.

The very same night he was much easier, temperature 104. The next morning found the animal the same. I then changed the treatment. I gave salol in one drachm doses every two hours. I kept up this treatment for about six days and changed again to iodide of potash, two-ounce doses three times a day for two weeks, without producing iodism. To my surprise, the animal made complete recovery after this treatment.

TETANUS—RECOVERY—ANTITOXIN TREATMENT.

By W. A. Young, D. V. S., Utica, N. Y.

Case No. I.

September 1, 1901, was called to one of our large truck stables and found a large brown gelding, about 17 hands, 1500 lbs., 8 years old. Upon making an examination found animal to be suffering with tetanus, quite excited from the rough handling he had received. I say rough; it was, considering the malady with which he was afflicted. Membrana quite prominent on slightest noise or touch, tail slightly elevated, hocks turned out, nostrils dilated, and all the characteristic symptoms of the disease. Removed to hospital, placed in slings; 120 cc. tetanus antitoxin injected at 6.30 P. M.; jaws

fast becoming locked, so that medication by mouth was impossible, though would suck gruel, nibble on green food, as green corn, grass, etc. Stall dark and quiet; the animal left entirely alone, except to feed, water, and for observation.

Sept. 2d and 3d, remained about same (quiet), with very little uneasiness.

On the 4th became very uneasy—stamping, champing jaws, profuse salivation; 20 cc. antitoxin injected at 11 A. M. After this gradually calmed down to same condition as shown upon previous days, this continuing up to the morning of the 6th, when patient again became uneasy, this increasing throughout the day. At 2 P. M. 40 cc. antitoxin injected, after this gradually quieting down to about same condition as shown upon Sept 3d.

From this date on he slowly and steadily improved; was removed from slings on the 18th and discharged as cured Oct. 1st.

Case No. II.

Bay gelding, 9 years old, 1300 lbs.; noticed acting wrong while working and was driven to Dr. Hollingworth's office, where the doctor diagnosed the disease as tetanus and ordered animal sent to hospital. Entered on Sept. 6th, and 100 cc. tetanus antitoxin injected at 11 P. M. The delay in injecting caused by being out of the antitoxin and supply had not reached us, though sent for the day previous. Animal very uneasy, so that it was a very difficult task to inject drug. Jaws at this time set very firmly, hocks turned out, tail elevated, membrana prominent. Considerable amount of nourishing gruels and green chopped food taken. Slings were also used, as in Case No. I. On the 7th animal quiet most of the time. At no period of his sickness were the spasms as severe as prior to injecting antitoxin, only the 100 cc. being used in this case.

As for the cause of both cases, the mode of entrance of the bacillus is not known, as no abrasions were found, upon very close examination, and no history of any previous injury. The above two cases, as others have, of like kind, impressed me that if the antitoxin is injected early in the disease before the cells of the system have taken up the toxin of the germs that we can get good results from antitoxin in tetanus.

DR. W. H. DALRYMPLE, of the Louisiana State University, has been elected a member of the Executive Committee of the National Live Stock Association.

DEPARTMENT OF SURGERY.

By L. A. and E. Merillat,

Chicago Veterinary College, 2537–39 State Street, Chicago, Ill.

SURGERY OF THE EYE, EAR AND UPPER AIR PASSAGES.

(*Continued.*)

Iridectomy.—The object of the operation is two-fold: 1. To make an artificial opening for the passage of light; 2. To relieve and cure inflammatory conditions of the eyeball. In human surgery, more importance is paid to the former than in veterinary surgery; but the latter is about of equal importance in either branch of surgery. The loss of sight in domestic animals is not so serious a sequel as in man; the conditions required for favorable results from delicate ocular operations are not as encouraging in lower animals as in human beings; and the value of veterinary patients does not always warrant the expense incurred by such operations, and the trouble required to properly and successfully nurse such cases; therefore the value of such operations is much less in veterinary than human surgery.

The conditions that may be considered indications for iridectomy are:

1. Dislocation of lens.
2. Glaucoma.
3. Cataract.
4. Prolapse of iris.
5. Iritis.
6. Foreign bodies and tumors.
7. Preliminary operation.

1. *Dislocation of Lens.*—This condition may be caused by injuries, such as blows, bumps or concussions, and may be dislocated in various directions. In some dislocations it is found in the anterior chamber, while in other cases it does not go beyond the posterior chamber. When the dislocation is into the vitreous chamber the condition is serious, and its extraction is followed by loss of vitreous humor. When the sclera ruptures and allows the lens to pass under the conjunctiva, it is easily extracted. Dislocations are always very serious conditions even when the lens can be reduced; the complications that follow and the sequelæ resulting from the condition, are generally very unsatisfactory.

In any of the above conditions, iridectomy is only a pre-

liminary operation, which is performed in order to get access to structures beyond the iris.

2. *Glaucoma.*—The name "glaucoma" is applied to any condition of the eye characterized by an increased intraocular pressure or induration and hardening of the eyeball. For our purpose we will consider two forms:—1. *Simple Glaucoma*, which includes all glaucomatous conditions that seem to exist without inflammatory symptoms; 2. *Secondary Glaucoma*, which includes glaucomatous conditions that are sequelæ of other ocular diseases. Iridectomy has been considered a curative measure for glaucoma since 1856, and is to-day receiving as much attention as ever.

3. *Cataract* is a diminished transparency of the lens or its capsule, and is more commonly observed in old animals. It may be influenced by heredity, heat, trauma, internal ophthalmitis, and disturbed nutrition. The operation in the treatment of cataract may be considered *preliminary iridectomy.*

4. *Prolapse of Iris.*—The iris sometimes protrudes through openings in the cornea. Such perforations result from disease, traumatic or surgical wounds of the cornea. When the portion that protrudes through the *corneal wound* cannot be properly replaced *iridectomy* is indicated.

5. *Iritis.*—The causes of iritis are constitutional, local and metastatic. Constitutional iritis is not so common in domestic animals as local or metastatic, and either of these may be acute and chronic, or plastic and serous. In chronic plastic or serous iritis the intraocular pressure may be increased to such an extent as to necessitate paracentesis and even removal of part of the iris; or the iris may adhere to surrounding structure and require it to be loosened and probably part of it resected.

6. *Tumors and foreign bodies in the iris.*—Tumors found in the iris are cysts, angioma granuloma, melanoma and sarcoma. These tumors when removed often require the resection of part of the body of the iris. Foreign bodies in the iris that require a removal of part of the iris is an indication for iridectomy.

7. *Preliminary operation.*—Iridectomy is a preliminary operation when it is performed to enable the operator to get access to structures beyond the iris.

Sequelæ.—The operation, like all other ocular operations, is sometimes followed by undesirable conditions; among the most common sequelæ are sympathetic ophthalmitis and intraocular hæmorrhage. Sympathetic and internal ophthalmitis can be obviated to a certain extent by aseptic precautions; but, intraoc-

ular hæmorrhage cannot be prevented as easily as infection. The decrease in intraocular pressure is usually the cause of such hæmorrhage; and, it is impossible to determine when the eye is predisposed to such hæmorrhage; therefore such an accident is unavoidable.

Operation.—The instruments required for iridectomy are: A triangular shaped lance; a curved iris-forceps; a pair of curved iris-scissors; a metal grooved spatula or director; and a blunt hook.

The patient should be properly secured, and a general anæsthetic administered. The incision through the cornea is made at the upper margin as near to the sclera as possible. Care must be taken not to injure the iris unnecessarily. By removing the lance the aqueous humor is allowed to escape from the anterior and posterior chambers. The iris is then drawn through the corneal wound with the hook or iris-forceps, and clipped as desired, with the curved iris-scissors. The iris must be drawn out by gentle traction in order not to rupture the arterial circle of the iris. The iris must be cut in such a manner that no part of the remaining portion will interfere with the healing process or cause adhesions. It can be pushed out of the corneal wound by the use of the spatula and sometimes it is necessary to put it into proper position in the chamber with the spatula and hook or probe.

After-care.—If the operation was performed with aseptic precautions, no irregularities will follow. The eye should be dressed with gauze, saturated in a mild antiseptic solution, and a pad of absorbent cotton placed over it. The patient should be placed in a dark stall, and the eye dressed every twenty-four hours for the first seven or eight days.

NOTE.—The word "*introtechnics*" on page 833, Jan. number of REVIEW, should be *intratechnics.*

SURGICAL ITEMS.

The Re-union of Nerves in Neurotomy.—The surgical division of a nerve trunk is frequently followed by the formation of a tumor at the proximal end, manifested in the shape of a painful cicatrix which produces a lameness even more intense than the original lameness. As the resection of such tumors will again cure the lameness, surgeons usually conclude that the severed nerve trunk had re-united. Such a conclusion is wrong, as *nerves do not re-unite.* If a nerve were experimentally divided under the strictest aseptic precautions and the cut ends

brought together in perfect apposition and healed by primary union the nerve stroma would *re-connect*, but the *communication* between the *centre* and *periphery* would not be immediately established. When the cut ends of a nerve are not widely separated the active proliferation of the structures comprising the nerve trunk may establish a re-connection, or, again, when the ends are even very widely separated, the active proliferation attending the formation of exuberant granulations will frequently result in the same *anatomical* union, but in no instance is there a *physiological* uniou of divided nerves. When a nerve has been divided its power of transmitting impressions between the seat of division and periphery is destroyed forever. The nerve supply of an un-nerved area is re-established by a *diverging growth of the axis-cylinders from the nerve stump toward the periphery*, and such innervation is never perfect nor complete even after years. However, the union of the stroma of a nerve may facilitate the re-establishment of nerve supply to an un-nerved area by forming a guiding channel through which the new axis-cylinders may grow more rapidly. The importance of preventing such so-called union of nerves in neurotomy is not denied, as the process is no more nor no less than the formation of the troublesome *nerve tumor*. Although it is the sensitiveness of the connecting tissue, and not the connection itself, that causes the lameness, prevention of the tumefaction is quite as important as if the nerve supply were fully re-established. This sequel of neurotomy is prevented (1) by resecting the nerve well beyond the proximal commissure of the wound, so that the stump will not lie within the wouud and share in the reparative inflammation. The surgeon is too apt to hurriedly sever the nerve at the upper commissure in order to prevent the non-anæsthetized patient from struggling. Careful dissection and gentle traction at the upper commissure is an indispensable feature in the prevention of nerve tumors. At the distal commissure of the wound no special care is necessary. (2) The septic inflammation following an unclean operation is a potent factor in the causation of nerve tumors by encouraging the formation of an abundance of new tissue, nerve tissue included. Hence the neurotomy operation should be strictly an aseptic procedure. (3) The incision and dissection should be performed without mutilating the surrounding structures. The artery, vein and connecting areola should not be unnecessarily disturbed in order that the wound may heal with the least possible inflammation.—(*L. A. M.*)

A Hoof Pad to Prevent Nail Pricks.—It is well known that nail pricks are uncomfortably common in any large stable of city work horses, and an appliance that will prevent their occurrence should be accepted with open arms. A leather covering to be effectual must be made of heavy leather that will bear too heavily upon the sole of flat-footed horses, and besides will favor loosening of the shoe and are expensive. Sheet-iron plates are difficult to apply and are objectionable for reasons too well known to mention. The pad for this purpose must be cheap, it must be easily made and applied at the time of shoeing and must possess no objectionable feature, such as loosening of the shoe, formation of corns, lameness from sole pressure, thrush, etc. These requirements seem to have been met by the invention of Mr. Thos. Donolan, of Armour & Co.'s, Chicago, in whose stable of three hundred horses not a single nail wound was sustained during six months, while before their use from five to fifteen horses were continually out of service from the lameness of nail wounds. The pad consists of three layers of canvas strengthened across the heel by a band of sheet iron two inches wide. With a simple cutting machine the horseshoer can make one of the pads in a few moments and adjust them without delay.—(*L. A. M.*)

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By Adolph Eichhorn, D.V.S., Bureau of Animal Industry, Milwaukee, Wis.

Chloral Hydrate Anæsthesia in the Horse [*Prof. Fröhner, Berlin*].—As general anæsthetics for the horse, the veterinarian has at command, principally, chloroform, morphine, and chloral hydrate. In regard to chloroform, Fröhner in a previous publication pointed to the facts, that chloroform for horses is not a very safe anæsthetic. Similar bad experiences were had by Venerholm, Lanzilotti and others. Although the administration of morphine has many advantages, it has also some disadvantages; before all, that as after affects in many horses it causes uneasiness and excitement, which often lasts for several hours after the operation. Furthermore many animals suffer for hours from choking and symptoms of vomiting as a result of the morphine injection, which eventually may have very serious effects (foreign-body pneumonia). Fröhner,

therefore, in the summer session of 1900, in an experimental way administered in 75 cases chloral hydrate before the operations. The form of application of the chloral hydrate was exclusively rectal, with the following formula :

℞ Chlorali hydrati, 150.0
Gummi arabici, 75.0
Aquæ destil., 3000.0
M. f. emulsio.

The amount of 150.0 gm. chloral hydrate is equivalent to one and a half doses ; it is advisable to prescribe a slight surplus, as very frequently some is wasted. The effect takes place in about half to one hour, and appears to be in young horses stronger than in old ; in common-bred horses the anæsthetic acts more powerfully and will come on sooner than in thoroughbred animals. The anæsthesia manifests itself by swaying, falling, sleepiness and closing of the eyes. Some horses fall into a deep lasting sleep, during which they snore aloud. As in some horses the muscular weakness is so great that they sink down, it is advisable to perform the infusion at the place of operation. In relation to the motoric weakness, the sensibility is not reduced to the same degree ; complete anæsthesia was only observed in a few cases. The duration of the anæsthesia varies in the same way as the intensity, and lasts on an average of from one to two hours. In three cases, there were also observed a few hours after the operation symptoms of choking and vomiting ; therefore, it is not advisable to feed the horses too soon after the operation. In one case three and a half hours after the operation, there was a prolapse of the rectum of the size of a man's head, which in spite of repeated repositions and applications of cocaine ointments, repeatedly made its appearance at intervals of half an hour, finally remaining in place the following day after the operation. Fröhner thinks it very probable that the chloral hydrate during five days standing of the emulsion, in a hot room (August heat), and periodically directly exposed to the sun's rays, under the influence of these two factors, through absorption of oxygen, partly changed into trichloracetic acid. Fröhner also made some experiments with the combination of morphine and chloral hydrate, but which he cannot recommend, and concludes his observations as follows : Chloral hydrate, rectally, freshly prepared, strongly diluted in a slimy emulsion, is the best general anæsthetic for the horse, where a very deep anæsthesia is not required. For these cases it is to be decidedly preferred to the morphine and chloroform. —(*Monatschr. f. pract. Thierheilk.*)

THE TREATMENT OF PERIODIC OPHTHALMIA WITH INTERNAL ADMINISTRATIONS OF IODIDE OF POTASSIUM [*Dor*].—D. made bacteriological examinations of an eye epizoötic in Auxonne, and claims to have successfully obtained pure growths of the specific microbe, with which he was able to produce the disease in test horses by inoculations. On the ground of his culture experiments, he also states that the specific agent of this eye malady can not withstand alkalies, and experimented to suppress the disease by intravenous and rectal injections of alkalies. Among the applied agents, the iodide of potassium proved to give the best results in the treatment of the inoculated disease, while the control animals were very severely affected. D. administered daily 15 to 18 gm. of the iodide of potassium in a 1 per cent. solution, intravenously, or 25 to 30 gm. by os. In one case of periodic ophthalmia D. succeeded in bringing about a resorption of a severe hypopion in 48 hours with the administration of the iodide of potassium.—(*Bull. de Soc. Centr. de Med. Vet.*)

OPERATIVE REMOVAL OF A CYSTIC CALCULUS [*Dr. Vogt*].—The urine of a horse for several years was bloody, especially so after great exertions. The examination reveals beside an emaciated condition, great qnantities of fibrin flocks in the urine, slimy sediments and blood clots, considerable albumen and calcium carbonates. The rectal examination reveals the presence of a calculus of the size of a lemon in the bladder. Operation through opening of the urethra, close under the rectum. The stone had to be crushed and removed in pieces. Bladder, urethra and wound were irrigated with a 1 per cent. tannoform solution, at body temperature, the external opening of the wound was closed by stitches. The weight of the stone was 90 gm. and consisted chiefly of carbonate of lime. About a month after the operation a membrane was removed through the wound, which, by its extension, entirely lined the internal surface of the bladder, and containing great quantities of crystals and yellow sand particles. Besides a large amount of sand, a calculus of the size of a pigeon's egg was washed out in the irrigation of the bladder with a solution of boracic acid. Complete recovery took place inside of four months.—(*Deutsch Thier. Wochen.*) [A similar and very skillful operation I had the pleasure of witnessing at the American Vet. Hospital, while acting there as house surgeon, and which was performed by Prof. Dr. W. J. Coates. The presence of a large calculus was established, and an operation for its removal was decided

upon. The operation was performed under chloroform anæsthesia. The procedure was the same as described in the operation above, with the exception that the stone could not be crushed with the lithotrite; the calculus being covered with a membrane which prevented the fixation of the instrument on the stone. After a number of trials, the instrument was laid aside, and with the aid of a trocar and hammer the stone was split into several pieces and removed successfully in the following way: The trocar was inserted through the wound and the urethra into the bladder, while the stone was fixed through the rectum towards the neck of the bladder by an assistant. With a few gentle blows the trocar split the stone into three pieces, which were then removed. After treatment consisted in irrigation of the bladder with mild antiseptic solution; complete recovery took place in about six weeks.]—(*A. E.*)

ENGLISH REVIEW.

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

A CEREBRAL ABSCESS [*T. Wolsey, M.R.C.V.S.*].—It is under the heading of "Another Brain Case" that the author relates the history of a young American horse which for five days exhibited a series of brain trouble manifestations with respiratory and cardial complications, and which at death exhibited the following lesions: Stomach and small intestines nearly empty; apex of the lung consolidated and putrid; pleurisy, with small amount of fibrinous lymph of visceral pleura covering the pericardium. This membrane was thickened and inflamed; numerous hæmorrhages under endocardium; meninges much congested; abscess about the size of a walnut in the left cerebral hemisphere, containing evil-smelling, thick, yellowish-white creamy pus; walls of abscess cavity black; no communication with ventricles of brain.—(*Vet. Record.*)

INTUSSUSCEPTION OF SMALL INTESTINES [*Ch. Sheather, F.R.C.V.S.*].—Should the question put by the author—"Did the struggling on being cast cause it?"—be answered affirmatively, this is then a sequel heretofore unobserved to add to those already on the list of accidents likely to occur when animals are cast. The subject was an aged horse, which, suffering from cartilaginous quittor, had to be thrown and chloroformed for operation. This was done after a fasting from food and water

for several hours previous to being cast, the animal struggling very much until well under the chloroform. Released from the hobbles after the operation, he was taken to a comfortable place, where he remained quiet for four hours, when he began to show pain, restlessness, scraping of the feet, and every indication of abdominal pain. Notwithstanding treatment, death occurred after three hours' suffering. At the post-mortem an intussusception of the small intestines was discovered, the invaginated portion of the organ measuring not less than 23 feet in length. The stomach was also found full of fluid, so that it may be suspected that the horse had been watered contrary to the author's directions. At the end of his report, Mr. S. says. "The struggling on being cast might have caused many more likely things than invagination of the ilium. Did it cause it? Would four hours elapse before any sign of pain occur? Was it a coincidence? Probably the true explanation lies around the stomach full of food.—(*Vet. Record.*)

OBSTRUCTION OF THE RECTUM—SUCCESSFUL REDUCTION OF A TWISTED COLON [*A. L. Farrant, M.R.C.V.S.*].—A mare exhibited symptoms of colic, for which the ordinary treatment was prescribed, without giving relief. The animal was in great pain, and, notwithstanding the administration of morphine, the case seemed to be hopeless. By rectal exploration it had been observed that the hand, pushed through the anus, could not go in beyond about nine inches or a foot, and presented then as if there was a *cul-de-sac* with a twisted opening, with room only to insert the middle finger from right to left. Warm enemas and glycerine injections seemed of no avail. By repeated attempts to force the hand through the small opening it at last yielded as though a cord had been suddenly broken, and the whole length of the arm was able to pass into the rectum, which was found filled with one solitary pellet of fæces. Warm rectal injections of water and glycerine were then administered, and as the animal was very restless more morphine was given. Another rectal examination gave the sensation of what was at first supposed to be the distended urinary bladder, but on closer examination it was concluded that it was the colon, as its muscular bands were distinctly felt. To reduce the torsion the hand was introduced towards the left side of the rectum, and pressed forwards and upwards towards the midst of the body, while pressure was applied under the abdomen. After two unsuccessful attemps, a third one was made, the next morning, and the result was at last satisfactory. After a few hours, with proper treatment, defecation took

place in a fairly natural condition, and gradually the mare recovered.—(*Vet. Record.*)

COMPLETE REMOVAL OF TWO SACRAL VERTEBRÆ IN A COW —RECOVERY [*W. M. Scott, F.R.C.V.S.*].—An eight-year-old milk cow was presented to the author for a small injury on the "rump-bone." The wound was situated on the median line, over the second and third sacral vertebræ. Covered by a thick scab, from under which pus oozed freely, it showed a fistulous tract some five or six inches long, and running perpendicular to the bone, which was felt on probing. A thick wall of granulation tissue surrounded the wound. The owner objecting to the destruction of the animal, Mr. S. decided to operate. The cow was cast and chloroformed. The soft tissues were freely excised and the extensive diseased bony material removed. The hæmorrhage was abundant. The resultant cavity was treated as antiseptically as possible, and the animal recovered with only a paralysis of the tail, which required amputation high up. According to the author: "Roughly speaking, the tissues impaired by the operation were as follows: (1) *Muscles:* Origin of the biceps femoris from the sacral spine, part of the semitendinosis, of the buccinator coccygis, and of the curvator coccygis. (2) *Bones:* Probably the second and third sacral vertebræ. (3) *Nerves:* Prolongation of the spinal cord, sacral nerves from inferior foramen, branches of the lumbo-sacral plexus, sympathetic gangliated cord. (4) *Blood-vessels:* Middle sacral, small collateral branches, cutaneous and deep. (5) *Ligaments:* Prolongation of the supra spinator ligament."—(*Vet. Record.*)

ANEURISM OF THE AORTA WITH CALCIFIED WALLS [*H. G. Simpson, M.R.C.V.S.*].—A cob, five years old, being affected with intermittent lameness for a long time, was finally destroyed and a post-mortem made to ascertain if his trouble was not due to thrombosis of the iliac arteries. At the autopsy an enlargement was found over the aorta just behind the diaphragm, which proved to be a large aneurism. The walls of the enlargement were hard, brittle and calcareous. The cavity was filled with a clot. Three atheromatous patches were found in the coats of the aorta within a few inches of the aneurism. This measured seven inches in circumference at its broadest part, and the longitudinal measurement, including the wall of the vessel, was nine inches. There were no traces of thrombosis in the iliacs. The animal had been lame for some two years, first on the off, then on the near hind leg, the lameness generally manifesting itself after short work and subsiding by a few days of

rest. In some instances, after going a quarter of a mile, he would suddenly reel, seeming to lose control of his legs, sweating profusely, and in considerable pain. All of these symptoms would pass away by rest and return as soon as exertion was demanded of him. In the beginning spavin had been suspected and a blister was applied.—(*Vet. Record.*) [There being no thrombosis, was the aneurism the cause of the trouble. ? It is regretable that no mention is made of the condition of the hocks at the post-mortem.—*A. L.*]

ACUTE SPLENITIS—CAUSE? [*H. J. R. P.*].—It is indeed an attack of acute splenitis which carried off a valuable deerhound dog, in the very pink of condition, and which, after a gallop in the morning, was suddenly taken ill in the afternoon, with hurried and painful breathing and abdominal distension, for which he received a dose of oil. He grew worse ; the tympanites of the abdomen increased, eyes were sunken, corners of the mouth retracted, salivation, anxious expression, temperature 102.4 ; no motion of bowels by first dose of oil. The dog died in a few hours, and at the post-mortem all the organs were found normal except the spleen, which was black, enormously enlarged, weighing two and a half pounds ; the omentum was congested, and the distended stomach contained a lot of fluid and partly digested food. The size of the spleen suggested splenic apoplexy, but no trace of the bacilli could be found under the microscope. What could have caused this? If it were not a sudden enlargement, how could the dog have been in such spirits and form in the morning ?—(*Vet. Record.*)

RUSSIAN REVIEW.

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

TUBERCULOSIS IN THE BUFFALO [*N. Kantzelmaher, of Tiflis*].—To this day tuberculosis among buffaloes has been studied but little. According to Prettner, these animals are refractory to it. This author has made only two experiments : to a young buffalo cow he injected in the vein of the ear 5 cc. of a virulent culture and 20 cc. in the peritoneal cavity. A month later the animal was killed and no tuberculous lesions found. To control this experiment, he inoculated a young calf with 5 cc. in the vein of the ear and 10 cc. in the peritoneal cavity, and after three weeks the animal died with marked tuberculosis. In another experiment Prettner injected a virulent culture to an

aged buffalo and as a means of control to a calf. After one month the old animal when killed presented no evidence of tuberculosis, while the calf was extensively tuberculous. Criticising these experiments, Kantzelmaher states that the conclusion of Prettner cannot be admitted as decisive, as observations of slaughter-houses prove the contrary. From the statistics of the author during four years, 20,715 buffaloes were killed at the abattoirs of Tiflis, and tuberculosis was found in 5. The post-mortems left no doubt about it. Three of these were not studied microscopically, the others were. Those five cases of tuberculosis, says the author, prove that the opinion of Prettner is not sufficiently demonstrated, and that one can affirm that tuberculosis is not very rare in those animals. During his four years at the abattoirs the author has observed only one case of actinomycosis in buffaloes, and on that account he believes the disease is rare with them. In relation to tuberculosis of buffaloes, Kantzelmaher has only observed one true case of phthisis pulmonalis. This he considers very rare in buffaloes.—(*Archiv. Vet. Russ. Jo. de Zoötech.*)

TREATMENT OF RHEUMATISM IN HORSES BY SUBCUTANEOUS INJECTIONS OF SALICYLATE OF METHYL [*D. Kissielow*].—In human medicine good results have been obtained by friction of salicylate of methyl or with salicylated ointments; but a close-fitting bandage is always required on the diseased part. As such cannot be well applied on animals, the author thought of subcutaneous injections, and resorted to them in six cases. *Case I.*—Rheumatism of the scapular region, which was rebellious to other treatment. Subcutaneous injections of 10 cc. of salicylate made every five days were followed by recovery. *Cases II and III.*—Two horses suffering with severe rheumatism; both had been treated during the winter and spring without results. At the end of June injections of 10 grammes of salicylate were made in the femoral and brachial regions. After ten or twelve days there was marked improvement, followed after eighteen or twenty days by complete recovery. *Case IV.*—A mare was lame with rheumatism of the hip; she received 10 grammes of salicylate of methyl, renewed seven days later. Five days afterwards she was cured. *Case V.*—A horse was lame for some time in the left foreleg from chronic rheumatism; 10 grammes of salicylate were injected in the scapular region, followed by another seven days later. In five days there was complete recovery. *Case VI.*—A colt showed symptoms of muscular rheumatism of the four extremities; during six weeks injections

were made every five days, and the animal recovered. According to the observations of the author, this treatment is to be preferred to the use of arecoline, pilocarpine, and veratrine on account of the rapidity of its action.—(*Archiv. Vet. Russ. Jo. de Zoötech.*)

CORRESPONDENCE.

THE BANQUETS OF THE A. V. M. A.

RALEIGH, N. C., Jan. 11, 1902.

Editors American Veterinary Review:

DEAR SIRS:—While Dr. W. L. Williams seldom attends the banquets of the American Veterinary Medical Association, still, in the January REVIEW, page 848, he most unmercifully excoriates those of us who have been "loyal" enough to attend and "unfortunate" enough to be placed in the "embarrassing position" of which he speaks. Truly, Dr. Williams has made the position of the speakers at future banquets doubly embarrassing.

Seriously, it is the opinion of the writer that what Dr. Williams has said about the speeches at the banquets of our association is fully justified. In fact, his criticism might have been made much more severe, if that were possible, and still have been richly deserved; but the important point of his letter is the question of future improvement. His suggestion that the banquet speakers be given early notice is by no means new. The writer has, on more than one occasion, suggested this to the Secretary and others and knows that they approve of it, still the "old peculiar methods" have been pursued. In some cases, even the President of the association has been kept in complete ignorance of the toast list and speakers until after it had gone to the printer, notwithstanding his repeated request that he be allowed to see it as early as possible. In short, the manner in which the toast lists have been prepared has, on more than one occasion, been more than merely "*suggestive* of a deliberate attempt to put an enemy in an embarrassing position."

While I do not agree with Dr. Williams that *appropriate* banquet speeches are usually such as a scientific association should care to preserve, still, with the memory of past efforts fresh in my mind I am indeed amazed at the mildness of the characterization, "dry," from his usually vitriolic pen.

Both the "flavor and substance" of these banquet speeches can be much improved, even to the extent that Dr. Williams

might be willing to listen to them, if the local committee having the banquet in charge will confer with the President and Secretary and announce the toast list not later than the first day of the meeting. I, therefore, endorse all that Dr. Williams has said about the quality of these banquet speeches in the past and the wisdom of in the future giving at least a few hours' notice of the subjects to be "toasted" and the unfortunates to be "roasted."

While we are discussing the banquet question there is another point worthy of consideration. Since the attendance of the ladies has become a fixed feature of our meetings I am of the opinion that they should be welcomed to our banquets. I know personally of many members who wish for this innovation. Active and regular participation in the business of the meeting means almost complete exclusion from social intercourse with the lady visitors. This is regretted by many and it seems to me might be largely obviated by making the banquet the crowning social function of the meeting, where we might become acquainted with and enjoy the society of the wives and daughters of our friends. If the hour preceding the banquet, which is usually sufficiently late to admit of it, were devoted to informal social intercourse and improving acquaintances the enjoyment of the occasion would be much enhanced.

Now, Mr. Editor, I have one more suggestion which I hope you will give the stamp of your approval. I insist that at the next meeting our friend Williams be compelled to attend the banquet and speak for not less than ten minutes on some subject to be selected on the spot by yourself. I promise to provide the stenographer to "take it down" that we may "preserve" it.

TAIT BUTLER.

DIFFICULTIES OF ARMY VETERINARIAN IN THE PHILIPPINES.

BATANGAS, PROV. OF BATANGAS, P. I., NOV. 16, 1901.

Editors American Veterinary Review:

DEAR SIRS:—I have taken the liberty to make a further report on "Surra," * which is so prevalent here at the present time, having under my observation at least two hundred animals suffering from it. One great drawback is that it is almost impossible to get necessary drugs for the purpose of combating diseases. While all officers do their utmost to assist the veterinarian, under the present system many hundreds of animals

* Published elsewhere in this number of the REVIEW.

die for the simple reason that we are unable to treat them because of not being able to have corrals, instruments, drugs, etc.; that is one reason that an efficient veterinary department with a young experienced business man at its head would be of benefit to the public service. When one considers that each animal on these islands costs the government six hundred or more dollars to land here, the actual loss from death of animals is appalling, and this loss could in a great measure be prevented by allowing the veterinarian privileges equal to the medical man in the United States army.

Respectfully yours, COLEMAN NOCKOLDS.

AS TO TUBERCULAR LESIONS OF THE INTESTINES.

INDIANAPOLIS, IND., Jan. 16, 1902.

Editors American Veterinary Review :

DEAR SIRS :—Prof. Koch has said, I believe, that if the tubercle bacillus enters the body with the food and infects it we should find the primary lesions in the intestines.

I think it is admitted by all that tuberculosis in hogs is a "feeding tuberculosis," generally, why, then should we not find the primary lesions in the intestines in hogs, and do we?

From my experience with the disease in hogs I would say that I usually find the lesions in the portal gland, liver, spleen, mesenteric glands, under the pleura and in the submaxillary lymphatic glands, sometimes in the mediastinal glands and lungs, *but, very seldom have I examined the intestines.*

It was my good fortune one day to condemn twenty-five hogs for tuberculosis out of three hundred and fourteen killed. While waiting for the men to run the carcasses to the detention room I thought I would examine the viscera again and with my knife opened the small intestines throughout, the cæcum and about one foot of the large intestine, in five cases, washed them out well and examined thoroughly, but found no tubercular lesions in the mucous, serous or muscular coats. I wish now that I had examined all of those cases.

What I wish to suggest is that all inspectors throughout the country examine the intestines in all cases of tuberculosis in hogs and report their results through the pages of the REVIEW. It will only take a few minutes and even if they are killing six hundred or more an hour it can be done when there are two inspectors on the "gutter's bench."

CHAS. H. CANFIELD, D. V. M.,
U. S. Inspector, B. A. I.

QUACKERY IN NEW YORK STATE.

SARATOGA SPRINGS, N. Y., Jan. 13, 1902.

Editors American Veterinary Review:

DEAR SIRS:—In answer to your article on "A Serious Menace to Veterinary Progress," I would say as a suggestion that in my opinion the best way to eradicate the nuisance of this charlatanism and quackery would be for each and every graduated and qualified veterinary surgeon to attend personally to keeping the district in which he practices clean; by instituting a personal prosecution, backed up by his neighboring brethren, and the State Veterinary Medical Association, as it could be done with much less expense, as the local veterinarian would know of all the law violators. Each man should have the support of the entire veterinary profession of the State. No one man can do it all alone. T. S. CHILDS.

AS TO ILLEGAL PRACTITIONERS IN NEW YORK.

KANSAS CITY, KANSAS, Jan. 20, 1902.

Editors American Veterinary Review:

DEAR SIRS:—I heartily agree with your sentiments in regard to illegal practice in New York State, and if some step is not taken by the State Society, our profession is bound to retrograde. I know of any number of such men practicing in the vicinity where I was located [Dunkirk] until December, 1901, and they all get a certain amount of work. It certainly makes one feel belittled to be classed with such men by the uneducated public. In Watkins, N. Y., right near the State College, is a graduate of a two-year college practicing without legal right, as he was graduated since the State law regulating practice was enacted. Respectfully yours, C. H. JEWELL.

VETERINARY PRACTICE IN NEW YORK.

ASSEMBLY BILL NO. 254—AN ACT TO AMEND THE PUBLIC HEALTH LAW RELATING TO PENALTIES FOR PRACTICING VETERINARY MEDICINE AND SURGERY WITHOUT A LICENSE.

At present any incorporated veterinary medical society of the State or any county veterinary medical society can bring an action in the name of the county in which a violation of law relating to the practice of veterinary medicine has occurred, for the recovery of the penalties imposed for such violation.

The bill cancels this authority so that the District Attorney upon information furnished by such a society shall cause an action to be brought for the recovery of such penalties; one half of which, after expenses are paid, shall be delivered to the society giving the information, and the other half shall be paid into the county treasury.—(*Brooklyn Eagle, Jan. 24.*)

OBITUARY.

WILLIAM H. PROPHETT, D. V. S.

At Suffield, Conn., Jan. 17, Dr. Prophett succumbed to heart failure following a long period of sickness, which seemed to be a complication of minor disturbances. The deceased was a graduate of the American Veterinary College, class of 1885, and had practiced at Bridgeport, Conn., for the greater part of his professional career, having disposed of his business four or five years ago on account of failing health and removed to Suffield. His son, James H. Prophett, is also a veterinarian, being a graduate of the same college as his father, and succeeds to his business. The funeral occurred on the 20th ult., from the family residence.

ROBERT JACKSON SAUNDERS.

On Jan. 22, at Highland Station, West Roxbury, Mass., this well-known veterinary surgeon died from heart lesions as a complication of rheumatism, aged 66 years. He was one of the original members of the U. S. V. M. A., and, though a self-made man, was a thoroughly conscientious and studious practitioner, who gained the respect and good will of all who knew him. He was a brother of the late William Saunders, the father of Frederick, and an uncle of the late John S. Saunders. He gave up active practice about two years ago on account of rheumatism, but was only confined to the house for three days. He was interred at Salem on the 25th.

SOCIETY MEETINGS.

CHICAGO VETERINARY ASSOCIATION.

Meeting called to order at 8.41, December 9. Members present 23. Minutes of previous meeting read and approved. Secretary reported the receipt of bills for printing, etc., to the amount of $14.50. After considerable discussion among the

members, some of whom claimed that the bills were excessive, while others thought that any committee should get authorization before incurring expenses, it was moved and carried that the bills be accepted and paid from the treasury of the society. Treasurer Walker reported $83.15 in the treasury.

Dr. L. A. Merillat, of the Committee on New Literature, read an interesting paper on happenings and items of interest to the society, including the following subjects: Dr. Robert Koch's statement regarding the immunity of man to bovine tuberculosis, the tetanus outbreak in St. Louis, spinal cocainization, increased popularity of tuberculin tests on human patients, concluding his paper with a report of the proceedings of the last annual meeting of the American Veterinary Medical Association at Atlantic City, giving resolutions adopted by that body. The report is as follows:

"*Koch's Statements.*—The most important event of interest to the veterinary profession since our last session is the statement by Professor Robert Koch as to the immunity of the human body to bovine tuberculosis. At the Tuberculosis Congress held in London in July, 1901, this eminent German expert reported the results of certain experiments to substantiate the above proposition, and for the third time has astounded the civilized world with his work on tuberculosis: The first time when he discovered the etiology of tuberculosis, the second when tuberculin was brought prominently before the world, and the third, by making a statement contrary to the theory which had been universally accepted by all scientific medical men. While the statement is not entirely new to comparative pathologists, coming from one so high in the profession the laity were immediately brought face to face with a statement that seemed to surprise them. Koch has proven that cattle are not susceptible to human tuberculosis by artificial inoculation, and that the same cattle under similar conditions readily succumb to artificial inoculations of bovine tuberculosis, and that swine fed with human sputum alive with tubercular bacilli do not contract the disease, but readily yield to the same experiments with animal bacilli. He theorized therefrom that the tubercular bacilli which these animals carry will not produce tuberculosis in man; and the fact that Koch is supported by hosts of the most eminent pathologists of the world cannot be denied. From all the literature that this committee is able to secure at the present date, however, it is evident that the question is still an open one that will require years of experimentation before it is definitely set-

tled. Koch refers to the rarity of intestinal tuberculosis in children as a strong argument in favor of his theory. He claims in this connection that if man were susceptible to bovine tuberculosis through the ingestion of meat and milk the intestines should be primarily the seat of the tubercular lesions. Although this committee may seem ridiculous in the eyes of its hearers to repudiate the theories of such eminent men, we are forced to believe that tuberculosis may be disseminated through the body through the intestinal tract without causing tubercular lesions in the intestines themselves. If the alimentary canal were eminently susceptible to tuberculosis, how would a man suffering from pulmonary tuberculosis escape intestinal tuberculosis when it is known that he is swallowing millions of tubercular bacilli continually? The time is especially opportune for this society to discuss this salient point.

" *Tetanus Outbreak in St. Louis.*—A new danger in the use of diphtheria antitoxin was exemplified by the death of a number of children after they had been injected with medicinal doses of this biological product. It might be well here to refresh our minds with the fact that diphtheria antitoxin is manufactured by charging the blood of horses with large quantities of diphtheria toxin and diphtheria bacilli. The blood serum of such animals after being duly filtered and tested as to strength, constitutes diphtheria antitoxin. In the St Louis case the serum was drawn from a horse's jugular on August 24th. The horse died from tetanus the first week in October, six weeks after, showing that the toxin of tetanus may be a long time accumulating before it is manifested clinically. This committee does not believe that this unfortunate circumstance, awful as it is, will materially affect the use of diphtheria antitoxin, but that it will add to the responsibility of the persons engaged in its manufactnre.

"*Increased Popularity of Tuberculin Tests on Human Patients.*—The value of tuberculin tests in the diagnosis of tuberculosis in its bacillary stage in the human patient is becoming more and more recognized by the practitioners in human medicine. For a number of years it fell into disuse because of the supposed danger attending its use. Recently such eminent authorities as Evans, Castleberry and others of note, placed much stress upon its great value in ferreting out the most remote cases, thereby making it possible to begin rational therapeutics before the disease had developed into an incurable affliction. The same authors, however, referred to reactions in nontuber-

culous patients, who are suffering from syphilis, sarcoma, or carcinoma. The value of this test in the bovine genus is too well known to reiterate here.

"*Spinal Cocainization.*—This committee during the last session referred to the probable practicability of spinal cocainization in domestic animal surgery. At that time this method of producing anæsthesia was becoming quite popular in human hospitals all over the world. In view of the fact that the first experiments were performed upon animals we were led to the belief that that procedure was a practicable one for the veterinarian. We find, however, that instead of gaining popularity in human surgery it is fast losing prestige on account of the danger of infecting the spinal cord. The difficulty of overcoming this very obstacle being greater in veterinary surgery than in human surgery, leads us to conclude that spinal cocainization is not a practical operation for the veterinarian.

"*Annual Meeting of the American Veterinary Medical Association.*—The annual meeting of the American Veterinary Medical Association at Atlantic City, on September 3, 4, 5 and 6, 1901, was one of the most important meetings in its history. Some of the resolutions adopted by that body were as follows: [These resolutions were published in the October REVIEW.]

The regular programme was prolific in papers and discussions of importance to every veterinarian, and the surgical clinic is said to have surpassed that of previous years, both as regards the number of operations, and for the arrangements for spectators and operators. This committee urges the members of the Chicago Veterinary Society to take a more active interest in the affairs of the American Veterinary Medical Association, and thus contribute to its welfare."—(*To be continued next month.*)

Dr. Hawley, President, announced that the Government Bureau of Animal Industry had just issued a bulletin written by Dr. D. E. Salmon, Chief of that Bureau, on the relation of bovine tuberculosis to man. This bulletin, he stated, is free to any one who will write for it, and it contains exhaustive statistics collected by Dr. Salmon, of accidental inoculations, proving in his opinion that bovine tuberculosis *is* communicable to man.

Under the head of reports from committees, Dr. Quitman, chairman of the committee on subscriptions, made the following report:

"*Gentlemen:*—The committee appointed to solicit subscriptions for the purpose of entertaining the American Veterinary Medical Association at its next session, provided it is secured for

Chicago, has, I believe, met with a very liberal support. We have pledged to be paid $577.50. This is without Dr. Hughes' report, he being sick and having turned in no report as yet. So far I have received no response from the commercial houses of this city, but have every reason to suppose they will contribute very liberally to the fund. Dr. Merillat informs me that Houseman & Dunn stated that they would not lag behind in the matter of subscriptions. The West Disinfecting Co., manufacturers of Chloro-naptholeum, say they will contribute any amount called for up to $300, and the Pasteur Vaccine Co. will do as well. Sharp & Smith and Truax, Greene & Co. will help us. I have no doubt we will be able to collect an ample amount, and for my part I can see no reason why we should not go ahead and perfect arrangements for inviting them to this city. The Illinois State Veterinary Association passed resolutions suggesting that their officers invite the American Veterinary Medical Association, their idea being not to send a general invitation, but each association to send a separate invitation stating that they are acting in conjunction with the other society."

Dr. Quitman's statements brought forth a long discussion as to the propriety or advisability of having the invitation a joint one. Some members thought as this society did all the work, collected all the money, and took it on themselves to do the entertaining, they should send the invitation and receive the thanks for it. Others held that as this society was to entertain with money collected from the State Association and from the business and professional men of Chicago and Illinois, outside the Chicago Veterinary Society, it should be a joint affair, and that there should be no feeling of animosity created between the two societies. Dr. Robertson seemed to turn the tide of opinion, however, by stating that the subscription lists had been circulated at the last meeting of the State Society with the result that $185.50 was subscribed by the members present. Nearly every member subscribed something.

Dr. Quitman, the only member of the Committee on Legislation present, had no report to make.

A sharp discussion was started when the Committee on Entertainments was called on for a report. Dr. Clancy, as a member of the said committee, asked to be informed as to the duties of that committee. The by-laws were read by Dr. Hawley.

Several applications for membership were read, but as they had not been acted on by the Board of Censors, and as none of the censors were present, it was moved and carried that the

rules of the society be suspended for the evening and the members voted on by the society as a whole. The licentiate record for the State of Illinois was referred to to ascertain whether or not the applicants were duly registered. The question was brought up as to whether or not it was essential that a veterinarian be registered in order to be eligible to membership. It was asserted and admitted that there was nothing in the constitution of the society to that effect, but as one member stated that according to the present laws of the State of Illinois, any person practicing veterinary medicine in the State of Illinois without being first duly licensed and registered, is a criminal, it was decided that in order to prevent criminals from being admitted to membership iu the society they should first be duly registered as licensed veterinarians. It then became necessary to refer to the records of the Secretary to ascertain whether the vouchers for the applicants were in good standing in the society. "In good standing" was defined as having their dues paid to and including December 31st, 1901. The applicants passed on were as follows: Dr. Albert Rudberg, vouchers Ryan and Campbell, admitted; Dr. Jeffrie, vouchers Walker and Baker, admitted; Dr. Smelley, vouchers Quitman and E. Merillat, admitted; Dr. Frederick W. Buecher, vouchers Merillat and Walker, admitted; Dr. Miller (one of his vouchers not in good standing) held over till next meeting.

Dr. Allen then read the following paper on the subject of

"RESULTS OF NEUROTOMY AND WHY."

"This paper was written principally for the purpose of bringing out a discussion on the results of this well-known operation and the reasons why these results occur. The operation, I think, we all perform in substantially the same manner, some standing, aided by a local anæsthetic, others by casting or on a table. For my own part, I prefer the latter. The three most common neurectomies are the median, the high and the low. I will take the operations in that order.

"*Median.*—Median neurectomy I have performed but seldom, as I consider the cases calling for it are very few. The bad results of this operation in my own practice are none, and I have only observed one, that of a quittor I was called to operate on and which refused to heal at all, although the wound was to all appearances perfectly healthy. I was unaware at the time I operated that median neurectomy had been performed a year before for tendon lameness. I was obliged to destroy the

animal. The high operation is the one I always perform for ringbone and sidebone and generally for navicular disease. I have good results with this operation in these diseases. Low ringbone, especially if the exostosis be towards the front, I consider should not be operated on, as the greatest number of failures from neurectomy in my practice have been from these cases, caused, I believe, by a pressure on the coronary band, between the exostosis and the hoof. The low operation would be the one *par excellence* if it was always successful, but unfortunately it is not, as in many cases the lameness remains and so brings discredit on the operation, the owner always expecting when a horse is unnerved that he must immediately go sound, and then the high operation had to be performed finally. I believe, if the surgeon picks his cases, the unfortunate results so talked about in the high operation will be decreased materially. As to the length of time an animal will last after neurectomy, this is a question we are continually being asked, and we should know how to answer it. The longest time I ever kept track of a case was seven years, and this was a pair of light livery horses which I continually saw and drove for that time. When I last saw them they were still working. The shortest time was five weeks, and this quite recently, in a case of navicular disease, the high operation followed by a rupture of the flexor tendon. Bad results which I have noticed are fracture of navicular bone, rupture of flexor tendons, degeneration of tendons and surrounding tissue, sloughing of hoof either by diseased process or following an injury, neuromas and regeneration of nerve tissues. Fracture of navicular bone I have seen in two cases, both following the low operation, neither in my own practice. Rupture of flexor tendons, two cases, both following high operation, one in my own practice and one in a friend's. Degenerations of tendons and surrounding tissues, one case, following high operation. Sloughing of hoof following high operation, eight cases, five in my own practice. Sloughing of hoof from injuries, about a dozen all told, in my own practice and others. Neuromas.—These are of comparatively common occurreuce, and come, I think, from the use of the animal too soon, sometimes causing great lameness. Regeneration of nerve tissues I have seen in two cases, one in a year and one in about eighteen months.

" I have a few statistics to offer on the results of these operations, as when I first started in practice I had the only table in the neighborhood and three practitioners used to bring their

operations to my hospital, and as there seemed at that time a prejudice among some practitioners at the operation, we kept statistics of all our cases for a period of five years. Out of 480 cases divided into 297 high and 183 low, the fatal cases being 3 high and 1 low. Two of the high operations were for low ringbone, and sloughing of the hoof took place. One for navicular followed with breaking down of the tendons and a low operation for the same thing with the same result. Since that time I have kept no regular statistics."

The lengthy discussion on the subject of neurectomy which followed Dr. Allen's paper, and which was taken part in by Drs. Baker, Robertson, McKillip, Hawley, L. A. Merillat, Quitman, Allen and others, was exceedingly interesting. Each member expressed his views with reference to the high, low and median operations and the special merits of each, showing his reasons for preference and illustrating with examples in his own practice.

Under the head of "new business" it was moved and carried that the Chicago Veterinary Society extend a formal invitation to the American Veterinary Medical Association to hold its next annual meeting in this city. It was suggested by Dr. Baker that the invitation be sent to Dr. Stewart, Secretary of the National body at Kansas City, but that a duplicate be sent to the Chairman of the Executive Committee at the same time. It was suggested by Dr. Quitman that the invitation should have embodied in it the promise that they would be given a royal reception and an all-around good time, should they decide to come here.

The meeting adjourned at 10.30, to meet at McKillip College Hall, 1639 Wabash Ave., at 8 P. M., on the second Monday in January, 1902.

E. MERILLAT, *Sec'y.*

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The eighteenth annual meeting was held at the Trenton House, Trenton, January 9, 1902, and was called to order at 10 A. M. by the President, Dr. Wm. Herbert Lowe, of Paterson.

The following members were in attendance: Drs. A. Brown, of Windsor; T. Earle Budd, of Orange; George E. Fetter, of Hopewell; James T. Glennon, of Newark; G. P. Harker, of Trenton; E. A. Hogan, of Newark; J. B. Hopper, of Ridgewood; L. P. Hurley, of Hopewell; E. L. Loblein, of New

Brunswick; S. Lockwood, of Woodbridge; Wm. Herbert Lowe, of Paterson; J. Payne Lowe, of Passaic; J. V. Laddey, of Arlington; James McDonough, of Montclair; James H. Mecray, of Maple Shade; George W. Pope, of Athenia; Werner Runge, of Newark; T. E. Smith, of Jersey City; A. T. Sellers, of Camden; S. S. Treadwell, of Englewood, and L. E. Tuttle, of Bernardsville. Visitors and delegates present: Dr. Robert W. Ellis, of New York City, President of the Veterinary Medical Association of New York County; Drs. Leonard Pearson and W. Horace Hoskins, of the Pennsylvania Association; J. M. W. Kitchen, M. D., of East Orange, and Dr. T. B. Rogers, of Woodbury.

President Lowe gave his annual address, which was pithy, with good suggestions to committee men and members in general.

Applications for membership were received from Drs. Wm. P. Fink, of Atlantic City; Jacob Bühler, of West Hoboken, and Edward Rowe, Jr., Health Officer for the city of Summit. Applicants were duly vouched for and approved by the Board of Censors and were unanimously elected to membership.

Dr. Werner Runge, chairman, presented the report of the Public Health Committee, which is here given in part:

"Dr. John V. Laddey has prepared a paper entitled 'The X-Ray as an Aid in the Diagnosis of Tuberculosis in Cattle.' Dr. W. Runge will submit a paper entitled 'Results of Experiments to Transmit Tuberculosis of Man to the Bovine Race.' The work of the Public Health Committee is of a broad character and can only be covered in part. The Committee recommends the following resolutions:

"*Resolved*, That the Members of Congress and State Legislatures be requested to provide suitable laws, establishing a commission to be composed of the best men available, empowering said commission to make use of condemned criminals as subjects for experimenting in the transmission of bovine tuberculosis to mankind.

"*Resolved*, That no cattle should be allowed to drink from any polluted pond, brook or river. All public water troughs should be so constructed as to allow constant circulation of the water contained therein; that the overflow of said troughs should be so constructed as to allow all water to flow from the sides of same, thereby carrying off the surface water of said troughs continually.

Resolved, That we, as members of the Association, do hereby declare ourselves as heartily in favor of carrying out the law making it compulsory on the part of all veterinarians to report glanders, whenever it comes under their observation. And we further suggest that the law be carried out stringently and that the party concealing any case of glanders, coming under his observation, be summarily dealt with.

"*Resolved*, That it is the sense of this Association that every city.

town or towhship board of health should have at least one veterinarian on their staff, whose duty it shall be to have charge of contagious diseases of animals and the inspection of meat and milk."

Signed { W. RUNGE, J. V. LADDEY, G. F. HARKER.

In the discussion following the reading of the report special interest centred upon the recommendation made regarding experimental work upon criminals.

Dr. Pearson spoke of the personal responsibility of physicians who experiment upon human beings and, asked if a physician who by injecting bovine tubercle bacilli into a human body and thus causing disease and death be adjudged guilty, what can be said of editors of agricultural papers who have been recommending owners to keep tuberculous cows and use or sell the products from such animals. He believed that public opinion was against experimenting on human beings, that it would prejudice the public against medical men and shake public confidence in them and would be morally wrong. Experiments should be limited to animals.

Dr. Laddey, speaking for the recommendation of the committee, argued that in cases of experiment, as suggested by the committee, the law would place the responsibility upon the State and a physician would be acting for the State and hence not personally responsible for results of any experiment.

Dr. Treadwell argued that such a law could not prevail in this country, where all men are born free and equal.

Dr. Rogers stated that there was danger of a misconception of the fundamental principles of law; that we should remember the objects for which criminals were punished, among these being the protection of society and the reformation of the criminal.

Dr. Kitchen argued that the air which we breathe is laden with germs, and that they are not to be so greatly feared as some might believe; that autopsies reveal the fact that tuberculosis exists or has existed at some period of life in a large percentage of the human family and that it might not be such a serious matter for a person in good health and with great resistive power to subject himself to experiments, and that the State might better pay volunteers than experiment with criminals.

Dr. Hoskins gave warning that such a measure as had been suggested would meet with much adverse criticism in this country, where many persons were even opposed to experimental work upon animals; that any such a radical movement in the profession would be freighted with great danger.

At 1 P. M. the discussion was closed and adjournment taken for dinner.

Upon reconvening the report of the Animal Industry Committee was called for, and was given by the chairman, Dr. J. Payne Lowe, and was in substance as follows:

"Recommended that competent veterinarians be officially connected with all agricultural and live stock fairs, horse and dog shows, and that an animal census of the State be taken.

"Suggested that the subject of transportation of animals be looked into; the cars used for transporting animals, their construction and equipment, light and ventilation, cleanliness, disinfection, manner of feeding, watering and caring for stock are some of the details that the Association should investigate. There are a large number of horses and cows shipped into this State, cows advanced in pregnancy and lost either at time of parturition or afterwards, due to the effect of a retained placenta, metritis, etc., where the cause can be traced directly to rough treatment received and exposure during transportation. There should be a decrease in sickness and death among 'green' horses as a result of improved conditions of transportation.

"Your committee would recommend that all stallions and bulls be periodically examined as to soundness and health by a competent veterinarian appointed by the proper State or county authorities and that before said stallions and bulls be allowed to stand for breeding purposes the owners of such animals be required to produce a certificate of such veterinary examination. There are a number of diseases (such, for example, as osteoporosis in horses) that from an economic and agricultural standpoint concern the people of the State and which the veterinary profession must deal with, and your committee is of the opinion that the State (State Agricultural College and Laboratory) should make original investigations as to the etiology and pathology of this class of diseases.

"We would further recommend that this Association urge upon the proper authorities the necessity of asphalt and similar pavements being sprinkled with sand during the slippery season, as many animals are severely injured by falls, etc.

"This committee would like at a later date to take up the subject of foods and feeding with relation to the application of scientific principles in feeding animals to produce the best and most economic results."

"Signed for the committee, J. PAYNE LOWE, *Chairman.*"

Dr. Budd, chairman of the Committee on Legislation, reported for that committee and recommended that the Association endorse a bill which had been drafted by the committee, said bill providing for the creation of a State Board of Veterinary Medical Examiners to regulate the practice of veterinary medicine, surgery and dentistry in the State of New Jersey.

The bill was read and freely discussed by members and it was finally voted that the committee be authorized to draw upon the treasury for needed funds and assume full charge of introducing the bill in the Legislature.

Dr. Sellers, chairman of the Committee of Arrangements for the Atlantic City meeting, reported for the committee. The report was accepted and the committee discharged with thanks.

Dr. J. V. Laddey, delegate to the State Sanitary Association, reported, and his report was received and filed.

Dr. Wm. Herbert Lowe reported as a delegate to the meeting of the New York State Society.

It was moved and carried that a vote of thanks be extended to the veterinarians of Pennsylvania and New York for the assistance rendered this Association in entertaining the National Association at the Atlantic City meeting.

Drs. Treadwell, Sellers and Budd, appointed a committee on resolutions, presented the following, which were unanimously adopted by a rising vote:

"WHEREAS, God in his wise providence has taken away our brother and fellow laborer, Rush S. Huidekoper, who has for many years been a faithful worker in our profession, be it

"*Resolved*, That we hereby express our appreciation of his high personal character, his wise counsel, his long continued interest in the veterinary profession, and his ever willing and substantial help; with deepest sympathy for his bereaved family, we commend them to God, the only comfort in such an hour of trial; Be it further

"*Resolved*, That a copy of these resolutions be sent by the Secretary to the widow and family of our deceased brother."

J. M. W. Kitchin, M. D., of East Orange, who is interested in the dairy industry, read a paper entitled "Some of the Unsolved Problems of Milk Fever." The paper was well received and quite generally discussed. The conclusion reached was that while the disease was probably caused by ptomaine poison originating in the udder, no one had as yet succeeded in demonstrating the fact positively and that laboratory experiments should be conducted by State and Government with a view of determining the exact nature of the disease, the expense of such experimenting being beyond the reach of the average owner of live stock.

A paper entitled "The X-ray as an Aid in the Diagnosis of Tuberculosis" was presented by Dr. J. V. Laddey, who had been making some practical use of an X-ray machine in the work of inspecting cattle intended for slaughter. Dr. Laddey illustrated his paper by means of ante and post-mortem photographs of animals subjected to the experiment. The paper will be found elsewhere in the pages of this magazine.

The Public Health Committee was requested to secure if possible an X-ray apparatus for use at the next meeting.

Dr. Werner Runge reported some personal experiments con-

ducted by him during the past few months and his report, which is of great interest, is here given in full:

REPORT OF DR. WERNER RUNGE'S EXPERIMENTS IN INOCULATING CATTLE WITH THE BACILLI OF HUMAN TUBERCULOSIS.

To the President and Members of the Veterinary Medical Association of New Jersey,

GENTLEMEN:—The statement made by Prof. Koch, M. D., at the British Congress on Tuberculosis. held in London, Eng., June 23d, 1901, that human tuberculosis cannot be transmitted to the bovine race is an error and without any practical foundation. It has not only aroused the profession in general, but medical and laymen have become more or less interested in the matter. In view of these facts the members of our profession should use their utmost efforts in investigating the above statement.

Through the kindness of Mr. Stephen Francisco, of the Fairfield Dairy, Caldwell, N. J., cattle have been placed at my disposal, as well as the use of the Isolation Hospital at said dairy, for experimental purposes. Also through the valuable aid of Dr. R. N. Connolly, Bacteriologist for the Newark Board of Health, I was assisted in seleeting a specimen of virulent sputum of a young person affected with acute tuberculosis.

On August 14th last, I selected a yellow cow that gave no reaction to retest nor had it done so to a previous tuberculin test made Nov. 12, 1900, and injected the same hypodermically on August 29, 1901, with the above-mentioned sputum. At both shoulders and both flanks I made also four injections into a five weeks' old calf, born in the pasture lot and kept in said lot until the day of injection, whose mother previous to the birth of said calf gave no reaction to the tuberculin test. As all cattle of this dairy, about 600 in number, are tested previous to their coming into the herd, and are rejected if they give any reaction at all, it is reasonable to believe that this calf was free from tuberculosis, as it had never been exposed to the same. The temperature of both animals taken twice daily after the injection of the sputum did not show anything abnormal, and no symptoms of any disease were revealed except some enlargement of the retro-pharyngeal glands.

The calf was killed Nov. 14, 1901, 11 weeks after injection.

The cow was killed Nov. 20, 1901, about twelve weeks after injection.

The post-mortem showed the following lesions:

The calf killed Nov. 14 did not show any marks at the place of injection, but enlarged tubercular bronchial glands, several of which were broken down and calcareous. A large number of gray nodules were visible in the lung tissue, also one cyst about the size of a small hen-egg and full of pus.

The microscopical examination of the scraping of the walls of the cyst as well as the scraping of the interior wall of the broken-down gland showed the bacilli of tuberculosis in large numbers.

The cow killed Nov. 20 had a large cyst full of pus at the right shoulder and an induration of the tissue on the left side at the places of injection. The bronchial glands were enlarged and partly broken down and full of calcareous substance.

The microscopical examination of the scraping of the interior of the wall of said broken-down glands also showed tubercle bacilli.

Respectfully submitted, (Signed) WERNER RUNGE.

Fellow members expressed their appreciation of Dr. Runge's efforts in experimental work, and among those who joined in the discussion were Drs. Pearson, Hoskins, Kitchin and Rogers.

Dr. James McDonough, of Montclair, here read a paper entitled "The Horse's Foot." Dr. McDonough's paper was well written and upon a subject with which he is especially conversant. As the hour was late it was voted that a discussion of the paper be deferred until the next meeting.

At 5.30 the meeting adjourned. Next meeting to be held at Newark in July. GEORGE W. POPE, *Secretary.*

THE SOCIAL SIDE OF THE MEETING OF THE VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The literary side of the above association meeting, at Trenton, N. J., on Jan. 9, was so replete with good things, which were so ably dealt with, by some of the best talent that our country boasts (all of which our readers will be furnished with elsewhere by Secretary Pope), that we feel that it will not detract in any way from the dignity of the occasion to make brief mention of the social side. We were fortunate in participating in both the literary and social treats, through a determination to head a delegation from New York, to visit this New Jersey Association, at its next meeting, in token of appreciation of the efforts, and result of said efforts, upon the social and clinical aspect of the A. V. M. A., at Atlantic City, by its President and the committees appointed by him. This determination, actuated by this feeling of appreciation, was reached *en route* from Atlantic City to New York at the termination of the National Convention, and given expression to in the presence of several New York veterinarians, who approved of it. Our determination, although taken thus early, never wavered, notwithstanding the fact that the delegation, at the eleventh hour, had become so insignificant that it could be counted on the first finger of one hand. And we went, and were not sorry for it either. When we boarded the 8.15 A. M. train we discovered that President Lowe, whom we had planned to meet in the Pennsylvania depot, was already on board, with a goodly number of members from Paterson, Passaic, Orange, Newark, Ridgewood, Jersey City, Garfield, Montclair, and perhaps from many other places that we did not know. After reaching the hotel, we were presented to a distinguished M. D., Dr. Kitchen, of East Orange, who for some years past has been devoting his energies to

the scientific breeding and feeding of Jersey cattle; who subsequently read a paper on "Parturient Paresis," and who talked like a "past-master" in the art when discussing "dietetics." But this is not the social side, although the last mentioned subject may bear some relation to it. Shortly after the President had delivered his address, a delegation from Pennsylvania arrived in the persons of Drs. Leonard Pearson and W. Horace Hoskins. As I have elected to narrate the social side, and am leaving all the good things that took place within the assembly hall for the Secretary to portray, we must pass over the three hours from the time of our arrival at the hotel at 10 A. M. to 1 P. M. (devoted principally to legislative matters) to adjournment for luncheon. At this juncture the guests were invited by the President to accompany the members to the dining hall of the Trenton House, in which the meeting was held, where, entering a few minutes late, we found about thirty happy looking gentlemen seated, and a chair reserved for us at the President's left, Dr. Pearson occupying that at his right. The informal and cheerful conversation, after the perplexing questions of the morning, did much toward making the hour a pleasant one, and preparing the minds for the reception of the good things yet in store. At 2 P. M. the meeting reconvened, and from that time until five o'clock we enjoyed the excellent papers and discussions presented, when there was a sudden and somewhat precipitous exit from the assembly hall, the 5.47 train being the object of the moment. With one or two exceptions it was reached in time, and the social side of the meeting was renewed, and informal conversation again resumed by the little group which continued to grow less at each station at which the train stopped until we reached Jersey City, when we found our New York delegation to be all that remained, as we stepped aboard the ferryboat, and reflected upon the success of the meeting. And right here we will say that had we not taken a strong resolution to confine ourself to the social side of this meeting, we certainly would have broken out once or twice, as our enthusiasm over the literary side would flash up, as our thoughts would recall certain things—notably the paper of Dr. Laddey, member of the "Public Health Committee" of the Veterinary Medical Association of New Jersey, and probably the youngest man in that assembly hall, whose original work on the use of the X-ray as an aid in the diagnosis of tuberculosis in cattle, illustrated by photographs and radiographs, received the commendation and approval of no less an authority than

Prof. Pearson, Dean of the Veterinary Department of the University of Pennsylvania, recently returned from a sojourn through Europe, where he has visited the famous laboratories of bacteriology and eleven veterinary schools, who, at the request of President Lowe, closed the discussion on tuberculosis. We need not tell those of you who have been fortunate enough to listen to Dr. Pearson that it was a literary treat; and the fact of his recent visit abroad added to its interest. He also confirmed the very interesting report of the chairman of the Public Health Committee, Dr. W. Runge, of Newark, who read a most interesting paper relating the details of his experiments in the transmission of tuberculosis from man to animals. The memory of these papers and discussions and other good things, are a temptation to treat on the literary side, as well, but we have purposely avoided doing so, that REVIEW readers may get it first handed, from the papers and from the accurate notes of Secretary Pope. R. W. E.

ONTARIO VETERINARY ASSOCIATION.

The annual meeting of this association was held in the Ontario Veterinary College, Toronto, Canada, on Friday, Dec. 20.

In the absence of the President, Dr. H. Wende, V. S., the First Vice-President, Dr. J. H. Tennant, took the chair, opened the meeting at 11 o'clock and after a few preliminary remarks called for the usual routine of business, viz., the reading of the minutes of the previous meeting, the Secretary-Treasurer's and Auditor's reports, which were read and approved.

The following new members were duly proposed and accepted: Messrs. W. J. R. Fowler, V. S., C. Brinel, V. S., J. H. Engel, V. S., A. D. Stewart, V. S., and R. A. Milne, V. S.

A number of communications were then read.

It was then moved by Dr. O'Neil, seconded by Prof. Reed, of the Guelph Agricultural College, and resolved that the Secretary be instructed to write to Mrs. R. S. Huidekoper and express to her and family the deep sympathy of the members of this association with them in the sad loss they have sustained by the death of the late eminent veterinary surgeon, R. S. Huidekoper.

The meeting then adjourned to meet after luncheon.

The President, Dr. H. S. Wende, opened the meeting after lunch, and explained his absence earlier being in consequence of the non-arrival of his train on time, and after a short address called for the reading of papers.

Prof. J. H. Reed described a case of urethral calculus in a gelding. He removed it by surgical operation. This was followed by considerable swelling of the penis, which soon subsided. A short time afterwards another calculus appeared in the urethra; this one was much larger than the first. He removed this also by a similar operation. Both calculi were situated near the ischial arch. There was some constriction of the urethra following the operations. But complete recovery resulted.

Dr. Orr Graham read a paper on "Œdema of the Tongue of the Horse," of which he had seen some cases. The conditions were rapid swelling of the tongue, so great that it completely filled the cavity of the mouth, pressing the jaws widely apart and the tongue protruding some distance, accompanied by an abundant discharge of fluid from the mouth and nostrils. In two instances the animals died from suffocation. The disease came on very rapidly and without any cause that he could discover. When the swellings began to recede, the recoveries were rapid and permanent.

Dr. S. E. Boulton read an excellent paper on the necessity for observing kindness and gentleness in the treatment of our patients, and although severe and painful operations may sometimes be necessary, everything possible should be done to alleviate pain and obviate suffering.

Dr. D. K. Smith, professor of pathology and microscopy at the Ontario Veterinary College, read a very useful and practical paper on preserving and preparing pathological specimens. He gave demonstrations of the use of the microtome, also of staining and mounting microscopic specimens.

Dr. W. J. Wilson read a paper on the treatment of tetanus. He claimed that "serum therapy" has not brought the good results that its advocates anticipated—and he explained his own mode of treatment.

The reading of the papers was followed by interesting discussions upon them, in which many members participated, and it was resolved that the thanks of the meeting be tendered to those gentlemen who had contributed to the interest of the meeting by reading the papers.

The sum of $25 was appropriated for a medal to be competed for by the students of the Ontario Veterinary College at the approaching spring examinations.

The Secretary was instructed to send post cards to all duly qualified veterinary practitioners in Ontario, who have not reg-

istered in accordance with the Act of Incorporation of the Ontario Veterinary Association, requesting them to register. Also he was instructed to get a number of new copies of the Ontario Veterinary Register printed.

The following gentlemen were appointed to read papers at the next annual meeting: Messrs. L. A. Wilson, J. D. O'Neil, W. J. Wilson, S. E. Boulter, R. A. Milne, C. Brind, Drs. D. K. Smith and J. H. Tennant.

The following is the list of officers for the ensuing year:

President—J. H. Tennant.

First Vice-President—W. Steele.

Second Vice-President—W. Lawson.

Secretary-Treasurer—C. H. Sweetapple.

Directors—S. E. Boulter, L. A. Wilson, C. Brind, J. H. Engel, J. H. George, F. G. Hutton, R. A. Milne and F. Daly.

Auditors—C. Elliott and J. H. Reed.

Delegates to the Industrial Fair, Toronto—Prof. A. Smith and C. Elliott.

Delegates to the Western Fair, London—Messrs. J. H. Tennant and J. D. O'Neil. C. H. SWEETAPPLE, *Sec'y-Treas.*

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The words of President Ellis, quoted in the January REVIEW, were probably more prophetic than even this sanguine and enthusiastic veterinarian had imagined them—"We must fill that room this winter." He probably did not believe that the first meeting held after that bold and determined assertion would witness the lecture-room of the New York-American Veterinary College filled as it never was before at a meeting of this society, and by some who are seldom seen at a gathering of this nature. Another outcome of this was the remark heard on all sides that they had no idea that so much of interest was transacted, and so much was to be learned. The interest centred in a surgical clinic, arranged largely through the energy of Dr. Ryder, who guarantees a programme of equal importance for the February meeting.

The meeting was called to order by President Robert W. Ellis, January 3, at 8.15 P. M., with the following members and visitors in attendance:

Drs. S. Atchison, Burns, P. F. Bergen, J. F. Budd, O. Barnett, Jr., David W. Cochrane, J. S. Cattanach, George Cohen, W. D. Critcherson, C. E. Clayton, Edgar Chambers, Cyrus W.

Du Bois, T. E. Delaney, Robert Dickson, Thomas Doyle, Eason, Wm. H. Edson, R. W. Ellis, W. J. Finn, H. D. Gill, F. C. Grenside, G. J. Goubeaud, Hough, A. M. Heard, W. H. Hayes, Elishu Hanshew, D. Hildebrant, R. C. Jones, Theo. A. Kellar, Louis H. Kraus, A. C. Knapp, M. A. Livingston, A. M. Leek, Robert W. McCully, George W. Meyer, W. J. McKinney, L. Nicolas, F. D. Owen, A. E. Parry, Purcell, J. E. Ryder, Andrew Strange, Shaw, Charles Schroeder, Herman Stark, Moffet Smith, and G. W. Taylor.

The minutes of the preceding meeting were read and approved.

Dr. Gill asked that the duties of the Judiciary Committee be defined, and also that individual members give this committee their earnest support in the prosecution of illegal practitioners.

Dr. Ryder reported that the clinical programme was ready for the evening, that the subjects and operators were on hand.

Under the head of "new business," Dr. Gill made a motion that this association draft a request to the Board of Health that all appointments for meat inspection should be graduates of veterinary medicine. Seconded by Dr. Goubeaud, and carried.

Dr. Gill moved that a set of resolutions on the death of Dr. R. S. Huidekoper be drawn up and recorded in the minute book. Seconded and carried. President Ellis appointed as a committee to draft resolutions, Drs. Gill, Sherwood and Dickson.

The meeting now adjourned to the operating room of the college, where the following operations were witnessed:

Overectomy in a mare—Dr. J. E. Ryder.

Peroneal tenotomy—Dr. R. W. McCully.

Tarsal tenotomy—Dr. C. W. DuBois.

Passing stomach tube through nasal cavity—Dr. R. W. McCully.

Passing the seton probe—Dr. J. E. Ryder.

Adjourned. C. E. CLAYTON, D. V. S., *Secretary.*

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The January meeting was held at N. W. cor. Broad and Filbert Streets, Philadelphia, Pa., January 14th, 1902, with the following members of the profession in attendance: Drs. Cox, Harger, Williams, Carter, Underhill, Lintz, Marshall, Noack and Ranck, also about 20 students of the Veterinary Department, University of Pennsylvania. After the regular business was trans-

acted we listened to valuable papers by Dr. C. J. Marshall and Dr. S. J. J. Harger.

The object of Dr. Marshall's paper in part was to prevent our brothers in the veterinary profession from making flippant remarks, either to other member of the profession or to our clients, about the uselessness of certain drugs, instruments or operations, especially those which have stood the tests for hundreds of years and proved themselves useful in the hands of skilled men. The incentive for Dr. Marshall writing this paper was certain unqualified statements made at the last meeting of the A. V. M. A. in the discussions. One was that "90 per cent. of the drugs we use in our practice is a fake." Another one was "that the firing iron should never be used." Dr. Marshall would like to know whether the veterinary profession is ready to accept these statements, and, furthermore, if we accept them as facts, then in his opinion it is about time to revise the pharmacopœia.

The next paper, which was very educating to all, was the "Anatomo-pathologic Study of Ringbone and Spavin as Indicated by Examination of Pathologic Specimens." *

E. M. RANCK, *Secretary.*

MAINE VETERINARY MEDICAL ASSOCIATION.

The annual meeting of this association was held at Hotel North, Augusta, January 9th, with President Dr. A. Joly in the chair. Among those in attendance were Drs. A. Joly, Waterville; I. L. Salley, Skowhegan; F. E. Freeman, Rockland; C. L. Blakely, Augusta; A. B. Fairbanks, and J. G. Goddard, Lewiston.

The address of the retiring President, Dr. Joly, was well received, as was that of the Secretary, Dr. Freeman. President Joly spoke as follows:

"*Fellow Veterinarians:*

"In 1893 the Maine Veterinary Medical Association was founded, and I wish to consider with you, gentlemen, what it has accomplished during nine years of existence and its standing of to-day.

"It began with a small membership, but kept increasing each year; still it has not the number of members it ought to have. It seems to me that every veterinary surgeon in the State should belong to it, yet it has only about two-thirds of the whole number.

* Dr. Harger's paper will be published in the March REVIEW.

"However, with a small membership we have done something; we have met regularly every three months, have become better acquainted with one another, have exchanged ideas, discussed many valuable papers and we have had some important clinics.

"The veterinary profession is better known to-day, the public is beginning to appreciate our work; we find veterinarians in many parts of the State filling municipal offices, either as milk inspectors or as members of the local board of health. The Maine Board of Cattle Commissioners admitted in their last report that their good work depended upon the coöperation with veterinarians of the State.

"The standing of the Maine Veterinary Medical Association to-day, compared with other States of about the same number of veterinary surgeons, is good. Of course, it could not be possible to realize all that we tried to accomplish. For eight years we have endeavored to get a veterinary bill through the legislature; to be sure, we failed, but our courage and convictions must be kept up. If we expect a protection law from the public we must do something for the public in order to be entitled to some recognition. It is true we guard the public in our respective localities, to a certain extent, against contagious diseases communicable to men; but is it appreciated at its real value? I doubt it.

"I think every veterinarian should become a granger, and try his best to be of some benefit to his brother granger in his locality; he might take an active part in the lodge, by preparing careful, instructive papers on some subject important to the farming element; such as veterinary hygiene, proper feeding, care of stock, etc. It seems to me that much good could be done by closer association with our friend, the farmer, and we can do it by joining our local granges, and I hope that next year we will meet not only as brother veterinarians but also as brother grangers.

"Much has been *said* at our meetings about the inspection of cattle for Brighton market, and nothing has been *accomplished.* Since 1895 the State of Massachusetts requires the tuberculin test trom all neat cattle shipped to their markets, For four years I believe a proper inspection was made, but for the last three years we all know that it has been, and is to-day. nothing but a farce. We know that about seven-eighths of the cattle shipped to Massachusetts are certified by non-graduates, and, furthermore, we know that such certificates are manufactured,

that is to say, no tuberculin test is applied at all. Such a state of things is a disgrace to the veterinary profession, misleading and fraudulent to the buyers of cattle in the State of Massachusetts. This farcical inspection still costs something, may be twenty-five to fifty cents per head of cattle, and who has to pay for it? The farmer, which is a part of the public; and, brother veterinarians, as I said before, if we want the public to enact laws recognizing the veterinary profession, it is our duty to do something for this same public. Let us take measures to stop this imposition and we can do so by joining granges (if they are willing to accept us), and once a granger, we can have the grangers of Massachusetts to have their legislature investigate the matter, for I am sorry to be obliged to say that the Cattle Commissioners of Massachusetts are looking for their salaries first, the performance of their duties being of secondary importance, and I am told on good authority that it matters little how the inspection of cattle is done. Knowing this condition of things as we know it, are we going to keep quiet? If so we had better disband at once. Our duty as a body, as a profession, requires us to act immediately. 'Better late than never.' Let us inform the public through the medium of the press, let us show the incompetency or dishonesty of the Cattle Commissioners of the State of Massachusetts, for imposing a tax on our neat cattle which, honorably, benefits *nobody*.

"In closing, I thank you for the honor you have bestowed upon me in electing me twice your President. I thank you for your coöperation in the advancement of the veterinary profession, and let us double our efforts to bring our noble profession to its proper standing."

The following officers were elected for the ensuing year:

President—I. L. Salley, Skowhegan.

Vice-President—F. W. Huntington, Portland.

Secretary—C. L. Blakely, Augusta.

Treasurer—Sherman Cleaver, Bar Harbor.

Executive Committee—F. L. Russell, F. E. Freeman, and A. Joly.

Dr. I. L. Salley reported a number of very interesting cases, which resulted in a lively discussion.

It was voted to hold the next meeting at Waterville in April, with a clinic at Dr. A. Joly's hospital.

F. E. FREEMAN, *Secretary*.

THE REVIEW wants all associationists to read it carefully.

GENESEE VALLEY VETERINARY MEDICAL SOCIETY.

The annual meeting was held at the Livingston Hotel, Rochester, N. Y., Jan. 17, 1902, it being one of the most interesting in the history of the society. The meeting was called to order at 11 o'clock by President Dr. T. S. Rich, of Avon, N. Y., and the following members responded to roll-call: W. G. Dodd; Canandagua; P. I. Johnson, Williamson; G. C. Kesler, Holley; N. N. Leofler, Geneseo; J. C. McKenzie, Rochester; T. S. Rich, Avon; W. E. Stocking, Medina; J. E. Smith, Webster; A. George Tegg, Rochester; Leroy Webber, Rochester; D. P. Webster, Hilton; W. J. Payne, Fairport; A. McConnell, Brockport.

Following the usual routine of business came the election of officers for the ensuing year, which were as follows:

President—O. B. French, Honeoye Falls.

Vice-President—G. C. Kessler, Holley.

Secretary—W. E. Stocking, Medina.

Treasurer—Leroy Webber, Rochester.

The meeting then adjourned until 2 P. M. At the afternoon session came the reading of papers. Dr. Taylor's paper on "Acute Indigestion and Flatulent Colic" was a very excellent paper, and was well received and discussed.

Dr. Kessler opened discussion on the use of external applications in various diseases, which brought forth a considerable interchange of ideas, which was very interesting.

Dr. N. N. Leofler's subject, "Nasal Gleet," in which he reported a case of very complete impaction of the sinuses with a thick cheesy pus.

Dr. P. I. Johnson presented a specimen of rupture of the extensor pedis tendon in a young colt, two days old, it being an excellent specimen and well prepared.

After a lively discussion on various other subjects relating to the profession, the meeting adjourned to meet in July.

W. E. STOCKING, *Secretary.*

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The annual meeting of this association will be held in Philadelphia on March 4 and 5, 1902.

The officers and committees are as follows.

President—S. J. J. Harger, 205 N. 20th St., Philadelphia, Pa.

First Vice-President—W. L. Rhoads, Lansdowne, Pa.

Second Vice-President—M. Moriarty, Gettysburg, Pa.
Third Vice-President—C. W. Boyd, Pittsburg, Pa.
Treasurer—Francis Bridge, Philadelphia, Pa.
Recording Secretary—C. J. Marshall, 2004 Pine St., Philadelphia, Pa.
Corresponding Secretary—E. M. Ranck, 422 N. 41st St., Philadelphia, Pa.
Committee on Legislation—M. E. Conard, West Grove, Pa., Chairman; J. W. Sallade, Pottsville, Pa.; J. C. McNeil, Pittsburg, Pa.; Otto Noack, Reading, Pa.; Benj. Underhill, Media, Pa.; W. Horace Hoskins, Philadelphia, Pa.; F. F. Hoffman, Brookville, Pa.
Committee on Intelligence and Education—Jacob Helmer, Scranton, Pa., Chairman; J. W. Adams, Phila., Pa.; Geo. Magee, Uniontown, Pa.; B. F. Senseman, Philadelphia, Pa.; H. P. Keely, Schwenksville, Pa.; C. Goentner, Byrn Mawr, Pa.; J. Butterfield, South Montrose, Pa.
Committee on Sanitary Science and Police—C. C. McLean, Meadville, Pa., Chairman; R. G. Rice, Towanda, Pa.; J. M. Courtright, Clark's Green, Pa.; H. S. Jackson, Sewickley, Pa.; Charles Williams, Philadelphia, Pa.; C. J. Marshall, Philadelphia, Pa.; J. B. Irons, Erie, Pa.
Committee on Animal Husbandry—Geo. B. Jobson, Franklin, Pa., Chairman; W. H. Ridge, Trevose, Pa; A. W. Radley, Bethlehem, Pa.; Leonard Pearson, Philadelphia, Pa.; J. C. Michener, Colmar, Pa.; E. C. Porter, New Castle, Pa.; W. H. Fry, Pine Grove Mills, Pa.
Trustees—Leonard Pearson, Chairman, Philadelphia, Pa.; W. Horace Hoskins, Philadelphia, Pa.; H. B. Felton, Olney, Philadelphia, Pa.; Thomas B. Rayner, Chestnut Hill, Pa.; N. Rectenwald, Pittsburg, Pa.
Local Committee of Arrangements—Drs. C. J. Marshall, W. L. Rhoads, and E. M. Ranck.

IOWA STATE VETERINARY MEDICAL ASSOCIATION.

The fourteenth annual meeting of this association will occur at the Savery Hotel, Des Moines, on Tuesday and Wednesday, Feb. 11 and 12, for which the following programme is announced by Secretary Repp:

Reports of Cases.—"Anthrax in the Horse," W. Hamilton; "Chronic Atrophic Orchitis in the Bull," H. C. Simpson; "Ravages of the Strongylus Tetracanthus," S. H. Kingery; "Urethral Calculus and Paralysis of the Penis," E. G. Marten;

"A Cow Case," G. P. Statter; "Typhoid Fever in a Horse," L. U. Shipley; "A Case in Practice," A. H. Quin; "Impaction of the Small Colon," J. Vincent; "Report of a Case," J. Thomsen.

Papers.—"Abortion in Cows," P. Malcolm; "Amputation of a Bull's Penis," G. M. Walrod; "Parturition Cases," W. Drinkwater; "Obstinate Constipation," J. W. Griffith; "External Ulcerative Ano-Vulvitis," S. T. Miller; "Rabies," D. E. Baughman; "Symptoms of Rabies," S. H. Johnston; "The Trials of the Veterinary Board," H. E. Talbot; "Cæsarean Section," H. L. Stewart.

A surgical clinic will be held in the forenoon of the second day, and a number of instructive operations have been assigned to well-known surgeons. Besides the above programme there will be volunteer papers and important committee reports.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

The Executive Committee has elected Minneapolis, Minn., as the place for holding the annual meeting of 1902. Never did men work harder to bring the association to their city than did the veterinarians of Minneapolis. Everybody seemed to call for it—from the Governor down, and the association may expect a royal welcome when they reach this beautiful northwest city next September.

President Winchester has appointed the following Committee on Pharmacopœia: L. A. Merillat, Illinois, chairman; E. L. Quitman, Illinois; D. King Smith, Canada; E. M. Ranck, Pennsylvania; H. D. Hanson and Roscoe R. Bell, New York.

NEWS AND ITEMS.

DR. J. O. GEORGE, of Camden, N. J., is erecting a veterinary hospital.

MINNEAPOLIS, Kansas City and Chicago solicited the 1902 meeting of the A. V. M. A.

DR. H. C. BABCOCK and Dr. N. V. Boice have recently been transferred from Sioux City to Kansas City.

DR. Z. VELDHUIS, of Freemont, Mich., is taking a post-graduate course at the Kansas City Veterinary College.

JOHN P. WOOD, M. D., of Coffeyville, Kan., who is still in active practice, celebrated his one hundredth birthday on Jan. 5.

He is believed to be the oldest practitioner of medicine in the world.

THE following figures are from the last census: Iowa stands at the head of horse-breeding States, with 1,401,427 horses; Illinois second, with 1,344,784, and Texas third, with 1,266,000.

DR. J. W. CONNOWAY, of the Experiment Station at Columbia, Mo., spent some time during the month of December in Texas, introducing to that State a number of pure-bred cattle, which had been rendered immune to Texas fever.

Dr. A. J. SHELDON, of Boston, Mass., who has been in active practice there for a number of years, and at the same time lecturing at the Veterinary Department of Harvard University, has abandoned veterinary medicine for business pursuits.

DR. CHARLES H. JEWELL (N. Y. S. V. C., 1900), formerly of Dunkirk, N. Y., took the civil service examination for meat inspector under the Bureau of Animal Industry on Oct. 22, and received an appointment Dec. 24, being assigned to duty at Kansas City.

DR. ALBERT LONG, an inspector in the B. A. I. service, has been transferred from Kansas City to Boston. During the doctor's three years' stay in Kansas City, he has made many lasting friendships, and will be greatly missed by a wide circle of friends.

DR. W. G. HOLLINGWORTH, of Utica, N. Y., has just completed a very fine operating room, making this addition to his already fully equipped hospital, also enlarging the canine and feline department. Dr. W. A. Young, A. V. C., is house surgeon. The hospital is located at 229 Jefferson Avenue.

DR. GEO. R. WHITE (Columbian University, '97), and Dr. Joseph Plaskett (McGill University, '92), have formed a partnership under the firm name of White and Plaskett. They have just completed the erection of the Nashville Veterinary Hospital, 24 Bridge Avenue, which is probably the largest as well as the best equipped Veterinary Hospital in the South. Dr. White continues to serve as City Veterinarian of Nashville.

DR. VICTOR A. NORGAARD has resigned his position as chief of the Department of Animal Pathology, in the Bureau of Animal Industry, and has been succeeded by Dr. Jno. R. Mohler. While Dr. Mohler is a young man, his rapid rise in the Department of Agriculture has doubtless been the reward of merit, as he has proven a most capable and earnest worker in whatever position he has been assigned.

PUBLISHERS' DEPARTMENT.

Subscription price, $3 per annum, invariably in advance; foreign countries, $3.60; students while attending college, $2; single copies, 25 cents.

Rejected manuscripts will not be returned unless postage is forwarded.

Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address.

Alex. Eger, 34 East Van Buren St., Chicago, Ill., Veterinary Publisher and dealer in Veterinary Instruments, Books, and Drugs, is the authorized agent for the REVIEW *in Chicago and the Middle West, and will receive subscriptions and advertisements at publishers' rates.*

AIR-CUSHION HOOF PADS.—INFRINGEMENT NOTICE.—The Revere Rubber Co., of Boston, manufacturers of the celebrated pads bearing the name "Air-Cushion," have entered suit against the Consolidated Hoof Pad Company in the United States Supreme Court for an injunction and accounting of profits and damages for their infringement of the Kent patent of March 27, 1900, by the pad which the latter company has placed on sale under the name "Air-Cushion." The Revere Company give notice that "all who deal in or use infringing pads are infringers, and are liable to injunction and for damages equally with the manufacturers thereof."

A SLIGHT CHANGE in the ad. of Charles Marchand, this month, means *no change* in the value of his product from the time you begin the bottle until you have finished it, due to the "New Stopper," there illustrated.

IN these days when the practice of veterinary medicine without a hypodermic syringe is practically impossible, Parke, Davis and Company's "Necessary Equipment," appeals very strongly to the needs of veterinarians.

COLORADO LIVE-STOCK COMMISSION.

"I have used Zenoleum for scab on sheep and mange on cattle and consider it the best and cheapest remedy upon the market.

SOL. BOCK, V.S., State Veterinarian.

THOSE VETERINARIANS who have not used "Red Ball Brand Stock Food" have failed to secure one of the greatest aids to a general practice for the purposes specified in their advertisement.

REVIEWS WANTED.

The publishers will pay 25 cents each for copies of the April, 1901, issue. Address, Robert W. Ellis, D. V. S., Bus. Mgr., 509 W. 152d Street, New York.

AMERICAN VETERINARY REVIEW.

MARCH, 1902.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

CONTAGIOUS PLEURO-PNEUMONIA.—Remarks upon this subject may be of secondary importance to our American colleagues, the disease having been wiped out so thoroughly and so carefully kept away by our Bureau of Animal Industry, and yet for many there are still facts of interest to know, and it is in that direction that Prof. Nocard, after his great discovery of the microbe of pleuro-pneumonia, sets himself to work.

An important question, and one of the most interesting points in the history of the disease, was that in relation to the modes of contagion. How does the infection take place? How are the organisms of those which are near the sick animals invaded by the contagious element?

The pleuro-pneumonia animal coughs frequently; it then throws quantities of fine droplets of mucus, which float in the atmosphere or drop on the solid or liquid food of its neighbors: those droplets are no doubt the principal agents of contagion. But how do they enter the organism? By the digestive apparatus or through the respiratory channel?

These questions have just been answered by a series of experiments, and the firm conclusions of Prof. Nocard are that it is by the respiratory organs that the infection takes place; that the ingestion of virus, even in large quantities, does not give the disease, and does not confer immunity against a natural experimental attack.

Immunity against such a disease is an important matter; and for a long time it has been admitted that intravenous injection of pleuro-pneumonia virus confers a great protection, a lasting immunity. This has also been the object of experiments, but the results have been entirely different from those that were expected, and which had already been declared as positive by others. In three series of experiments where the injection of liquid virus or of cultures of the microbe was made in the jugular, or in the auricular vein, none of the eight cows experimented upon received immunity; the injection did not modify in any way the receptivity of the animals.

While I mentioned cultures in the preceding experiments, I may also state that those cultures are almost entirely used for the obligatory vaccination in France. They take the place of the practice of vaccination with serosity obtained from the diseased lung—serosity which was more or less suspected of impurities, and which often gave rise to severe complications, which, in fact, have been for so many the greatest objection to vaccination. It seems that by the use of pure cultures scarcely any complications can occur.

Is it due to their use that at last France has been relieved of the disease? Some of the last monthly sanitary bulletins report no cases. Not likely. In many outbreaks the pole-axe has been the main liberator. But there seems to be a special indication for the use of the preventive inoculation. It is this: Upon the frontiers, principally those of Spain and France, there exists at some period of the year a kind of traveling among the cattle, that is to say, fields of pasture are offered to French cattle on Spanish ground. These cattle, in healthy condition, come in contact with diseased Spanish cattle, and when they return home they carry with them the germs of the malady; hence almost yearly outbreaks. To resort to the pole-axe every year would be an enormous expense, and after all would prove not only useless, but a great danger. To guard against this, by advice of the Commission of Epizoötics, the preventive inoculation with the use of fresh and pure cultures is recommended for all

bovines which are to cross the Spanish frontier. Thus rendered refractory to the disease, they could not bring the germ back into their own barns.

* * *

FOOT-AND-MOUTH DISEASE.—For several weeks there has been no question of greater importance in the Italian agricultural papers and among veterinarians than the treatment of this disease by the method invented by the present Secretary of Agriculture, Dr. Bacelli.

This subject is not interesting to American veterinarians to the same degree as to Europeans. Foot-and-mouth disease does not exist in the United States. Dr. Salmon and his body of coworkers are watching—but yet, who knows? At any rate, a few remarks on the subject may not be without interest.

Before becoming Secretary of Agriculture, Dr. Bacelli was a simple but well-appreciated practitioner. It is to him that credit is due for the use of heroic remedies injected into the blood to obtain more certain and quicker effects, especially in some infectious diseases. Malaria, among others, offered the opportunity for wonderful effects by this mode of treatment. Salts of quinine, injected into the pernicious form of that disease, reduced to zero the mortality among his patients. Many other applications has Dr. Bacelli made known by the numerous and remarkable results he has obtained. When he reached the Agricultural Department he found that foot-and-mouth disease existed to an enormous extent in Italy, as, in fact, it has for some time back in all Europe. Remembering the good results he had obtained by injections of corrosive sublimate, he decided to have them tried for foot-and-mouth disease. He called his official veterinarian, fixed the dose according to the disease to from 2 to 4 centigrams for calves, 4 to 6 for adult cows, 6 to 8 for large steers and bulls, and the experiments were started. First, they were made on 52 sick animals. Most of them required only two injections, a few had to get three, and all recovered in a very short time. Another trial was made in a district where the disease was most fatal; in 26 animals the result was the same.

And since then the "*cure Bacelli*" is the question of the day. It has been used by many veterinarians, and our worthy contemporaries, *La Clinica Veterinaria*, *Il Nuovo Ercolani* and *Le Giornale della Reale Societa ed Academia Veterinaria*, have given the hospitality of their pages to the many articles written upon the subject.

The results are of so much importance that the Italian Secretary of Agriculture has decided to apply it at the expense of the State in some special districts.

* * *

PROF. CROOKSHANK'S SOUND ADVICE.—It is customary in England for one of the professors to deliver an opening address in the various veterinary schools. In America the same custom exists also; at least, in some, if not in all. But in England those addresses are usually published; in America they are not in recent years, at any rate. Why?

There are often interesting points to notice in those remarks; they do not always relate to dry subjects, or to scientific allusions; but for many they serve as a means of introduction of each professor to his entering class and contain sound advice to the new students.

The last opening address of the Royal College of Veterinary Surgeons of London by Professor Crookshank was a very interesting one, and one of the passages, where he speaks of the grand question of education, preliminary and higher, and in relation to the one, while dwelling upon the advantages that would be derived by the student of possessing knowledge of foreign languages, especially French and German, he says: "I do not require to be told that the veterinary surgeon has to think first of making a living. I am quite aware of that fact; but it must be remembered that traveling on the Continent is quite a different matter from what it was twenty years ago. The expenses have been reduced to such an extent by coöperation that an opportunity for foreign travel is placed almost within the reach of all. I would not even leave out the student; I should like to see parents encouraging the idea of 'stu-

dents' coöperative tours,' thus making them to combine a little sight-seeing and the enjoyment of traveling with a visit to the museums and laboratories and school buildings of such institutions as the great Veterinary School of Alfort, that of Berlin, the Pasteur Institute in Paris, and the Hygienic Institute at Berlin, where diseases common to man and the lower animals are constantly the subject of investigation. Traveling scholarships would be of quite as much advantage to veterinary as to medical students."

This is a wise suggestion, which can be just as well realized by American veterinary students as by those of England. Similar coöperative traveling clubs already exist in the United States. Every year members of those organizations of various forms of instruction come and visit Europe; why could not veterinary students join them? Why could not such prize be offered by colleges instead of the free scholarship? Why could not some generous benefactor be found to help to defray at least part of the expenses? Of course there are many objections that can be made; there are many ifs in the way of a realization of the objects, but yet are the obstacles insurmountable? That is a question.

* * *

Koch's Old and New Theories.—Professor McFadyean is decidedly a severe critic, and he seldom, if ever, advances a statement that he cannot substantiate with proofs by undeniable evidence. His last editorial in the December issue of his excellent quarterly shows it. At the recent Congress on Tuberculosis, answering the new theory advanced by Prof. Koch as to the relationship existing between human and bovine tuberculosis, he said: "I thought, Prof. Koch, when you had found a bacillus as the cause of tuberculosis in man and a bacillus in the cow, you came to the conclusion that they were one and the same." To which Koch answered: "No, I never indicated such a conclusion."

In a notice to a correspondent to the *Veterinary Record* the writer said that Prof. McFadyean was foolish to have made the

remark mentioned above. In answer to the accusation of foolishness the worthy editor replies by publishing paragraphs from Prof. Koch's first circumstantial publication on the etiology of tuberculosis, which he extracts from the *Berliner Klinisch Wochenschrift* of 1882 : "Tuberculosis of the domesticated animals, and especially bovine tuberculosis, is undoubtedly another source of infection. This fact indicates the position which in the future hygiene must take in connection with the danger of the flesh and milk of tuberculous animals. Bovine tuberculosis is identical with human tuberculosis, and is thus a disease transmissible to man. It must, therefore, be treated like other infectious diseases transmissible from animals to human beings. Be the danger which arises from the consumption of the flesh or milk of tuberculous cattle ever so great or ever so small, it exists, and it must be prevented. It is sufficiently well known that anthrax flesh is often consumed by many persons for a long time without any injurious result, and yet no one concludes therefrom that the traffic in such flesh ought to be permitted.

"With regard to the milk of tuberculous cows, it is worthy of remark that the extension of tuberculosis to the mammary glands is not seldom observed by veterinary surgeons, and it is therefore quite possible that in such cases the tuberculous virus may be immediately mixed with the milk."

What a difference in the opinions of the learned German authority ! A. L.

VOLUME XXV. CLOSED.

The present number of the AMERICAN VETERINARY REVIEW marks a distinguishing milestone in its long life, for it completes a quarter of a century of very earnest work in behalf of the cause which it has served so faithfully. To the comparatively few members of the veterinary profession of this country who have been in active practice for all those years, and who have followed its course from Volume I, No. 1, until the present day, its history is so intermingled with their own

that, as some have said, it is a part of their lives. The same hand which was instrumental in its launching is the one which holds the helm to-day, and his efforts in behalf of the constituency which the REVIEW has served so long are just as earnest as in its first number, while he has surrounded himself by others who cannot have failed to absorb the inspiration of his own energy and enthusiasm. Veterinary journalism in this country, at least, must of necessity be in the hands of those who love it for the good which they can do, for there is little hope of other reward. The REVIEW has jnst completed its most prosperous year, not in the sense that it has turned money into the pockets of those who have labored for this success, but that it has been enabled to give the profession the best volume in the quarter of a century which it has existed, and during which time it has never missed a number, the present one completing just three hundred issues. Long ago it pledged itself that when financial success crowned its efforts, its readers should be the gainers by giving them a better journal, and we feel that on this occasion we can frankly say that we have fulfilled our contract. And while it is more satisfying to point to an accomplished fact than to eulogize future intentions, we simply continue our assurance that the REVIEW will bestow upon its readers all the fruits of the success which it shall achieve, so that volume XXVI may be looked to with confidence to outclass every previous volume. We believe that no reader of volume XXV will be willing to struggle through the coming year without its monthly visits. They will please bear in mind the business rules established two years ago, that if they wish it continued to their addresses they must forward their subscriptions at the close of the term for which they have paid. As the majority of such subscriptions terminate with the present number, we trust this notice will be sufficient.

VOLUME XXV OF THE REVIEW closes with this number, and a few statistics may be of interest to those who follow the fortunes of veterinary journalism. They speak much more

volubly than promises of the progress being yearly made by this publication, and we confidently anticipate the presentation of a similar table at the close of Volume XXVI.

	Volume XXV.	Volume XXIV.
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THE SO-CALLED CEREBRO-SPINAL MENINGITIS.

The REVIEW has been so fortunate as to secure the manuscript of an important contribution to the study of this little understood disease of the soliped, which has up to the present time been as full of mystery as the malady has been fatal. Dr. Samuel S. Buckley, veterinarian to the Maryland Agricultural Experiment Station, working in conjunction with Drs. Welch and MacCallum, of Johns Hopkins University, Baltimore, has just published in the *Journal of Experimental Medicine* the results of their investigations to date and have put into operation an effort for further and more extensive investigations into the disease in question. In the April issue of the REVIEW their preliminary report will be published, together with some excellent plates illustrative of the disease, the nomenclature of which they have preferred to change to "Acute Epizoötic Leucoencephalitis in Horses."

Some paragraphs from a private letter to us from Dr. Buckley will probably give a fuller idea of the work which he has accomplished and undertaken than any explanation we could offer :

" . . . . I have, however, always given as much attention as possible to the study of the horse disease taught as 'Cerebro-spinal Meningitis' in the text-books and at the schools.

"I long ago concluded that this name was a 'misfit,' and that it was worth looking into. The disease is usually an annual visitor to Maryland, and I have seen hundreds of cases since I came here in 1896. Until the winter of 1900–1901, the post-mortems never revealed any more to me than to others; but at the last of the outbreak, I made an interesting observation and one which, if known to others, failed to elicit much comment; *i. e.*, a lesion of the brain substance itself, with but slight meningeal congestion. After the first case, I searched for it in all cases, and in each of the following cases I found the lesion varying in prominence. I knew then that I was on the right track, and, believing the best help available was none too good, I consulted with Prof. Wm. H. Welch, of Johns Hopkins University, at Baltimore, Md. He had already worked on this disease for a long time with the late Dr. Clement, when the latter was State Veterinarian, but without any success. He was intensely interested, and we then coöperated in its study, his associate, Dr. W. G. MacCallum, giving his time to the laboratory work. The results of our work to date are given in the reprint I send you. . . . . There is much now to be done upon it before it is completely solved, but this disease is our worst enemy here, and it will continue to receive study. There is at present a bill before our Legislature to create a commission for the purpose of studying this disease. We will have that commission formed of a pathologist, bacteriologist and veterinarian, I think, without any trouble, if the bill passes."

In a more recent letter Dr. Buckley encloses a copy of the bill referred to, which has had its third reading in the lower house with a vote of 66 to 9. The bill is as follows:

A BILL ENTITLED AN ACT FOR THE CREATION OF A COMMISSION TO INVESTIGATE THE CAUSE, ORIGIN, TREATMENT, PREVENTION AND CURE OF THE DISEASE IN HORSES CALLED CEREBRO-SPINAL MENINGITIS.

SECTION 1. Be it enacted by the General Assembly of Maryland, that the Governor of the State be and is hereby authorized to appoint a commission to be known as the Commission to investigate the disease in horses called Cerebro-Spinal Meningitis, to consist of not less than five persons, of whom the pathologist of Johns Hopkins University and the Veterinarian of the Maryland Agricultural College shall be two, whose duty it shall be to investigate the cause, origin, treatment, prevention and cure in the State of Maryland of the disease in horses called Cerebro-Spinal Meningitis.

SEC. 2. The members of the said commission shall serve without pay, except expenses actually incurred, and shall continue in office for a term of two years from date of their appointment, They shall meet in

Baltimore city within thirty days after the date of their appointment and thereafter at such times and places as may be necessary. They shall fill by a majority vote any vacancy that may occur in their membership and shall report the results of their investigations not later than January first, 1904.

SEC. 3. For the purpose of defraying necessary expenses, including printing, rent, postage, traveling and clerical assistance, the sum of two thousand dollars, or so much thereof as may be necessary, is hereby appropriated to be paid by the Treasurer of the State upon the warrant of the Comptroller at such times and in such sums as may be authorized by the commission.

SEC. 4. And be it enacted, That this Act shall take effect from the date of its passage.

A BILL is now before the Legislature of Massachusetts to abolish the Cattle Commission, and to establish in its stead a Cattle Bureau of the State Board of Agriculture, which shall have a chief (presumably a veterinarian, although the bill does not so designate him), at an annual salary of $2000. The other members of the board, as provided by the bill, will be the Lieutenant Governor, *ex officio*, the Secretary of the Commonwealth, the President of the Agricultural College, and the Secretary of the State Board of Agriculture. Verily, the State which led in the eradication of contagious animal diseases is fast bringing up the rear.

ASSEMBLYMAN PENDRY, of Kings, is taking a deep interest in legislation affecting the veterinary profession of New York State, and he may be relied upon to keep a watchful eye on any pernicious bills which find their way into the Senate and Assembly. He is a member of the Committee on Public Health, to which all such measures in the Assembly are referred.

THE STUDENT'S ASSOCIATION OF THE KANSAS CITY VETERINARY COLLEGE held a social session of that body in the class rooms of the college building on February 1st. The students were very gratified by the attendance of a large number of lady friends, and all were entertained by a musical and literary programme, at the close of which refreshments were served. The student body voted the social session a great success and declared for future repetitions of the same.

ORIGINAL ARTICLES.

MILK INSPECTION.

By Andrew Hyde, D. V. S., Norwich, Conn.

Read before the Connecticut Veterinary Medical Association, February, 1902.

The object of milk inspection is to oversee that the milk supplied to people in general is clean, of good quality and produced by well-fed healthy cows; to prevent the use of adulterants of any kind, and to guard against the spread of infectious and communicable diseases.

More specifically: It means that after the animal has done its part to furnish this essential food, the seperator cannot be used to remove the cream, and coloring material added to the bluish-white remnant to impart the rich yellow appearance of whole milk of good quality without being detected.

The sale of milk from poor or diseased cows or those kept in damp, undrained, ill-ventilated stables, and managed with no regard to hygienic principles, will be guarded against. Milk produced under such conditions is almost always poor in quality, infected with myriads of bacteria, and has been known to be sold for the genuine article after preservatives have been used to keep it sweet.

The influential customer who is able to make a good remonstrance to the milkman of the poor quality he is supplied, should not receive the rich milk from the top of the can, while his neighbor who cannot have his objection so forcibly felt gets the thin, dirty liquid from the bottom of the vessel.

Household employés (cooks), who for various considerations think it to their advantage to skim the milk, and add vinegar to make good milk sour, possibly turn the trade to a different party, will not get on so well in their peculiar practice.

Milk inspection acts as a safeguard against the spread of infectious and communicable diseases, such as diphtheria, typhoid fever, tuberculosis, scarlet fever, infant intestinal diseases, etc. That some of these diseases can be produced by contaminated

milk is apparent from the following statistics. These figures have been frequently quoted, but it is not generally understood that they apply only to a short period, namely, since 1880, and it is deemed advisable to recall them here to emphasize that milk is a factor in causing disease.

One investigator reports fifty epidemics of three thousand five hundred cases of typhoid fever, and another fifty-three epidemics with three thousand two hundred and twenty-six cases, a total of six thousand seven hundred and twenty-six cases compiled by these two writers. It was determined in these epidemics that the germ of typhoid fever was distributed by infected milk along certain milk-wagon routes. Seven epidemics of diphtheria with five hundred cases have been reported in England, and eleven epidemics and five hundred and one cases in New York, a total of a thousand and one cases, all due to contaminated milk. The same investigators report forty-one epidemics of scarlet fever, with a total of two thousand three hundred and ninety-three cases, all traceable to infected milk. "No doubt many infants, children and grown persons contract tuberculosis by drinking infected milk." From this it is apparent that, under certain conditions, milk is a significant factor in spreading disease; and it would seem as if this phase of the question alone was sufficient to warrant the inauguration of a system of thorough inspection in every city without emphasizing the question of fraud in relation to the traffic.

When the control of milk is more generally established and the regulations duly enforced, it is probable that there will be a smaller death-rate in children under three years of age, which is estimated to be about one-third of all infants, 9-20 of which is said to be directly due to milk. The question of pure milk for children, of whose food it constitutes a greater part, is, therefore, especially important.

It operates to keep dairies and places where milk is kept for sale in cleaner condition, so that it will not be exposed to dangerous odors, which are readily absorbed, making it unfit for use.

It tends to establish the confidence of people in milk, who, realizing that they are being supplied a pure article of standard quality, a quart of which, worth five or six cents, being equal in food-value to three-quarters of a pound of beefsteak that costs two to three times as much, will use more of it, perhaps, for no other reason than to reduce living expenses. The United States is the greatest dairy country of the world, yet some of the European nations consume two to three times as much milk per capita as America. The explanation is that "we do not appreciate the food-value of milk and its products."

LOCAL CONDITIONS.

The local necessity of milk inspection will depend upon the following general and specific conditions: The population of the city or town; whether milk is largely produced by the consumers themselves or purchased of vendors; the kind and general condition of the cows that are kept; the reputation of the dairymen and dealers; the carelessness and greed of consumers; the necessity of milk in every family; its easy adulteration, so that its food-value and actual value become greatly diminished in almost an instant without cost; and the fact that poor milk cannot be detected by its appearance. The inferior apple, potato, meat, egg, flour, and almost anything else used in the household except milk is noticeable at a glance, and the appearance alone will indicate the condition. Milk, as a rule, if the measure is full, will pass unchallenged. Of course, what may be regarded as the general necessity for controlling milk are applicable to local conditions as well.

The fact that the production of milk is largely in the hands of a class distinguished for industry and fair-dealing does not preclude the possibility of fraud. If fraud is practised it is safe to say that it is not general; but its elimination would be beneficial to the dairy interest. The man who sells milk containing four per cent. of fat cannot compete with an opponent whose milk contains two or two and a half per cent., because it costs more to produce the former than it does the latter kind of milk. The four per cent. milk represents the product of good cows that

have been abundantly suppled nutritious food; the two and a half per cent. milk is usually that of inferior animals indifferently fed.

If cream has been removed it cannot always be determined by the appearance of the milk. Cream or fat is the most essential constituent of milk. In butter or cheese factories it is the basis of value of the milk delivered by the patrons. It should be equally so for milk delivered to individuals and families. How is the consumer to know if milk that should have four per cent. of fat contains only two and a half or three per cent.? There is no inexpensive way for consumers to regularly and easily find that out. The invention is yet to be devised for determining the fat content of milk according to these conditions. Until it appears purchasers of milk are at the tender mercy of the seller. It is true that the Babcock test is a rapid method for finding the fat content of milk, but the least expensive apparatus obtainable for the purpose of a single test costs about five dollars. Moreover the detail required for making the test renders its use impracticable for general household purposes. Another way and one that would be more generally adopted, if known, is the collection of a composite sample, and sending it to a milk analyst. The expense is practically nothing, but it requires a little painstaking effort. Consumers could generally adopt this plan and pay for the milk according to the fat it contains.

Retailing milk direct to customers is considered to be the best of all markets for dairymen, especially in places where milk is not subject to the requirements of a legal standard for milk and inspection. Milk delivered to a butter or cheese factory, as stated, is sold on a basis of its fat content, and is tested as often as is necessary, frequently once a month, to determine the value, and payment is made according to the quality. If the milk is an inferior article, the return to the dairyman is correspondingly less. Milk sent to contractors in a distant city, where inspection is established, must be of a certain standard of purity and quality or it is subject to deduction. Hence the

dairyman naturally finds it more profitable to market his product himself by retailing it to customers where there is no inspection. The purity and quality are not likely to be seriously questioned, and he suffers no loss, except, perhaps, by bad bills. It is apparent, therefore, that a city without inspection fosters poor milk. In justice to consumers that premium should be removed. "The farmer is himself protected by law in every bag of a shipment of fertilizer he receives that it shall be uniform and up to the analysis." So the purchaser of milk should have the right to hold vendors to a reasonable requirement.

I have said that a city without inspection fosters poor milk. The question may arise, how does it do it? One answer is that "some milk producers are quite abreast of the times, and by the use of a little machine known as the separator extract all the cream and sell what remains as the real thing." That answer is based on the assumption that dairymen keep only good cows that give rich milk; in fact, some one has said "that it is so fatty in its natural condition that some of the richness must be removed before the city dyspeptics can digest it." But another explanation has been given to account for the poor milk retailed to consumers, in cities without inspection; and that is, that they keep a different class of cows than those who furnish milk to creameries and cheese-factories, the milk of which is naturally so thin that it does not require to be skimmed to make it wholesome. Aside from the levity of this explanation it seems reasonable.

It can hardly be doubted that it is to the interest of the patron of the creamery and cheese factory to keep only such cows as produce rich milk, for the richer his milk is the more money he makes. Since the advent of the cheese factory and creamery laws the up-to-date patron of them has gone into the milk-testing business for the sole purpose of finding out which of his cows, if any, are not paying a profit for the food they consume; that is one of the things he must know if he would succeed, and he has made himself familiar with the way of determining it, and it is safe to infer that he does a duty to

himself; the consequence is the profitless cow is sold. Where does she go? Certainly she is not "hacked" around among cheese factory patrons; they have no use for that kind. She is perhaps a well-bred young cow that would very likely pay for her feed in the barn of a dairymen who retails his milk to consumers, who so often think any kind of milk is all right if the measure is long enough, and there is where she gets a home. So it seems reasonable to conclude that the poor milk sometimes supplied consumers in cities where there is no control of the milk traffic, is not due to the fraudulent use of the milk separator, but is partly chargeable to a thin-milk-class of cows indifferently managed.

The following conditions in cities of varying sizes and widely separated sections may be taken to indicate what may exist in any city.

In cities in Pennsylvania of 342 samples of milk "tested, for fat, sixty-four (18.7 per cent.) were found to contain less than three per cent.; 41 of these were below 2.75 per cent., 22 below 2.3 per cent., 12 below 2.25, and 7 below 2 per cent. Of 329 total solids determined, 190 were below 12.9 per cent., 72 less than 11.5 per cent., and 37 less than 11 per cent. The specific gravity of 329 samples was below 1.029 (which is considered the minimum of good milk). The restaurant milk as a class was found to be badly adulterated, the average per cent. of total solids in all the samples examined from this source (29) being only 11.33 per cent., and 13 of the samples were below 3 per cent. of fat and 11.5 per cent. of total solids. Fifteen per cent. of the samples examined were undoubtedly watered or skimmed."

Recorded analyses of investigations in Chicago are as follows: "Of 272 samples examined, and which were sold as whole milk, the variation in total solids range from 6.24 to 18.44, a difference of 12.2 per cent. Variations in fat range from .5 to 10.4, a difference of 9.9 per cent. Solids not fat varied from 4.2 to 10.6, a difference of 6.4 per cent. The average percentage of fat in 272 samples, is 3.17. In 263 samples the average percentage of total solids is 11.71, and the average percent-

age solids not fat is 8.54. Of 272 samples, 134 or 49.26 per cent. contain less than 3 per cent. of fat, and 181, 66.54 per cent., contain less than 12 per cent. of total solids. Of the 272 samples sold as whole milk 90, or 33.09 per cent., may be considered as legal according to the city ordinances; and 235, or 86.4 per cent., are below the averages of the American analyses of whole milk. In other words, *two-thirds of the milk sold was adulterated* or below the low requirements of the city."

In relation to the question, "Does milk inspection lessen the percentage of adulteration," the experience of the Philadelphia authorities may be cited. There it was found that the adulterated milk in 1892 was 11.15 per cent. In 1897, five years later, this percentage was reduced by 8.77, and the inspector discovered only 2.38 per cent. of adulterated milk.

COMPOSITION OF MILK.

The component parts of milk consist of six principal ingredients: viz., water, fat, casein, albumen, milk-sugar and ash. Other compounds are present, but in such minute quantities that they are of no practical significance. Clean, normal milk contains about 87 per cent. of water, 4 per cent. of fat, 3 ¼ per cent. of casein and albumen, 5 per cent. of milk-sugar, and .7 of one per cent. of mineral salts. These proportions vary somewhat from different causes, but the figures given are the average of innumerable analyses. The chief constituents, fat and water, vary within such limits that certain States have established legal standards for milk somewhat under the proportions given below, which it is considered adulterated.

Wherever milk is sold there should be a legal standard for milk law, because "experience has shown that it *does* protect the consumer by preventing the sale of impure, adulterated milk." It is claimed by a competent authority "that a fair average quality of milk contains 13 to 13.50 per cent. of total solids, and from 4.00 to 4.50 per cent. of fat, and people are entitled to this kind of milk." The average per cent. of total solids is 12.30 in the legal standard for milk law of seventeen (17) states having such a law.

Connecticut is one of the States without a milk standard law, although it has the distinction of having had such a law among its statutes for six days in 1895. A very good law was passed by the General Assembly in 1895 and approved June 28. A repealing act, however, was passed and approved July 4, following.

If by the better methods in dairy management and improved breeds of cows' milk containing 13 or 13.50 per cent. of total solids can be regularly produced, a legal standard requiring such quality would not be a hardship on the honest vendor, while it would tend to eliminate the unscrupulous one from the business. It should be borne in mind that a low standard, as well as no standard, acts as a premium on poor milk.

BACTERIA OF MILK.

Milk secreted by the healthy gland is pure, but shortly after becomes contaminated with bacteria to a greater or less extent. This bacterial infection constitutes the chief impurity of milk, assuming, of course, that the straining process has been sufficient to remove ordinary stable dirt that almost inevitably gets into it, and that adulterants have not been used. It has been determined by experimentation that all of these impurities can be kept out of milk by the practice of suitable sanitary regulation and pasteurization. Indeed, it has been found in quite recent observations by E. A. de Schweinitz that some milk produced under sanitary regulation, was almost free from bacteria. This should go far toward emphasizing the value of control of the dairy, stables, and places where milk is kept for sale.

The bacterial flora of milk have been extensively studied by competent investigators and the species and numbers, and many of their effects upon milk are now a matter of common knowledge among them. Lactic acid fermentation, the most common change of milk, which produces souring, is due to bacterial development. The old belief was that early souring was due to thundery weather, something the cow had eaten, or that she was sick. The common idea is that the bitter taste

sometimes acquired by milk is attributable to strong food of some kind, but it is now known that it may be of bacterial origin. Abnormal colors, and disagreeable odors are sometimes traceable to the same cause. Aside from the bacteria that are harmless and those that produce fermentation, there are pathogenic (disease-producing) germs sometimes found in it. Tuberculosis may be instanced as to the most common disease affecting bovines and man alike; it is the disease most to be feared. Slow and insidious in its nature, it affects the appearance of an animal usually after long infection. For years the animal may be apparently healthy, all the organs seeming to perform their natural function, but long before the time when the cow shows signs of disease and the milk becomes thin and otherwise unnatural in appearance, she may be disseminating the germ of tuberculosis. Notwithstanding the view of Dr. Koch that the danger of transmission of tuberculosis to man through the flesh, milk and milk products of tuberculous cattle, is hardly greater than that of hereditary transmission, there is ample justification for not removing any sanitary barriers at present. Even the Congress before which his opinion was delivered, did not sustain his opinion, but overwhelmingly decided against him.

The bacteria that produce diphtheria, typhoid fever, scarlet fever, through the agency of milk, do not gain entrance to it from sick cows, as has sometimes been supposed, but partly by the milk being held in open vessels in rooms adjacent to those occupied or frequented by persons suffering or convalescing from those diseases.

Bacteria are vegetable, microscopical bodies that produce the changes in animal and vegetable substances, known as decomposition, putrefaction, decay, etc. They are so small that millions of them have been found in a drop of badly tainted milk. They vary in size and shape and multiply rapidly by division of the cells and the production of spores. During growth some of them develop poisonous chemical ptomaines. Most species develop rapidly where heat, moisture and animal, also vegetable matter are abundant. Some require air to grow

in, others do not; some grow best in an acid medium, others in an alkaline or neutral one.

Bacteria are destroyed by sunlight, dry air, lack of organic matter, antiseptics, and finally certain species are antagonistic to others, such as the variety used as a butter starter. About 200 species are known to be partial to milk and its products.

The number of bacteria in milk as usually delivered in cities is very large. One bacteriologist (de Schweinitz) found an average of 61,886 per cc. in 32 samples. The same observer found the average number of bacteria in 132 samples of sanitary milk to be 5971 per cc. Another writer states that city milk usually contains from 10,000 to hundreds of thousands of bacteria to a single cc. Of 32 samples of milk taken from milk wagons in the city of Washington, D. C., and examined by de Schweinitz, one showed only about 2500 per cc.; one 4000 per cc., five others between 10,000 and 15,000; six between 30,000 and 50,000 and the remainder, 18, over 50,000 per cc.; in several instances over 115,000 per cc. While he found that the *majority* of 135 samples of sanitary milk varied from 200 to 5000 colonies per cc. He inferred that in those cases where the number of bacteria was small, the milk was collected with considerable care, and the other cases spoke for themselves. One observer found that milk drawn in a pasture under favorable conditions, contained 88 bacteria per cc., while the average from samples drawn in a dark filthy stable was 685,000 per cc. Sixteen samples of milk collected from groceries in Boston contained 4,577,000 per cc.

The city of Buffalo fixes the maximum limit of bacteria in milk for human use at 10,000 per cc. Dirt or filth of any kind in milk is a sure indication of bacterial infection.

If milk is naturally a clean fluid and bacteria constitute the chief impurity, the question of their origin, development, etc., in relation to milk, is important. Where media suitable for their nourishment and growth is plentiful, there they are found in greatest numbers.

(*To be continued.*)

A STUDY OF SALT SICK CATTLE.

By W. E. French, D. V. S., Daytona, Florida.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathologal science."

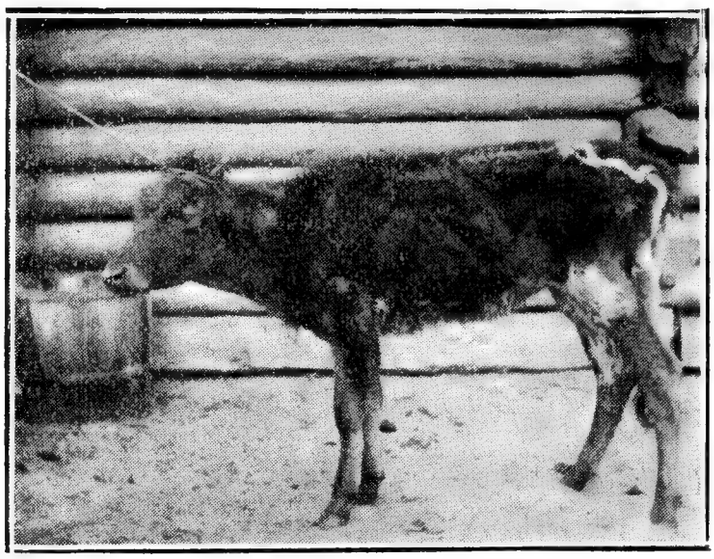
During the past year I have given the greater part of my time to the investigation and study of the condition known as "salt sickness in cattle," its cause, symptoms, treatment and prevention.

The investigation of this condition was taken up by the State Experiment Station, under the direction of Prof. Stockbridge. And it was thought best to establish a temporary station in Osceola county, as the stockmen were willing to co-operate with us, in that locality. This was done, and at one time we had fifteen animals under treatment, representing different stages of the trouble.

This work was done on the premises of J. E. Ennis, M. D., who co-operated in the work. Quite a number of cases were examined and post-mortems were held in different parts of the State, by Prof. Stockbridge and myself.

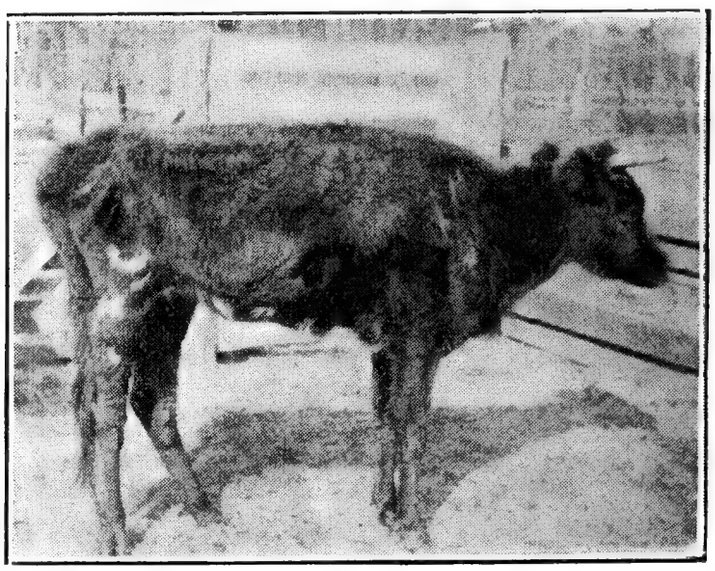
While in conversation with the president of the Stockmen's Association of Osceola County, I was impressed with the fact that great numbers of young cattle died with the trouble every year. And he made the statement that he thought that 90 per cent. of the deaths were from this disease. I might give the statements of stockmen and farmers from different sections of the State, but will not take the time, only wishing to give facts. I believe it to be a condition rather than a specific disease, and is most prevalent in the early months of the year, when obliged to eat inferior vegetation, such as wire-grass, black-jack oak and palmetto leaves, and such like, resulting in improper and insufficient nutrition. As to special location of this trouble, it is confined chiefly upon the higher sand hills or ridges, constituting the backbone of the Florida peninsula, and extending from the Georgia line to the Everglades.

The symptoms are loss of appetite, or abnormal appetite, the craving of foreign substances, like bones, leather, clay or dung —loss of flesh, chronic anæmia, as evidenced by the thinness of



Case C.—One of the worst cases I have ever seen in last stages with cerebral symptoms, gritting of teeth and "bad scours," skin tight, hair on end, could scarcely detect action of heart. Noticeable improvement after ten days' treatment with the solution of lime and iron.

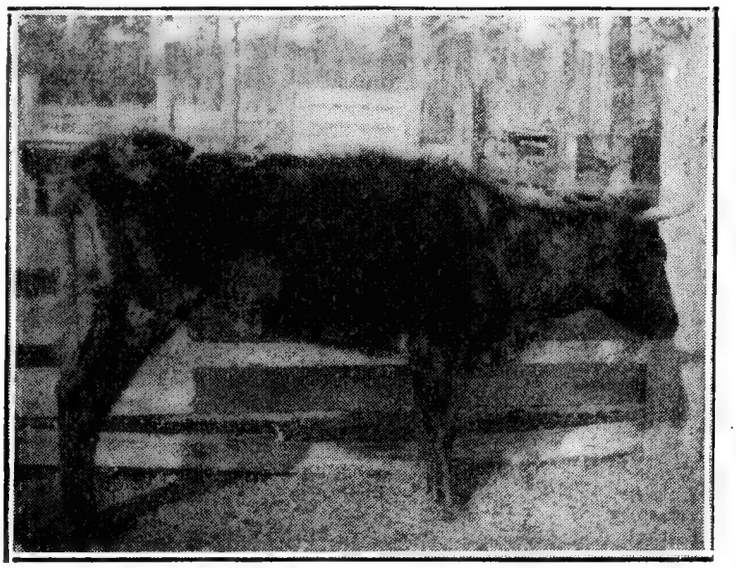
the blood, often ulceration of the glands between the lower jaw, pale mucous membranes, hide bound, staring coat, back arched, bowels often very constipated and at other times scouring profusely. One of the most prominent symptoms is the grating of the teeth. It was suggested time and again that sand was the cause of this trouble, but in no case have I found sand enough to cause any trouble.



No. 2.—A typical case of "Salt Sickness" in last stages. Constant gritting of teeth, back arched, skin exceedingly tight, temperature high, bowels discharge profuse.

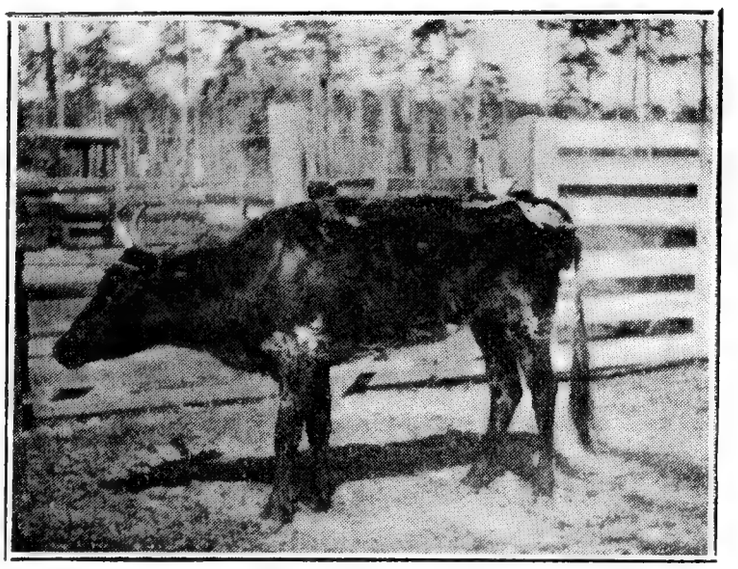
Some were inclined to think it was too much salt, while others thought it was for the want of salt.

The flat woods and low lands seem to be to a great extent exempt.



No. 3 —A typical case, with constipated bowels, high fever, weak heart action, no appetite. Cured in one month, with solution of lime and iron.

Cattle only are affected so far as I can learn—whether other animals are or are not sometimes affected, might be open to controversy. Young animals are perhaps more susceptible than the older cattle. The organs affected are in almost every case the small intestines. Sometimes the stomach, but in most of the post-mortems we find more or less ulceration of the small intestines. The spleen wasted away, blood deficient in red



No. 4.—A typical case with cerebral symptoms, high fever, weak heart action, bowels constipated, no appetite, constant gritting of teeth. Condition corrected in two weeks with the solution.

globules. In some we find high fever, and in others much below normal, and in nearly every case a weak heart action—and this is not to be wondered at when one studies the foods they get, and often restricted to the use of soft or surface water.

This condition may be brought about by the eating of coarse and fibrous grasses, which overtask the digestive powers, irritate the mucous surfaces of the stomach and bowels.

Foods which possess astringent properties and tend to check secretion may also act as an exciting cause.

Vegetable deficient in some essential element, especially that grown on poor, sandy soils, such as the sand hills of Florida, and restricted for a long time on the same kind of food, will in time result in a deficiency of red globules in the blood, the result of chronic conditions of digestion and the mesenteric glands, causing increased paleness of the mucous membranes and paper skin, and as the blood becomes poorer, all symptoms are aggravated, movements become unsteady, the hair easily detached, appetite fails, the dung is passed in small quantities and very hard, eyes sunken, staggering gait, hurried breathing, and may die any moment.

In this condition the animals are especially attracted by alkaline and saline substances, due to the depraved appetite, and this is why we often see them chewing an old bone or shoe, etc. This condition may last for months, the animal ultimately dying, worn out by the long-continued fever.

The bones often become brittle and fracture easily following this condition.

Food deficient in some of the constituents required to supply the wear and growth of the body, and especially those deficient in lime salts. Cattle on the sand hills are predisposed to it—one in a herd suffers though all may feed on the same range, and in such cases the condition must arise from the affected animal not assimilating properly the nutritive elements of the food it gets to eat, and again acute impactions of the manifolds are usually complicated with congestion and inflammation. Also result from over-stimulating food, or from dry heating ail-

ment, or from irritating fibrous grasses and we may have stupor or convulsions.

In this condition we often find the spleen wasted away and dried up, due to the animal's starving condition, not being able to assimilate properly the food taken.

These are the conditions found in cattle upon the sickly ranges of South Florida.

The change of affected animals to new ranges or pastures is both preventive and curative in effect. Alimentary correctives and tonics are suggested as counteracting these conditions. The use of lime water, gentian and iron salts, have proven invariably beneficial. The question has often been asked—can this condition be prevented? I will say after a close observation and study of this condition that it can be to a large extent—"An ounce of prevention is worth many a pound of cure in this case." In the first place see that the animal has a change of feed; often the change from the sand hills to the low lands will give the animal a new lease of life.

In some sections of the State the stockmen have brought the chemicals from the low lands, in the shape of the heavy clay, to their stock at home, and given it to them in their drinking water or placed it in troughs so that they could help themselves. Now these seem to be on the right track, as in these sections there is a deficiency of lime.

Lime is a natural constituent of the animal textures, but being present in most articles of food, extra supplies are seldom required. But on the sand hills of Florida there is a great deficiency of the lime salts.

The Need of Lime in Agriculture.—A large amount of the agricultural failures in Florida, the small yield, the perishable nature of stuff raised, its breaking down on the road and arrival in market in bad order, are due to the absence of mineral matters, especially lime, in the majority of our soils.

All vegetables, fruits and grains contain an important portion of lime when reduced to ashes. Yet what do we find in our Florida soils? Several years ago our Experiment Station

analyzed samples of soils from several counties of the peninsula and by referring to that analysis it will be seen that in nearly all soils tested the percentage of lime was far below one per cent., generally less than one-tenth of one per cent., and often none whatever. Yet we know that all vegetables, fruits and grains demand lime and animals still more, as from sixty to seventy per cent. of bone contists of phosphate and carbonates of lime. For the lack of lime the Florida marsh pony, living on marshy land, where the soil is of purely vegetable origin, grows small and stunted. The same is true of the native cattle living all their lives on sandy lands where there is almost no mineral in the soil but silica ; they are inferior in stature having no mineral elements to maintain the tone and vigor of the system. In such regions where brush heaps have been burned, leaving the ashes to fertilize the ground with minerals, lime and potash making the grass sweet and tender, the cattle depasture it into the very ground. They evidently require the minerals in their feed as man needs salt for a relish. It is a fact that in the interior states where the soil is of a mineral origin, cattle require salt. In Florida they care little for it, but consume lime greedily, even bones. The humane farmer will not look with indifference upon this spectacle of his live stock actually suffering for an element which their systems instinctively demand.

Therefore it is necessary to add lime to supply this deficiency. Lime water is appropriate for gastric derangements and will often correct and check diarrhœa in calves ; and is also useful in all forms of malnutrition, indigestion and prevents acidity. Therefore I suggest the use of lime water as the best and cheapest method of supplying this deficiency

The phosphate of lime or calcium phosphate is present in bones, nerves, and other animal textures; occurs abundantly in the intercellular fluid, and wherever cell-growth is most active and is hence an essential constituent of food and a restorative.

Its absence in the dietary is shown to induce softening of the bones and general wasting ; it is deficient in the bones of pregnant animals, and furthermore children living on some of the

sand hills and ranges where they have no other water than soft or surface water, have very poor teeth, but where lime water has been supplied there has been a decided improvement in the teeth. This form of lime is especially useful in all forms of malnutrition conjoined with iron for anæmic and badly nourished scouring young animals. Bran is especially useful for young stock, as it contains a large amount of calcium phosphate.

I have suggested a mixture of iron, lime and salt for this condition, after using it with marked success myself upon range cattle and also upon the farm, or it can be used in solution; the proportions best suited are lime, air-slacked and fresh, 1 pound, powdered sulphate of iron two pounds, salt, ten pounds—by adding one-half pound of plaster of Paris this can be made into a brick, by adding a small quantity of water, which can be placed in any protected place and the animals will soon take to it. Or for those who prefer the solution it can be made with one ounce of lime, one ounce of iron in five gallons of water.

ALUMNI ASSOCIATION OF NEW YORK UNIVERSITY.—A conference of the presidents and secretaries of the several alumni associations of New York University was held at the Academy of Medicine, New York City, Oct. 28, 1901, the following associations being represented: New York University Medical Alumni, Bellevue Medical Alumni, Veterinary Alumni, Law Alumni, Jr., Collegiate Alumni, Law and Pedagogy Alumni. An association was formed bearing the name, "The General Alumni Society of New York University." Officers were elected and a Constitution adopted, and it was decided to hold a triennial dinner, which should be the occasion of the regular meeting for the transaction of business. The first dinner was held at the Hotel Savoy, Feb. 4, and 307 sat at the several tables. At the veterinary table there were 18, as follows: Drs. J. E. Ryder, W. A. Young, H. T. Cronk, Wm. Anderson, C. E. Clayton, Wm. Henry Kelly, J. W. Fink, R. T. Churchill, Wilfred Lellman, E. J. Decker, W. J. Coates, J. L. Robertson, Wm. A. Engeman, Wm. C. Miller, Robert W. Ellis, H. T. Foote, H. D. Gill, and Atkinson. The affair was pronounced by all those present to be a great success.

ANATOMO-PATHOLOGIC STUDY OF RINGBONE AND SPAVIN AS INDICATED BY EXAMINATION OF PATHOLOGIC SPECIMENS.

By S. J. J. Harger, D. V. M., Philadelphia, Pa.

Read before the January meeting of the Keystone V. M. Association.

There is some diversity of opinion as to the manner of production, the seat of the primary lesion and the order of progression of the successive stages of the alterations of these diseased conditions. I anticipate that some of you may entertain varying views upon these points, and I shall merely interpret the facts as they appear to have presented themselves to me from a series of specimens which I have examined.*

1. *Ringbone.*—By this term I shall designate the exostoses having for their base the bones from the middle of the first phalanx to the os pedis (coronary ringbone). It is most frequently the lower extremity of the first and the upper end of the second phalanges—at the tuberosities where the lateral ligaments are attached—that are the primary seat of the exostosis. In rare cases the latter may be confined to the pyramidal eminence of the third phalanx, involving the termination of the anterior extensor tendon of the phalanges and accompanied by a bulging of the superior border of the hoof. The distinction of *high* and *low*, *true* and *cartilaginous* ringbones of the English and French should, I believe, be discarded.

Ringbones, according to the seat of the lesion, may be *articular* and *peri-articular.*

In the former the process is as follows: In the compact bone tissue a short distance under the articular cartilage, a rarefying ostitis takes place over an area appearing in transverse section as large as a pea or larger. The bone tissue becomes absorbed, leaving a cavity filled up with a more or less soft, embryonic tissue and blood vessels; in other words, a *rarefying* ostitis. The process gradually extends towards the articular cartilage,

* Specimens in the museum, Veterinary Department, University of Pennsylvania.

which becomes ulcerated over irregular areas and desquamates, as is frequently seen in cases of osteoporosis, constituting an *osteo-arthritis*. This inflammatory zone in the bone now becomes the seat of a condensing ostitis (osteosclerosis). The soft vascular, embryonic material now becomes organized, infiltrated with calcareous matter and converted into condensed or compact bone. The articular cartilage of the opposing bone at a point opposite to articular ulceration of the bone first affected likewise commences to ulcerate and leads to an osteo-arthritis at that point. The two articular ulcerations being contiguous will finally form adhesions and become coössified. This centre of ossific union may be localized, or in aggravated cases may involve the entire articular surface and form a complete ankylosis. There is first a rarefying, then a condensing ostitis and, finally, ossific union of the two bones at those points where the process is completed. The articular ulceration usually commences towards the margin of the articular surface.

The histologic alterations are the absorption of the bony tissue and the bone cells, enlargement and saccular dilatations (lacunæ of Howship) of the Haversian canals which are filled with embryonic cells and congested blood vessels—a picture which is repeated in the generalized bony lesions of osteoporosis and called osteitism or ostitic diathesis, which so often in these cases predisposes to fracture.

2. *Periarticular.*—The exostosis develops upon the periphery of the bone. It is an *osteo-periostitis*. It commences as a rarefying and then passes into a condensing ostitis of the superficial or subperiosteal layers of the compact tissue of the bone, which is communicated to the periosteum and provokes a periostitis. The result is a bone tumor of variable dimensions. The exostoses of the ends of two contiguous bones may become coössified, forming a peripheral or false ankylosis, while the articular surfaces themselves may retain their normal state.

The structure of an exostosis differs slightly from normal bone: It is more porous, the Haversian canals are larger, saccular and filled with embryonic tissue and blood vessels; the

bone cells are less numerous; its earthy salts are less abundant and by maceration in an acid solution it becomes decalcified in much less time than normal bone. The ligaments and the synovials also show inflammatory alterations.

Reciprocal Relation of Articular and Periarticular Ringbones.—Which is primary and which is secondary when both exist? Which occurs the more frequently? This is what I more especially sought for. Udriski of the Bucharest Veterinary School examined 55 specimens: 20 were exclusively periarticular without any articular lesion; 24 showed lesions in both places; 11 were ankylosed. The collection which I examined consisted of 29 specimens: 20, two-thirds of the entire number, were exclusively periarticular; 9 showed both external and internal lesions. Among the latter, there was ankylosis, partial or complete, and while the exostoses were well marked or large, the articular coössification was progressive; that is, the exostoses were more or less stationary, the only difference in the specimens was the successively increasing degree of the obliteration of the joint, which seems to have been the last thing to have taken place. In one case there was false ankylosis, while the articular surfaces were normal. In no case was there any articular ulceration without periosteal deposit.

The evidence obtained from these specimens seems to point to the general deduction that ringbone begins primarily on the periphery of the bones and only secondarily extends into the joint. Whilst it cannot be denied that the articular lesions may be primary, these cases are by far in the minority, and in such a case, before the local temperature is altered, a correct diagnosis is difficult, if not impossible.

It would follow from these statements that in prescribing treatment early and before there is any mechanical interference in the joint movement, the prognosis should in the majority of cases be favorable; while, when the articular surfaces are already affected, the prognosis should be reversed. We know that for old ringbones firing is not very successful; ankylosis is difficult of production because of the difficulty of destroying

so large and deep-seated articular surfaces as those of the coronary joint.

Spavin.—Opinions are at variance as to whether spavin, *arthritis chronica deformans* of man, commences peripherally as a *periostitis*, or centrally as an *osteo-arthritis* of the hock bones. Does the lesion progress centripetally or centrifugally? Most veterinarians are inclined to the former view and for this purpose I have examined about 40 specimens, which have been collected promiscuously at various times. I shall not here refer to the mechanism of the causation of hock diseases.

Upon these specimens the following alterations were observed :

7. No exostosis. Occult spavin—ankylosis of the scaphoid and large cuneiform.

11. Ankylosis scaphoid, large and small cuneiform.

10. Ankylosis scaphoid, large and small cuneiform and metatarsus.

7. Ankylosis scaphoid, large and small cuneiform and cuboid.

The remaining were of miscellaneous coössifications—between the astragalus and calcis, astragalus and scaphoid (least frequent), the entire tarsus, etc.

In all cases accompanied by an exostosis the inter-articular lesions were well advanced ; and in no case, excepting one, and this was excessively doubtful, was there any peripheral deposit with a normal state of the articular surfaces.

The general order in which, from these observations, the hock bones became affected was as follows : The scaphoid and large cuneiforms, the three internal bones of the lower row, the lower row and the metatarsus, and finally the three internal bones of the lower row with the cuboid of the same row. If I am correct in making these deductions, the lesions of spavin should commence as a scaphoido-large cunean arthritis and, contrary to the frequent assertion, the small cuneiform was not the seat of the primary lesion. The so-called "occult" spavin may therefore be a variety of spavin in its usual sense when the

lesions remain in that condition for a more or less long time or, merely the beginning of a condition that spreads to other bones and subsequently manifests itself by an external enlargement. The time required for the latter to become visible on the exterior is usually said to be from six weeks to two months. Spavin therefore seems to develop eccentrically, beginning within the internal bony structure and the articular surfaces.

We cannot deny the probability of spavin commencing as a periostitis in cases of traumatisms and hyperextension of the internal ligaments of the hock joint, but that this is not the general mode. It also appears to me that these are not the usual causes, but that the latter operate incessantly at every step the animal takes in the form of constant concussions transmitted through these bones, the perpendicular pressure of one bone upon the other and the traction of the interosseous ligaments. Relative to inheritance in which there is a defect in the organization and integrity of the intimate structure of bone—an osteitic diathesis—the hock bones are subjected to the injurious effects of these constant causes and thus become diseased more readily.

Very recent cases of undoubted hock lameness without visible external alterations often respond to the effects of a good blister. Having said that such diseased conditions of the hock are primarily articular, I do not mean to convey the idea that the blister cures by producing ankylosis, such as cauterization does. These cases only present a sort of nerve irritation, the primary symptoms of inflammation without any decided structural changes, and the treatment is efficacious through its revulsive action, a possible reflex action through the nerve trunks in correcting the pain and the circulation, and the immobilization of the parts.

From a comparison of the external aud internal lesions of ringbone and spavin we find the conditions in the two reversed, the former developing from without to within and the latter from within to without, the enlargement of the hock being secondary. While some of the distinctions which I have here

made may not be mathematically as accurate as you may be led to believe, they appear sufficiently conclusive to warrant the general deductions and to form a fair conception of the pathology.

Chronic arthritis of the tarsus seems to be more amenable to treatment—ankylosis—with the actual cautery than the same lesion on the phalanges: The cautery can be brought in more direct contact with the seat of disease, the bones of the hock are porous and vascular, the articular surfaces are covered by a thin layer of articular cartilage and probably more readily exfoliated, the bones are in almost immovable and in very close apposition and have a paleontologic tendency to diminution from coössification and a disappearance of the individual bones of the anatomic foot. The last fact may be pertinent from a medico-legal point of view. I read an account of this kind in the *Revue Vétérinaire*. The subject was a young mare. When the bones were cleaned several of the hock bones were neatly coössified, although at no time during life, as far as could be learned, was there any knowledge of lameness. I have seen such a co-ossification of the astragalus and the os calcis in the hock of a horse in spite of the gliding movement that exists between these two bones, and no deformity could be seen on the surface. I know nothing about the animal from which it was obtained. Under any circumstance, a lameness, even though temporary, may accompany such a condition, and we are at sea when we endeavor to locate it.

In 1899 the meat from 25,640 horses was consumed for food in Austria.

There are said to be 224,000,000 head of live stock of all kinds in this country.

Our animal exports amount to $218,500,000, or one-third of the total exportation of the country.

To Loosen a Glass Stopper.—Soak a corner of a glass cloth in boiling water, and then wrap it round the neck of the bottle. The heat will cause the neck to expand, and then the stopper may easily be removed.

HAEMORRHAGIC SEPTICAEMIA IN CATTLE.

By C. Brown, V. S., Neillsville, Wis.

I have had for the last fifteen years in the northwestern part of this State much trouble with cattle with a fatal disease. I recognized three forms of the disease—acute, subacute, and chronic. Not being able to find any bibliography on the subject until recently, I first thought it some form of septicæmia. My joy cannot be imagined when I read a full report by Dr. Fenimore, of Tennessee, and another by the Minnesota State Board of Health, from which I write some of the history of previous outbreaks. In nearly every month in the year for many years I have under my observation isolated outbreaks of some form of this disease. Some farmers come to me with the history that they found some stock dead in the pasture or their cattle had a swelling in the neck and their legs were sore like scratches in the horse. In the months of July and August last year there came under my direct observation fifty-three cases of this disease, most all in the acute form. As I had an opportunity of observing the clinical symptoms and post-mortem lesions of many cases I report them. I may add that the acute form of this disease very much resembles gloss anthrax, in my estimation, —as I had an opportunity to observe both diseases side by side last year, as both were prevalent in this section. I observed the two diseases clinically, microscopically, and held post-mortems on cadavers of cattle from both diseases at one time. I find in the acute form in some cases the clinical symptoms are identical with gloss anthrax; the only way I can differentiate between the two is by post-mortem and microscopical examination. General symptoms in the acute form of rinderseuche in Wisconsin are a rise in temperature (41 degrees C.); swelling of the throat and neck, angina, ecchymosis of the mucous membranes, and a hæmorrhagic diarrhœa; eating but little; grinding the teeth, swelling of the tongue, staggering gait, hair-pin feathered epistaxis; in milking cows complete agalorrhœa and quivering of the muscles of the flank, lying with the head to the side,

very dull cast of countenance, weeping eyes, saliva stringing from the mouth.

Symptoms in the chronic form of rinderseuche: Loss of appetite, constipation, increase of temperature at first. The animal gets very anæmic; the temperature drops to normal, the mucous membranes become very pale; constipation is followed by diarrhœa; the fæces are frequently stained with blood; the intestines are more or less distended with gas; an œdematous swelling hanging from between the lower jaws. This symptom with a hæmorrhagic diarrhœa is almost characteristic. In some cases extensive œdema of the head, neck and lower part of the legs; the hair is stiff and desquamation and ulceration in the region of the pastern.

Course of the acute form, death in from 24 hours to 7 days. Course of the chronic form, 7 days to five months.

Post-mortems in General.—In removing the skin large and small hæmorrhages disseminated through the muscles, large and small hæmorrhagic tumors, infiltrated with serum, are abundant in the subcutaneous connective tissue and penetrating the muscles. In opening the abdominial cavity the viscera and intestines always showed large numbers of ecchymotic areas, while the subcutaneous tissue was infiltrated with a serous exudate. The mucous membrane of the tongue, larynx, and pharynx and the lymphatic glands of these regions were swollen and infiltrated with bloody serum.

History of Previous Outbreaks.—Friedberger and Fröhner say this disease is not so recent as might be believed. A terrible epizoötic was described in the *Veterinarian.* In 1858, an epizoötic which decimated the bovines was nothing else than the disease in question. In 1878, Bollinger described under the name of "Wild and Rinderseuche" an epizoötic disease which killed 234 boars and 153 deer in the royal game preserve in the environs of Munich. After the plague in the park had died out, the domestic cattle in the neighborhood began dying of the same, or a very similar disease. The disease was sudden in its onset and rapidly fatal, death occurring in most cases in

from 12 to 30 hours; ninety per cent. of the affected animals died. Two forms, an exanthematous and a pectoral, were described. In the former there was a rise in temperature to 42 degrees C.; swelling of the face and neck, stomatitis, glossitis; cyanosis and ecchymosis of the mucous membrane and diarrhœa, with blood-streaked pieces. Death occurred in from 12 to 60 hours. In the pectoral form, which was not observed in cattle, there were signs of pneumonia and pleuro-pneumonia, death resulting in from 5 to 8 days.

Bacteriologically, Bollinger demonstrated only that anthrax bacilli were not present and that the disease was inoculable to cattle, horses, pigs, sheep, goats and rabbits. In 1885 Kitt studied an outbreak of an unknown epizoötic disease of cattle, pigs, etc., in Simbath. He isolated a short polar staining bacillus, non motile, growing best anarobically in broth at incubator temperature, not liquifying gelatine and inoculable to cattle, horses, sheep, goats and rabbits. In the blood preparation collected in 1878 (consequently preserved seven years from the case which has been described by Bollinger) Kitt found bacilli morphologically the same as those from the Simbath outbreak. Johne confirmed Kitt's observation on material and culture furnished him by Kitt. Huppe from specimens received of Kitt also confirmed the latter's statement and identified the bacilli with those shown by Semmer, Perroncito, Toussaint, and Pasteur, to be the cause of European chicken cholera; those described by Koch and Jeffky as producing septicæmia in rabbits, and these Loffler and Schutz had found to be the cause of schweineseuche, or German swine plague. Huppe proposed the name "Bacillias Septicæmiæ Hæmorrhagicæ" for the members of the group and his observation and classification have been corroborated by a number of later observers.

In 1889 Jensen in Jutland described an infectious disease among calves—sixteen animals which died after showing symptoms of fever and diarrhœa. Post-mortem: phlegmonous œdematous swellings were present in the subcutaneous tissue; marked hæmorrhages were present throughout all the organs;

fibrinous pleuritis, pericarditis and gastro-enteritis were present in many of the animals; the blood was well coagulated and not very dark. The spleen was swollen. In the blood and in the organs were found small ovoidal endstaining bacilli which when isolated and studied in pure cultures were indistinguishable from those causing chicken cholera, rinderseuche, swineseuche, etc. Rabbits and mice succumbed to injection in forty-eight hours, guinea-pigs in eight days; one steer died in about thirty hours after a subcutaneous injection, and showed serogelatinous, in part hæmorrhagic infiltration of the subcutaneous and intramuscular tissue at the point of inoculation; numerous hæmorrhages in all of the organs, hæmorrhagic swelling of the lymph glands and enlargement of the spleen. Chickens inoculated subcutaneously died after eleven days and showed necrosis of the liver. For the solution of the question whether these similar diseases in various animals (rinderseuche, swineseuche, chicken cholera, etc.) are but forms of the same disease, Jensen inoculated six chickens with small doses of the bacteria of the calf disease. Four to six weeks later the same birds were inoculated with large doses of chicken cholera bacilli, whose virulence was shown by control inoculations in chickens. The fowls previously inoculated with the calf disease bacilli, showed no symptoms; thus apparently proving that immunity to chicken cholera in chickens had been established by vaccinal injections of *bacilli bovisepticus*.

I could relate many more reports of outbreaks of this disease from this most complete report from the Minnesota State Board of Health.

THERE are about 18,000 trotters with records of 2:30 and better.

RANGE HORSES from Colorado, Wyoming, Idaho, Montana and Oregon are winning praise and popularity in England. Broncos of the type that speculators were canning for export three or four years ago are now being used in England for polo and the hunting field. English critics say they are natural jumpers and as handy as cats, in addition to being hardy and of fine fibre.

THE HORSE'S FOOT.

By James McDonough, D. V. S., Montclair, N. J.

Read before the Veterinary Medical Association of New Jersey, at Trenton, January 9, 1902.

Mr. Chairman and Gentlemen: After first thanking you for this privilege, and apologizing for my inability to treat with so important a subject, I will state that the object of my paper is to create a discussion on that long neglected, and very important organ—the horse's foot, and its shoe of nature—the hoof. I know that for several reasons this has always been a very complex subject for veterinarians to deal with. First of all, owners are not conscious of the fact that most lameness and injuries to the limb can be traced to the foot.

Second, they do not know that a horse is lame, unless he is lamer in one leg than in the other. In other words, unless a horse travels with a perceptible limp, our most humane people will compel him to go unconscious of his sufferings.

Third, it has long been the custom for the care of the feet to be left to the farrier, and as to just where his duties end, and those of the veterinarian begin, has always been a problem that neither could solve.

As to the first cause, we are responsible for its existence. If we are called to see a lame horse, and find him suffering with a sprained tendon or ligament, a soreness of some muscle or muscles, bony enlargement, etc., we do just what any owner or groom would do, simply treat the part affected, which in most cases they have found and suggested the same treatment that we will apply, and oftentimes will themselves apply it with just as satisfactory results.

Now, we as veterinarians know that that cause of lameness was in itself an effect, and, it is our duty to find and remove its cause. For by so doing, we not only prevent a recurrence of the trouble, but we satisfy the owner that our knowledge of those things is superior to his, as the condition can oftentimes be relieved and permanently so without the application of any treatment to the parts affected, but by simply removing the

cause, a service that can only be performed by the veterinarian, who has a knowledge of the anatomy of the foot and limb, and the physiology of motion.

The second cause can easily be overcome, after having successfully removed the first, for in most cases the owners, after once convinced that a condition could exist unnoticed that would result in an injury to the limb and lameness, will seek our opinion of their other horses, when we can advise them of their condition and by our skill relieve them, and allow them to travel with a freedom that will be noticed and appreciated by the owner.

The third cause—it is the duty of the farrier to perform the work of horseshoeing. There is no one who can take his place, and it is far from my object to make little of his service. He is held responsible for all kinds of lameness, and whilst I do not wish to infer that they are entirely blameless, I do say with authority that there would be more lame horses if the judgment they exercised was commensurate to the pay they receive.

As to where his duties end and those of the veterinarian begin, why, they end just where his knowledge of the subject ends, and it is right there where the veterinarian's begins. Their duties are different and distinct. The one must not become a consulting shoer, and the other cannot be considered a consulting veterinarian. But to get back to the subject of my paper, and make clear its object, we will consider the relation of the hoof to the foot, and their relations to the rest of the limb.

The shell, as we know, surrounds and protects the foot just as our shoes surround and protect our feet. It is the shoe of nature, in the full sense of the term, and it is fitted so nicely and accurately to the foot as to permit of no alteration in its shape without causing pain and discomfort to that most sensitive organ. If this statement be true, we have only to notice the distorted shape of nearly all hoofs to form some opinion of the suffering endured by those animals who are powerless to relieve it. They are not even allowed to rest that they might lessen it. They manifest unmistakable symptoms of pain.

They go sore. Point first one foot, then the other. They move along, oftentimes under the whip, with little short steps. But it is only when the pain of one foot is more intense than that of the other, which causes them to limp, that we respond to their pleadings for relief, and then only to the extent of restoring the crippled limb to its former usefulness.

But our duty does not end there. We should know that the shape of that hoof cannot insure comfort to the foot, and it becomes our duty either to shape it, or to direct the performance of that work.

The relation of the foot to the limb and the different parts of the limb to each other, depends entirely upon the shape of the shell. This I wish to make plain.

We know that the possibility of a crooked and flexible column of bones to support the weight of a horse's body, depends upon the relation of one to the other, and the support they receive from the muscles, tendons and ligaments, that enter into the formation of the limb. We also know, that if we place a column of bones in a vertical position, with the first firmly attached to a base, that the relation of the ends of those bones to each other will depend upon the shape of the base and its position upon the ground, and as the hoof forms the base of this complex column of sensitive tissue, we can readily see that any alteration of its normal shape can only result in an injury to the limb.

But man has altered all of them. You probably have but few normal-shaped hoofs in this city to-day. And the only reason that more horses are not lame is because the work they perform does not tax the distorted limb to the limit of its endurance. But whilst it is only reasonable to suppose that the limbs were intended to perform work proportionate to the other organs —heart, lungs, etc.—yet we know if subjected to violent exercise, such as trotting or running, the legs or feet are the first to give out. In fact, it is generally believed by owners of fast horses, that their limbs are unequal to the task of performing this work. And yet, I do not know of a single injury to the

limb below the knee, unless from some external cause, that the cause cannot be traced to the hoof, and must be removed before the injury can be permanently relieved.

If we are called to see a horse suffering with some injury to a muscle, tendon or ligament, not traceable to any external cause, we must account for it in one of two ways: that it was either unequal to the task of performing its work, or there was imposed upon it more work than it was intended to perform. As to which it was, we can be reasonably sure, by examining the same part of the opposite limb, and finding it free from injury.

But if the work of this part of the limb has been increased, that of some other part or parts must have been lessened to the same extent. And as this transfer of work from one part of the limb to another can only be caused by a change in the relation of the parts to each other, and as we know the relation of those parts depends upon the shape and position of its base—the hoof—it would seem that we would have to seek relief for our trouble at that point.

Again, it is an undisputable fact that owners of some runners have been known to wait for their quarters to break before expecting them to win a race. And there is no question but some of those horses have run faster with broken and bleeding quarters than they could with the hoof intact.

Now, anyone knows that the breaking of that hoof, and the rupturing of that most sensitive tissue—the laminæ—causes pain to the animal. But the pain it caused was less than that caused by the distorted shape of the hoof which was responsible for the quarter-crack.

But, gentlemen, I know that I have taxed your patience to the limit of its endurance, and will conclude by thanking you for your kind attention, and requesting a liberal exchange of views upon the subject of my paper.

THE severe street conditions this winter in the cities have made much work for veterinarians.

METRO-PERITONITIS.

By James M. Reed, V. S., Mattoon, Ill.

Read before the Illinois Medical and Surgical Association, at Decatur, Jan. 10, 1902.

Metritis may be limited to one or more of the internal layers of the generative organs, or it may extend to its outer covering; the peritoneum may produce certain symptoms which may be called metro-peritonitis. Inflammation of the uterus and parturient septicæmia may ensue very soon after birth, rarely before the second day with the cow, and seldom beyond the eighth day; with the mare and bitch may be more retarded. The temperature increasing is the first indication of disease, and within twenty-four hours the rise may be as much as two to three degrees. At the commencement of the rise there are well marked rigors; the animal becomes dull and loses its appetite, the pulse small and hard; may increase in the mare and cow to one hundred per minute; the respiration is hurried and shallow, the mouth hot and pasty, and the mucous membranes injected. The horns and ears are very warm, the animal grinds its teeth and betrays the existence of colicy pains.

When metro-peritonitis is fully present there always occurs symptoms very rapidly of an effusion of serum into the abdominal cavity in large quantities. The abdomen becomes enlarged and round, as if the animal had been feeding freely. The course of metro-peritonitis is generally very rapid and may not occupy more than a few days, usually three or four days and rarely five or six days. In such cases death may be due to the violence of the inflammation and its extension to the peritoneum, gangrene of the uterus, or to septic infection by absorption of the putrid matter in the uterus and general poisoning; therefore, when recovery appears to be progressing favorably relapse may occur.

The predisposing causes of metro-peritonitis are septic infection following absorption, or peritonitis by infection of the genital canal, or infection of the uterus during birth, or exposure to cold.

Metro-peritonitis being a grave disorder and liable to be produced by any wound or abrasion in these parts, the genital canal should be thoroughly cleansed by injection of warm water, and any wounds dressed with antiseptic remedies. After the uterus has been cleansed an injection of carbolic acid solution should be made every day, and the wonnds, if accessible, must be dressed at the same time. Constitutional treatment must be directed towards neutralizing the effects of the septic matter by the exhibition of antiseptic remedies and reducing the temperature. I would recommend sulphite of soda and potassa or sulphurous acid. If there is a tendency to constipation a purgative should be given. I have had good results from this treatment when there was any possibility of recovery.

ERRATUM.—Dr. T. J. Menestrino, St. Louis, Mo., writes to say that in his article entitled "Acute Rheumatism in the Horse," which appeared in the February REVIEW, the dose of iodide of potassium was given as "*two ounces*," when it should have read "*two drachms* three times a day."

PUT ON GUARD.—"Yes," said the fairy prince, "you may have whatever you want for a present." "I will choose," said the fortunate person, "either a wife or an automobile." "How foolish!" exclaimed the fairy prince. "Why do you not select something that you can manage?"—*Judge.*

THERE is a band of nearly 1000 wild horses roaming the hills and ranges of Southern Oregon, which have been increasing in number for nearly twenty years. They originated in horses that strayed from the ranges, and some that were turned loose by parties when the great scare came on about the trolley cars and bicycles taking the place of horses. In this way some good blood got into this stock, and now efforts are being made to capture them.

FIRES DAMAGE VETERINARIANS.—The recent series of extensive conflagrations in the East have included as their victims two well-known members of the veterinary profession. The fire which almost swept away the heart of Waterbury, Conn, took all the instruments and other paraphernalia of Dr. Robert C. Jones, while the $10,000,000 blaze in Paterson, N. J., left only the walls standing of Dr. Wm. Herbert Lowe's commodious and well equipped infirmary on Ellison Street.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

ANTE AND POST-MORTEM REPORT OF A COLT INFESTED WITH GASTROPHILUS EQUI AND STRONGYLUS ARMATUS.

By Wm. Schumacher, M. D. V., Stevens Point, Wis.

The latter part of June I was called out to see a colt kept in a marshy pasture along the Wisconsin River. On arrival found a two-year-old filly of good breeding, struppy looking, with very long hair, paying no attention to what was going on, chewing on grass in what seemed a semiconscious manner. The attendant reported that the filly had been found down on several occasions, unable to get up without assistance, and sometimes showing colicy symptoms. Examination showed the membranes dirty white, pulse 35 and almost imperceptible; temperature 37° C., respiration 12 and very shallow; evinces pain on palpation of abdomen; peristaltic sounds two and one-half to three minutes apart. Diagnosis: Inanition anæmia due to poor food and worms. Told the owner to destroy the animal as I considered it in a dying condition. The owner decided to remove the filly to his stable in the city, which was done by loading it on a wagon as it was unable to walk any distance. Was called again two days later and found it down in the stall. Another veterinarian had been treating it with large doses of tr. nux vomica and had placed it in a sling, but was unable to retain it in the apparatus. Told the owner again to destroy it and he finally consented.

Post-mortem: Almost total absence of blood when cutting through the abdominal muscles and hardly any blood is found throughout. Gelatinous, yellowish infiltration of the subcutaneous tissues. The bowels are of a bluish color, the walls about one-eighth of an inch thick and contain only traces of food. The stomach contains about a pint of almost dry grass. Its walls are covered with the larvæ of the *Gastrophylus equi* as thick as shown in the illustration of "Bull. No. 5, B. of A. I., 1896." The peritoneum is of a blue color and between the two layers are found pinworms, *Strongylus armatus*, in large numbers. The kidneys are enclosed in a capsule of thick pus alive with the worms, which are also found in the kidney substance

and a few in the bladder. A few worms are also visible loose in the abdominal cavity and in the large bowels.

Some weeks later another colt which had been kept in the same pasture, belonging to two druggists of this city, became sick and was treated by the owners until death. I held a post-mortem on the sly and found almost the same lesions as in the first case.

Am treating at present a six-months-old filly, which has also been running in the same pasture, with the following symptoms: Has occasional attacks of colic, after which it passes some pinworms, looks very emaciated, hair standing erect, pulse and temperature a little below normal, membranes cyanotic, mucus of mouth sticky, appetite capricious, shows great pain on palpation of abdomen, peristaltic sounds very loud and frequent, bloody watery diarrhœa with the odor of a dirty pig pen in summer, alternating with constipation. The animal has been very lively all summer, but now appears very weak and sleepy. *Diagnosis:* Helminthiasis, but may be extended into chronic gastro-intestinal catarrh leaning towards enteritis, also peritonitis, nephritis and cystitis.

TUMOR AND SCIRRHOUS CORDS.

By A. W. BAKER, Brasher Falls, N. Y.

Case I.—A thoroughbred Jersey sold at a very low price on account of the presence of a large tumor on the anterior surface of the carpus. I was called to examine her, and advised an operation.

The operation consisted in the removal of the tumor, which weighed twelve pounds and six ounces. In the centre of the tumor was an oval-shaped blood-clot about the size of a goose egg, and surrounded by a membrane so tough that it could not be torn with the fingers. The dry clot dropped from the cavity when liberated. The strip of skin removed was sixteen inches long and nineteen inches wide, tapering to a point above and below. The field of operation was first cleansed with creolin solution and the wound sutured, after bathing with corrosive sublimate solution (1 to 1000). After-treatment consisted in placing the animal in slings and keeping the wound saturated with creolin solution for three weeks. During this time fresh dressing was applied but twice, after which the discharge of pus was very slight.

The wound healed by granulation and with no swelling of the leg. The operation was performed in October, and now

the knee has its normal smoothness. I would like to know how to account for the blood-clot at the centre of the tumor, and, if any other veterinarians have had similar cases in their experience, I would be glad to hear about them.

Case II.—In reply to Dr. Johnson, of Sioux City, Iowa, in regard to cases of scirrhous cord in horses, I had two cases last spring, one four, the other two years old. The owners thought my price too high for castrating, so a harness-maker was employed to operate at one dollar apiece. As result, both had scirrhous cord on each side, within four weeks' time of castration.

I injected cocaine at several points in the field of operation, and from the four-year-old one cord weighed four pounds, the other two pounds and four ounces. I only used creolin solution with cotton batten well soaked and redressed every day. The large colt was used every day following the third after operation.

ABDOMINAL LESIONS WITH RECURRENT COLICS.

By HUGH THOMSON, Newman Grove, Nebraska.

I send description of a case treated first during the summer of 1900. Symptoms present at that time were as follows:—Pulse and temperature normal, anxious expression of countenance, would eat a little and then stop to paw in one corner of the stall.

Diagnosis: Catarrh of the intestines. Gave calomel and aloes ball and left homeopathic dilution of nux vomica. Pain subsided, and two days later animal was turned to pasture.

In the fall animal was taken up and used as a saddle horse for hunting, stayed well all the fall of 1901, when after feeding for two weeks on wheat-straw and oats the same symptoms as before appeared. Gave same diagnosis and treatment. The animal apparently recovered, was sent to pasture and was all right for a month. A week after taking up, the mare was again taken sick. She would sit on her haunches like a dog, with frequent intervals of rolling, and turning head toward either flank. Urine passed frequently, about half a teacupful at a time, of a mucilaginous thickness, and color of flax-seed tea. Pulse 60 and fluttering. Temperature just above normal. No appetite nor thirst; bowels had moved regularly; abdomen tucked up. Diagnosis: Calculus or some growth of the intestines. Prognosis unfavorable. Treatment: Arecoline, gr. j, hypodermically, produced a free evacuation from the bowels. Left gin,

buchu and uva ursi for kidneys. The pain ceased, urine cleared up and animal ate bran mash and drank water. Continued well for two days, when I was called in the evening, finding animal suffering considerable pain. Gave morphine injection, which quieted the animal. Waited one hour, and as pain did not return, I left, with word that I would be around in the morning to get her hide for a robe and hold post-mortem. The hide is being tanned. Post-mortem appearances were healthy except the concave part of the pelvic flexure of the large colon, for sixteen inches, which was black and about six inches thick, there being some pus of an offensive odor; also, numerous fibrous branches running in all directions.

PUNCTURED WOUNDS OF THE ABDOMEN.

By E. H. KOHLER, D. V. S., Easton, Pa.

Case I.—On the evening of July 9th, 1901, a suckling colt jumped upon a picket fence and ran one of the pickets into his abdomen; the bowels protruded, but were replaced by the owner and held in place by a broad bandage. I was then called. Upon arrival the colt was bright and active and not a particle distressed. He was cast and his hind parts raised. With the aid of a poor lantern and the help of the farmers I removed the bandage and examined the wound. It was an opening one and one-half inches long, situated about four inches from the median line, and about four inches in front of the stifle, running obliquely inwards and forwards. The skin was incised for another inch to allow us to replace the bowels, which was done quite easily. The ruptured muscle was then sutured with silk, as was also the skin, the wound dressed with mild antiseptics, and the colt allowed to rise. Upon rising he showed a little distress, but I gave him a few doses of opiates. Next day the distress had disappeared, temperature and pulse nearly normal; was sucking the mare. Have not since seen him, but was informed by the owner that it healed without any complications in about two weeks.

Case II.—On July 20, 1901, a two-year-old colt punctured his abdomen behind the sternum and a little to the left of the median line, with an elder stalk, which broke off and remained in until pulled out, after which part of the omentum and a quantity of serum followed. The stalk was three and one-eighth inches long and five-eighths of an inch in diameter. The omentum that followed was amputated, the wound dressed

with mild antiseptics. A little pain was present after the dressing, but opiates soon relieved it. I saw it the next day; temperature and pulse nearly normal; was eating and apparently well. Healed without any further trouble.

A CASE OF EQUINE RABIES.*

By ROBERT DICKSON, D. V. S., New York City.

On Monday morning, Jan. 20, I was called to see a horse for lameness. On arrival I found a clipped bay gelding, 15.3 hands high, 9 years old, weighing 900 lbs., suffering from some nervous trouble. At first glance it appeared to be an affection of the brain, but as the symptoms were rather peculiar, I inquired very carefully into the history of the animal, which was as follows: On the Saturday previous the horse went suddenly lame while driving, and the driver treated it as best he could, regarding the cause as a strain of the tendons. The next morning he observed that the horse acted very queerly in backing out of the stall; and thinking that the cause might be a nail prick, sent for the horse-shoer, who removed the near shoe, but in endeavoring to take off the right shoe he struggled so much that he became very nervous and excited, and it was impossible to raise the off foot from the ground.

Upon my arrival I found the animal's respirations to be 40, temperature 103°, and in a highly nervous state. In backing him out of the stall he would drag the front feet in the manner of a foundered horse, only between the intervals of backing and stopping he would thrash and paw at an alarming rate. I sent for the shoer to get him to raise the horse's foot, but upon approaching him he would become very nervous and tremble with fear, pawing and striking with first one foot and then the other, finally endeavoring to lie down, with his front feet out straight. He was put back in his stall, and inquiry developed the fact that he had refused all food since the day before. However, he would drink water, which caused him no excitement. I placed the patient under "expectant" treatment, with an unfavorable prognosis.

He rapidly grew worse, the spasms of excitement returning with the least provocation, becoming so alarming that all attempts at treatment were abandoned. He became furious, striking, biting, and breaking everything with which he came in

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* Read at the February meeting of the Vet. Med. Assn. of N. Y. County.

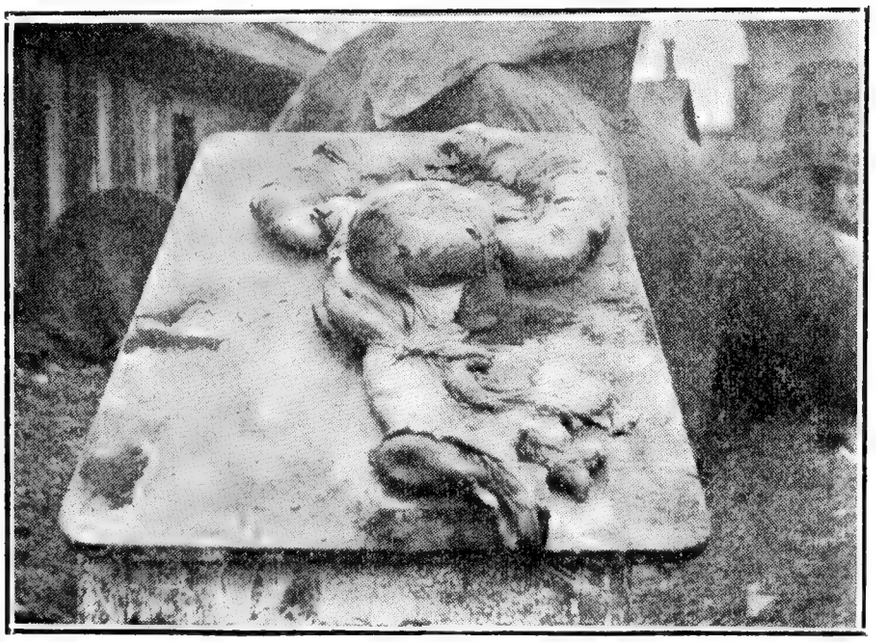
contact. On the morning of the 21st I ordered him destroyed, but he died in spasms before the officer arrived to shoot him.

I followed the cadaver to the dock, where I removed the brain and medulla, and, through the kindness of Dr. S. K. Johnson, they were sent to Dr. Cabot, of the Department of Health, who to-day (Feb. 5) reported his findings as those of true rabies.

OVARIAN TUMOR IN THE SOLIPED.

By W. S. Clark, D. V. S., Bradford, Pa.

The subject was an eight-year-old mare, which, while suffering from colicy pains, was relieved by ordinary treatment; but as the intestinal murmur was absent, she received an ounce of aloes. Four hours later the pain had returned, but still there was no peristalsis, while the temperature was normal. I then administered hypodermically the usual dose of eserine and pilocarpine, and had the patient removed to my hospital. While this relieved her, the pain returned in the morning with exaggeration. Temperature now 102°, no peristaltic sounds.



On rectal examination I could feel a large round body on the floor of the abdominal cavity, but it was so heavy and so far away I could move it but little. The eserine-pilocarpine injection was repeated, but it did not produce a free passage.

The mare died in fifty-four hours after being attacked by pain, and during the last four hours her temperature was 104°.

The post-mortem showed a double loop of intestine around

a large ovarian tumor, there being complete strangulation and gangrene of the encircling intestine. The tumor is apparently fibroid, and filled with small cysts. It was attached to the horn of the uterus, the other ovary being normal in size.

ŒSOPHAGOTOMY IN A COW.

By GEORGE I. SMITH, D. V. S., Lexington, Mo.

A Jersey cow with a silver fork in her throat, the result of feeding slops, garbage, etc., was the subject. The cow had been in a declining condition for several weeks; profuse dribbling of saliva, and could swallow only soft mushy foods. Upon examination found a hard substance about the middle of the second third of the œsophagus. The skin being divided and considerable tissue broken down, the jugular vein was exposed and pushed aside, leaving the œsophagus in place as much as possible. Making a direct incision the handle of a fork was exposed and withdrawn. A prong of the fork had penetrated the upper margin of the œsophagus, which prevented it passing down or being regurgitated.

I sutured the œsophagus with catgut and the external wound with linen tape. Keeping her in my infirmary on strict diet, she was sound and well and discharged on the tenth day.

DEPARTMENT OF SURGERY.

By L. A. AND E. MERILLAT,
Chicago Veterinary College, 2537–39 State Street, Chicago, Ill.

B. SURGERY OF THE APPENDAGES OF THE EYE.

I. REMOVAL OF EYELASHES.—The indications for removal of eyelashes are distichiasis, trichiasis and entropion.

1. *Distichiasis.*—This is a term applied to a condition which usually terminates in trichiasis; it is accompanied by the doubling in of the eyelashes; there may be any number of lashes turned in, and sometimes one or more rows. As the condition progresses, the ciliary surface turns toward the eyeball, and finally ends in a typical case of trichiasis.

2. *Trichiasis* is a term applied to the doubling in of the entire ciliary surface, with the eyelashes rubbing against the eyeball. In some cases an entire row of cilia may be inverted and lie between the ocular and palpebral conjunctiva.

3. *Entropion* is a term used for a condition marked by the apposition of the external margin of the ciliary surface and sometimes the skin of the eyelid with the surface of the eyeball. Two forms have been recognized, viz., spasmodic and organic. The spasmodic variety is generally due to some deficiency in the obicularis muscle, usually of a reflex nature, resulting from inflammatory conditions of the eyelid or conjunctiva. The organic form is generally a sequel of injuries or chronic inflammatory conditions. Any of the above mentioned conditions which cannot be relieved or improved by the removal of eyelashes, should be subjected to careful surgical treatment.

The operation depends to a great extent upon the condition to be relieved or improved; if there is but a few lashes causing the trouble the procedure is comparatively easy, but if a large number are involved the procedure is more tedious. We will consider three methods of accomplishing it, each one having its special indications. These methods are:

(*a*) Epilation.
(*b*) Electrolytic removal of cilia.
(*c*) Scalping.

(*a*) *Epilation* is the most simple method of removing cilia when there are but a few causing the trouble or condition which is to be relieved. The only instrument needed is a pair of cilium forceps.

When cilia are removed with forceps they will grow again and eventually must be removed. This procedure, therefore, is not a curative measure and must consequently only be used to relieve the condition.

Operation.—The operator's hand must be thoroughly cleaned; the eyelid must be held with the left hand and the forceps in the right; the cilia are caught with the forceps as near to the skin and drawn out by gentle traction to avoid breaking. Only one cilium should be taken at a time. Epilation is a procedure used only for temporary relief, because the extraction of lashes does not prevent them from growing again; the only permanent cure is electrolysis or scalping.

(*b*) *Electrolysis.*—The electrolytic removal of eyelashes is accomplished by passing a mild current of electricity through an electrolytic needle attached to a suitable handle and the negative pole of a galvanic battery. The positive pole, consisting of a dampened sponge, is applied to some part of the patient's head after the needle has been applied to the root of the cilium, which completes the circuit. When the current is

completed a little whitish foam gathers around the needle, and after a few seconds the needle is removed and the eyelash taken up with a pair of forceps. If it cannot be extracted without traction, the needle must again be applied to the root until the lash can be removed without resistance. When the root is entirely destroyed the eyelash is loose and can be removed without resistance, and will be permanently destroyed. The operation leaves no cicatrix and does not disfigure the eyelid; for this reason it is the most reliable method of removing cilia.

(*c*) *Scalping* is a method of removing cilia by excising the entire ciliary border. In human surgery, scalping was often used, but has fallen into disuse during the last few years; the cause for this is the hideous disfigurement of the eyelid which always follows.

The instruments required are a pair of forceps; fine scalpel; fine curved needles; fine silk; lid-plate.

Operation.—The lid-plate is placed between the lid and the eyeball; the thumb of the left hand is used to pull the skin of the eyelid back, exposing the ciliary margin; make an incision in the ciliary margin as deep as the ciliary bulb; then make an incision behind the eyelashes and remove them with the triangular strip made by the two incisions. This strip must include all the ciliary bulbs, and can be held by a pair of forceps and dissected out with the scalpel. After the strip with all the bulbs is removed, the wound is thoroughly washed and sutured with fine silk stitches, which are allowed to remain in place for four or five days.

After-care.—The eye should be bandaged for the first three or four days; the wound examined every day, and dressed with dry absorbing dressings. If the stitches become infected the infected ones must be removed, and if necessary new ones applied to prevent gaping and bring the skin and conjunctiva in apposition. The operation always leaves a disfigured eyelid.

(*To be continued.*)

SURGICAL ITEMS.

"*Neurotomy*" *and* "*Neurectomy.*"—Why has the word "neurotomy" become obsolete in our literature? A few years ago "neurectomy" was seldom used, while to-day it is in universal use. Literally *neurotomy* implies division or dissection of a nerve, while *neurectomy* cannot be defined as anything less than the total ablation of a whole nerve, unless qualified by

some descriptive adjective. Such a term as "plantar neurectomy" leaves the impression that the whole plantar nerve is removed bodily, and therefore defines no feature of the operation as ordinarily performed. On the other hand, "plantar neurotomy" might mislead by suggesting that the nerve is merely divided, yet its suffix is sufficiently elastic in its meaning to cover every feature of unnerving operations. "Neurotomy" therefore should not be supplanted by "neurectomy." Medical and surgical technology may, and in fact does, very frequently respect an *adopted meaning* of a word, but it never tolerates the misapplication of words. Furthermore, in defending the word "neurotomy," it must not be forgotten that it is a perfect elucidation of the prime object of the operation, *i. e.*, the solution of the nerve's continuity.—(*L. A. M.*)

What is a Curb?—A curb is usually defined as a sprain of the calcaneo-cuboid ligament. This impression, widely accepted as it is, has been proven erroneous by Prof. Hughes, who has made a number of post-mortems with the object of revealing its true nature. Curb, according to Hughes, is a synovitis and not a ligamentitis. The seat of lesion is always found in the synovial apparatus intervening between the perforatus tendon and the calcaneo-cuboid ligament. In no case of curb has he found the ligament involved in the morbid process.—(*L. A. M.*)

A Nasal Dilator.—The troublesome œdema of the anterior nares occurring in purpura hæmorrhagica, infected wounds of the nostrils, burns, scalds, etc., which may threaten an animal's life from dyspnœa, is rendered less harmful by the application of spring dilators made of wire (Fig. 60). A wire sufficiently strong to form a spring when bent in the shape shown in the accompanying illustration, is adjusted into each nostril so as to support the nasal cartilages and thus admit the air more freely.

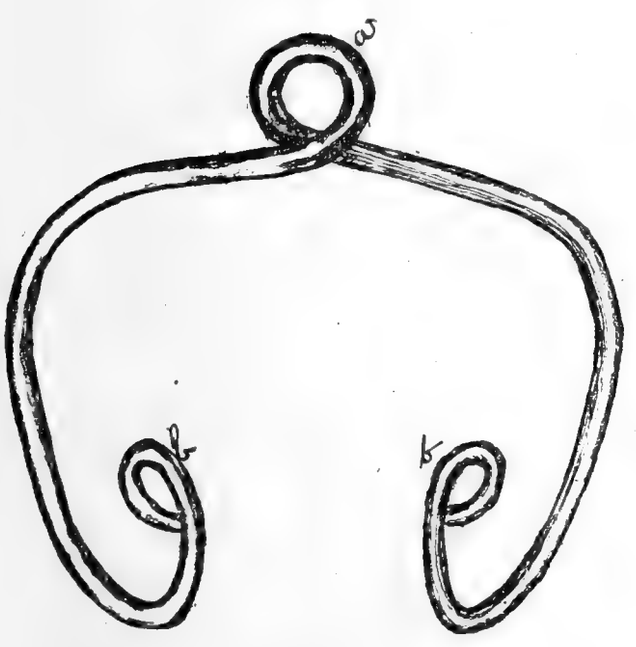


FIG. 60. NASAL DILATOR.

The loop *a* is attached to the halter over the nasal bones, and each angle *b* is introduced into the nostril on the opposite side.—(*Berlin. Thierarzt. Wochenschr.*)

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D. V. S., Bureau of Animal Industry, Milwaukee, Wis.

PURULENT CONJUNCTIVITIS, DUE TO THE ABSENCE OF THE LACHRYMAL OPENING OF THE LEFT NASAL DUCT [*Kuehn*].—Towards the end of February, the author was called to attend to a case with a history, that since the last three months there is a profuse, yellowish, thin, purulent discharge from the left eye, and that the flow of the discharge can be increased by taking a hold of the horse's chin and elevating its head in that manner. The examination revealed the correctness of the owner's statement, and the author found as cause of the stated ailment, the missing of the left lachrymal opening. At the place of the opening there was a slightly yellowish spot. The treatment consisted in the opening of the skin at this yellow spot corresponding to the diameter of the right lachrymal opening. After this was done a 35 cm. long, and 3 mm. thick hard rubber probe was inserted into the artificial opening, and in this procedure the natural nasal duct was reached. In inserting the probe, by a peculiar motion, at the depth of 10 cm. a slight obstruction was reached, which, in forcing through the probe, appeared to be thin bone plates. After overcoming this obstruction it was an easy task to force the instrument into the lachrymal sack. Soon after the operation there emptied quite an amount of discharge of a yellowish, thin, purulent character from the nasal opening. To prevent the closure of the artificial opening and for the treatment of the purulent conjunctivitis a catheter specially made for this purpose was given to the owner, which could be attached to a balloon syringe, with the direction to insert this several times daily into the nasal duct, injecting a 1 per cent. solution of sulphate of zinc. Complete recovery took place inside of 8 days.—(*Berl. Thierarzt. Wochenschr.*)

EXPERIMENTAL STUDIES AS TO THE HEREDITY OF TUBERCULOSIS [*Dr. F. Friedmann*].—Ever since the nature of tuberculosis was known, again and again the question is brought up as to whether it is possible to transmit the disease by the way of the placental circulation from the mother to the child, or if

there is a chance of infection of the ovum, through tubercular sperma, and in this manner causing a spreading of tubercular processes in the growing fœtus. Koch does not believe in the existence of hereditary tuberculosis, admitting only a certain hereditary predisposition. On the contrary, Baumgarten considers this disease just as hereditary as any other disease of a similar nature, and accepts the possibility of transmission from both mother and father, by means of the sperma. Virchow, on the other hand, considers the vitality of the ovum after infection with bacilli questionable. Johne arrived at the same conclusion, and declares it very improbable that such a delicate creation as the ovum could offer resistance to the influence of the tubercle bacilli. To decide the submitted question, the author cites next, the remarkably extensive literature on this subject, and concludes from the same that (1) a placental transmission of tuberculosis to the fœtus is a frequent occurrence, but that (2) still more frequently does a transmission of this infectious disease take place from father to child, as can be seen from numerous clinical observations made. *Tuberculosis of the father is ten times more dangerous for the children than that of the mother* (*Klebs*). To decide the last question in an experimental way, the author proceeded in the following manner: A few drops of a highly virulent tubercle bacilli culture in a mild soda solution, was injected into the vagina of a female rabbit, which gave birth a few hours previously. This procedure was immediately followed by an act of copulation, as these animals are most susceptible for conception directly after parturition. After 6–8 days the female rabbit was killed, the uterus with the containing embryo embedded in paraffine, and series of sections made, which were then treated with the regular tubercle bacilli stains (Anilin water, Fuchsin mixture, etc.), In examining these preparates derived from the embryo in the earliest state of development, as per above, there was found in all of them tubercle bacilli in small or large numbers, mostly inside of the cells, and in one case in the form of a whole colony. The mother animal proved to be entirely free of tuberculosis; a careful search for bacilli in the vagina and uterus was also fruitless, which corresponds with the observations of other investigators (Gärtner, Maffucci), and also with clinical observations. These bacilli seem to be eliminated from the genital canal in an unknown manner. As to the mode of entering of the bacilli into the ovum, the literature does not contain satisfactory explanations, especially in relation to the possibility of

carrying the bacilli with the spermatozoas. At present in this line investigations are carried on by Friedmann. At all events, through the careful and creditable work of the author, it is proved "*that tubercle bacilli which enter the vagina with the sperma can pass into the embryo without any intervention of the mother.*"—(*Zeitschr. f. Clin. Med.*)

A CASE OF ANORCHISMUS IN A HORSE [*C. Christensen.*]—The author was asked to undertake the castration of a cryptorchid, which is a very frequent operation in Denmark. After a rectal exploration of the horse, which gave a negative result, he on the following day operated. He entered the abdominal cavity with the whole hand, to the extent that he could feel markedly the left kidney. A thorough and careful search of the abdominal cavity as far as he could reach was made, but was unable to locate the testicles, and after an hour's tiresome work he had to give up the search, close the quite large wound and let the animal rise. In spite of the severe operative interference the horse was able without any difficulty to go into the stable, where he was tied up. The appetite was good, temperature normal, and in the first three days was apparently well. But on the morning of the fourth day the animal was found down, unable to rise without assistance. Helped on to his feet, he took some green food. Temperature remained within the normal borders, but the following morning rose to 41.2 °C. The stitches were opened to drain the collected secretions and the wound was cleansed. In doing this an intestinal sling was found in the cavity of the wound, already highly congested and œdematous, adherent, and was loosened from the wound only with great difficulty. In the neighborhood of the wound there was a sero-fibrinous exudate noticeable. Although the chances of recovery were very slight, efforts were made with suitable treatment of the wound and proper diet. On the following ten days the temperature fluctuated between 39.2° and 40° C.; the appetite was capricious, the appearance proportionally lively. Gradually the temperature became normal; at the same time intermittent colicy symptoms were observable, so that the general condition became worse. The animal taking up less and less food and losing strength to such an extent that it appeared to be cruelty to let it suffer any longer. 23 days after the operation the horse was destroyed, and an autopsy held by Chr. in the presence of two other veterinarians. *Testicles were not found at the autopsy.* Although the abdominal cavity showed considerable changes (partly organized exudates, adhesions of the in-

testines with each other, and with the abdominal walls, considerable of a sero-purulent exudate), which made impossible a regular minute autopsy. Chr. is of the belief with regard to the carefulness with which the slightest details were examined, to state the impossibility of the presence of a testicle, not even in a rudimental state. It is certain that there were no efforts made previously to this to castrate the horse, as on the one hand there was no marks visible of an attempted operation, and on the other hand Chr. was informed to that effect by the owner, who was in possession of the horse, since it came into the world. —(*Berl. Thierarzt. Woch.*)

ITALIAN REVIEW.

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

THE ANTERIOR OR HYO-THYROID PHARYNGOTOMY IN SOLIPEDS [*A. Baldoni*].—The exploration of the pharyngeal cavity made through the mouth is exceedingly difficult, if not impossible, and by it the diagnosis of pharyngeal lesions is rendered very doubtful in many instances. It is to remedy the difficulties presented by the soft palate, which as a curtain separates the pharynx from the buccal cavity, that the author has resorted to the anterior or hyo-thyroid pharyngotomy. The operation is performed on the median line, and consists in the incision of the tissues covering the subhyoid region, and in the space bounded by the superior border of the thyroid cartilage and the posterior part of the body of the hyoid bone. The animal is either kept standing or thrown down, with the head kept in extension by a Bernadot & Buttel apparatus. After careful disinfection the skin is divided over the hyo-thyroid space, then the connective tissue underneath, the muscular layer formed by the subscapulo-hyoideus, and finally the hyo-thyroid ligament; when then by dividing or pushing aside the hyo-epiglotteus muscle and puncturing the laryngeal mucous membrane, the pharyngeal cavity is entered by the introduction of one finger—the soft palate in front, the epiglottis behind, and the mucous membrane of the pharynx above and on the sides. When the examination of the therapeutic indications are finished the wound can be left alone, cicatrization taking place in a very short time. Anterior pharyngotomy can be very useful in the diagnosis of morbid processes of the pharynx and surrounding

organs. Tumors, endo-pharyngeal cysts, fracture of the epiglottis, foreign bodies, parasites, special inflammatory processes, etc., can be made out, while without it their diagnosis could not be established until the post-mortem. Palpation, the use of the rino-laryngoscope, exploration with instruments, probangs, etc., are in many instances of little use. The usefulness of anterior pharyngotomy is also most advantageous in the treatment of pharyngeal diseases, and to mention only a few, aside from those of an essentially surgical nature, we have the removal of tumors, extirpation of foreign bodies, operation on the gutteral pouches, etc. Also the catheterization of the œsophagus, irrigations and spraying of the pharynx, etc. The objections which can be made against the operation are: (1) The division of the hyo-epiglotteus muscle; (2) the possibility of the formation of fistulous tracts; (3) the tumefied condition of the subhyoid region, which would interfere with and perhaps make the operation impossible; (4) the small size of the hyo-thyroid membrane. But all of these are of little value, and can be readily remedied. Prof. Baldoni has at present but few observations to relate on the operation which he recommends, but he has no hesitation in so doing, considering it as most simple, of undoubted advantage, without sequelæ, and most practicable.—(*Clinica Veterinaria.*)

Croupal Enteritis of Calves Treated by Electricity [*Dr. Egidio Graziadei*].—A calf of common breed had been suffering for several days with croupal enteritis, which seemed rebellious to all forms of treatment. The animal was so reduced in condition that he remained in the sterno-abdominal decubitus all the time. The history was brief and the cause of the trouble plainly made out. The mother not having enough milk, he had received additional food of hay, straw, cabbage, etc. He presented all the characteristic symptoms of the disease, but besides had excessive tympanites, sensitiveness of the intestines, and in the right flank could be felt a long body, sausage like, extremely hard, and that could not be made to move or get softer, notwithstanding rectal injections of soap. The condition of the animal was very serious and the chances of recovery so slim that the author advised slaughter. As it was a valuable animal (said the owner) he would not consent, and after thinking the case over, and failing to find any therapeutic agent to give the animal, his condition preventing any of the treatment ordinarily used, the author decided to try electricity. He had a small electric battery (a Spamer?); applied one of the poles on the loins,

and with the other passed it over the abdomen, the rumen, and over the sausage-like cord of the right flank. After ten minutes the calf passed a fair quantity of fæces, covered with croupal exudation. Drenches of white wine and repetition of the electric application brought on improvement. On the third day the animal had marked tympanites, which was relieved by puncturing and ammoniacal drenches. Electricity was again applied for four days, and recovery followed without further trouble.—(*Clinica Veterinaria.*)

CONTRIBUTION TO NEURECTOMY OF THE MEDIAN IN SOLIPEDS [*Dr. Pietro Ghisleni*].—Although this operation has entered into almost daily practice, there are yet many who object to it. Can it entirely take the place of plantar neurotomy, as some claim? What is the cause of its failure? Is it applicable to all forms of specific lameness? Has the anatomical formation of the plantar nerves something to do with the failures? All these questions have been studied by the author—principally the last one. He has made interesting anatomical researches, has carried experiments on many animals, and has made some clinical observations of value, which authorize him to draw the following conclusions: (1) That of the nervous fibres of the cubital only a part go to the foot, where they keep up a certain degree of sensibility; (2) that this degree of sensibility is more marked in the territory of the termination of the external plantar, and that as the clinic and the experiments have proved it, it is in lesions of the external half of the foot that median neurectomy answers; (3) that median neurectomy has many advantages over the plantar operation, one being to allow a certain quantity of its function to remain, although in limited extent; (4) that in cases of negative result with median neurectomy, one may resort to that of the external plantar as a means of removing what little remains as a result of the slight sensitiveness of the foot.—(*Clinica Veterinaria.*)

A CASE OF OBSTETRICS [*Dr. Luigi Filippi*].—Although not new, the rarity of the case justifies its publication. A four-year-old cow, which had been served some six months previous, exhibited some symptoms of abortion, except the expulsive efforts. For fear of bringing about a too early delivery, a rectal examination was made and a fœtus, partly engaged in the neck of the uterus, was readily made out. The examination per vagina revealed that abortion was going on. The fœtus was in the sterno-abdominal presentation, which was easily changed by the author, and a small fœtus of the male sex was removed.

The next day the cow seemed quite ill. She had lost appetite, had fever (40.8 C.), and was making expulsive efforts. As great care had been exercised during the manipulations of the day before, no lesion was suspected, but it was thought she was going to have puerperal fever, and treatment was prescribed accordingly, viz., vaginal injections of creolin and antifebrile doses of salicylate of soda. No improvement followed, and the following day the cow was much worse, the expulsive efforts returning more frequently. The caretaker then reported that during one of the vaginal injections a foreign body had been expelled and dropped on the bedding. What was it but a fœtal third phalanx. A re-examination of the first fœtus showed the cadaver to be perfect. A vaginal examination was made at once, and a bone resembling a tibia was extracted, and in the right horn of the uterus was felt an emphysematous oblong mass, floating in a very offensive syrupous liquid, and which was another fœtus. This was removed, the uterus disinfected by irrigation, and the cow recovered rapidly.—(*Il Nuovo Ercolani.*)

FOREIGN BODY IN THE MOUTH OF A COW [*Dr. G. Leoni*].—Since about forty days the animal has had on the left side of the face, extending from half of the masseterine region down to the inferior portion of the jaw, a swelling which has been growing more and more. It has been treated by an empiric without result, and now there are two fistulous tracts, from which pus is escaping. The growth is a little less painful and perhaps a little smaller. The examination of the mouth was quite difficult and demanded the use of a special speculum. When it was made, a foreign body was discovered on a level with the third molar. It had made its way partly through the mucous membrane of the mouth and was almost entirely surrounded by soft structures. With long forceps, however, a good hold could be taken of it, when it was extracted. It proved to be a triangular piece of slate ; one of the angles, quite sharp, rested on the third molar; another, more cutting, had penetrated the soft tissues ; the third, more blunt, was the one which had given rise to the fistulæ. The wound and the fistulous tracts were treated with disinfecting solutions of sublimate, and the animal recovered in a few days.—(*Il Nuovo Ercolani.*)

NOTES OF PATHOLOGICAL ANATOMY [*Dr. Garibaldo Lisi*].—These relate to three cases of cysts which were observed by the author at the slaughter-house at Carrara. The first was in a young calf. It was situated toward the point of the liver and adherent to it, attached to the Glisson membrane, and contained

275 cubic centimeters of fluid. The minute microscopical examination of the liquid and of the walls of the cyst excluded the supposition of its being a cyst of echinococci, and showed it to be an anomaly of formation—that is, a congenital serous cyst. In the second case, some fifty cysts were found in the abdominal cavity, attached to the omentum and to the serous covering of the rumen. Some were spherical in shape, others piriform. They contained a perfectly limpid fluid; some were pedunculated, others spread over the walls of the organs. At first they were thought to be parasitic cysts, but no indications of echinococci could be found, and the conclusion was that they were the result of a cystic peritonitis, without gravity, and perfectly local. The third case, also not due to echinococci, was a transparent growth on the tricuspid valve of a calf. It was ovoid in shape, measured two centimeters in diameter, and contained a slightly straw-colored liquid. The presence of these three cysts and their nature, which differs from the usual parasitic nature, renders this communication interesting to veterinarians who have charge of meat inspection at slaughter-houses. —(*Il Nuovo Ercolani.*)

FRENCH REVIEW.

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

LACERATION OF THE GRAVID UTERUS WITHOUT LESION OF THE ABDOMINAL WALL [*G. Drouet*].—These injuries are somewhat frequent in domestic females toward the time of parturition, because of rough or improper manipulations. They may also occur in connection with deep wounds of the abdomen, and, again, although rarely, from traumas of the abdominal wall, bruises, etc. Their prognosis is generally fatal. The author reports the result of an examination made at a slaughter-house upon the carcass of a ewe just killed, and in which an extra-uterine fœtus was found floating freely in the abdomen. The fœtus seemed to be in about its fourth or fifth month of development, and weighed 1500 grammes. It formed an irregular mass, with both fore legs stretched forward along the neck and head, the hind legs flexed under the abdomen; it had no adherence to the abdominal walls, was floating freely, and united by little connective tissue bands to the intestines. When dissected its organs were found to be healthy, without odor or de-

composition. The uterus of the mother was of normal size, and on the superior face of the body presented an irregular cicatrix, the marks of which are also found on the internal surface, showing that all the membranes had been involved in the laceration. No trace of the placenta could be found, neither in the uterus nor in the abdomen of the mother. No history of the mother could be obtained.—(*Rec. de Med. Vet.*)

FRACTURE OF THE SPHENOID [*M. Drouin*].—Although well protected the base of the cranium is not free from fracture. The lesion is due to a traumatism acting at some distance and especially upon the occipital protuberance. The horse which is the subject of this observation frequently had attacks of staggers, his work was irregular, and when he was kept in the stable several days he would almost invariably fall down suddenly. Ordinarily when he fell he would drop on one side, and after two minutes could get up. At last, one Sunday morning he reared so violently that he fell backwards, the poll striking the pavement, blood flowing from the nostrils. In five minutes he was dead. At the post-mortem, made immediately, the sphenoid was found *entirely loose*, carrying with it a portion of the bacillar process of the occipital; it had a perpendicular position to its normal direction, and in its displacement had cut the internal carotid and cavernous veins of the occipito-sphenotemporal hiatus. The posterior extremity of the large bony splinter had also entered the rachidian bulb, cutting the pyramids and the pons varolii. The gutteral pouches were filled with blood.—(*Bullet. de la Soc. Cent.*)

STRANGULATED HERNIA IN A PUPPY [*L. Colin*].—Three weeks after birth the little fellow had a hernia as big as a nut, but it grew quite rapidly, and in a short time was the size of a hen's egg. At first the dog did not seem incommoded by the tumor, but one morning he was taken ill, groaned, and his little abdomen became tympanitic. The hernial tumor was hard and painful to pressure, was irreducible, and did not give the sensation of the presence of liquids or gases. An operation was decided upon. The scrotum and vaginal sac being opened, the hernia appeared, formed by a loop of the small intestines, and presenting on its anterior extremity a gangrenous spot. There was another also on the posterior extremity, but it was less advanced. The intestine was opened and a hard mass formed of straw was found. After excision of the gangrenous portion and thorough disinfection the wound was sewed up, the hernia reduced, and the vaginal sac closed by a circular ligature. Low

diet, mucilaginous enemas of lysol were prescribed. The next day the puppy seemed comfortable, began to suck his mother, and in a few days was cured.—(*Rec. de Med. Vet.*)

MELANOTIC TUMOR IN A MARE [*M. Cagny*].—This case is reported as a record for an attempt at treatment by *interstitial injections of lactic acid.* It relates to a mare, aged 15, which became lame on the left hind leg. She was in good condition, no indication of pain, and stood well on both legs. After trotting 100 meters she showed no trouble, but if the distance was increased to 600 or 700 meters she became lame and gradually limped more and more to such an extent that after some time the lameness was such that she could not go any further and she was ready to fall. After one or two minutes of rest she would be able to resume work. During the attack the leg would be cold, the muscles of the side hard, tetanic like; respiration hard, nostrils dilated, seeming in great pain. After the attack the heat would return to the leg and the muscles resume their suppleness. By rectal exploration a tumor as big as the fist was found, attached to the sacrum, and involving the left iliac blood-vessels. The pulse, easily felt above the tumor, is imperceptible below it. The diagnosis was sure—a melanotic sarcoma interfering with the circulation of the left hind leg. Abandoned by the owner, it was decided to try interstitial injections of lactic acid, already mentioned, to arrest the growth and promote the melting of subdermic melanoma. These were made in the mass of the tumor, through the rectum, carefully disinfected. Five injections of one cubic centimeter each of pure lactic acid were made at various points of the tumor. At first the animal did not seem to suffer, except from slight colics, but after a few days the leg began to swell, standing upon it becoming more and more painful and difficult, and the size of the tumor increased, and the animal was slaughtered. The diagnosis was confirmed at the autopsy. A number of melanotic growths were found beside the one spoken of above. At the five points of puncture there were five cysts, containing eight or ten cubic centimeters of citrine serosity. Around them the tissues of the tumor were softened, of sticky consistency, and colored in black. With time, perhaps, the tumor having undergone this change in its whole structure, might have been resorbed and recovery or an improvement be obtained.—(*Bullet. de la Soc. Cent.*)

COMMUNICATION OF THE SINUSES WITH THE MIDDLE MEATUS OF THE NASAL CAVITIES IN THE HORSE [*Prof. Barrier*].—It is known that in normal conditions the sinuses of one

side of the head communicate with the corresponding nasal cavity by a slit, situated a little above the centre of the middle meatus. There are cases, however, where an opening is found large enough to introduce the finger. In other cases the opening will permit two fingers to pass. This the author attributes to an arrest of development of the base of the maxillary turbinated bone. In a specimen which he presents Prof. Barrier shows that in this case the abnormality is not due to an imperfect development of the maxillary turbinated bone, but to an arrest in the development of the base of the ethmoidal or frontal turbinated. Whatever may be the cause, the opening of communication is very wide, and leaves exposed the anfractuous cavity of the superior maxillary sinus.—(*Bullet. de la Soc. Cent.*)

PHLEBITIS OF THE JUGULAR AFTER PHLEBOTOMY—LIGATURE—RECOVERY [*M. Vivien*].—This is the history of a half thoroughbred mare, which, being taken with intestinal congestion with very violent colic, was bled with much difficulty at the jugular, five liters of blood being extracted. Notwithstanding the strict application of the after cares the animal had several successive hæmorrhages. The author values the quantity of blood at some 45 litres, without counting the first five taken at the therapeutical bleeding. There were complications of thrombus, of formation of several abscesses, the vein had become diseased, and the only chance of saving the animal was to ligate the vein at the point where the diseased process had not reached, a condition difficult to ascertain on account of the swelling and infiltrated condition of the parts. This, however, the author succeeded in doing by securing a ligature as far up as possible, viz., very near the point of junction of the jugular and facial. This stopped the further danger of hæmorrhages, the several abscesses along the vein were properly treated, and ultimately the animal recovered. From the severity of the case the author concludes: (1) Phlebotomy is not as anodyne an operation as many believe; even with ordinary care the sequelæ may be very serious; (2) when phlebitis exists and assumes the suppurative form, hæmorrhages must always be looked for, and to correct them sutures are useless; (3) ligature of the vein is the only radical and sure treatment to resort to, and that as early as possible.—(*Rev. Veter.*)

PREVENTIVE AND CURATIVE TREATMENT OF TRAUMATIC ARTHRITIS BY ANTISEPTIC DRESSINGS AND INJECTIONS OF ANTISTREPTOCOCCIC SERUM [*M. Pegus*].—After relating several cases of recoveries from suppurative arthritis and recent

articular wounds, the author gives the following conclusions: (1) With all kicks received on the hocks which may be followed by open joint, a permanent antiseptic dressing had better be used from the start. The temperature of the animal and his ability to stand on the leg, will give the indications to renew it; (2) in all developed arthritis, one must at once wash and drain the subcutaneous loose structures, antisepticing them with iodoformed glycerine, so as to avert a possible focus of suppuration, which would afterwards infect the synovial; (3) one must never forget that loose detached conditions is the rule; (4) do not allow yourself to be deceived by this subcutaneous tract, which may make you believe you have to deal with a wound without importance, where there is in fact an articular opening; (5) do not probe an articular tract without it is needed, and if so do it with the greatest care, so as not to infect the synovial or do severe injury; (6) leave the dressing five or six days longer than really necessary, to be sure of no late infection of the joint. Injections of antistreptococcic serum have given excellent results, and shorten the duration of the fever.—(*Journ. de Med. Vet. and Zoot.*)

Polynucleosis of Rabies [*J. Courmont and Ch. Lesieur*].—From the numerous researches which they have made on the numeration of leucocytes of the blood during the life and after the death of man, guinea-pigs, rabbits, and dogs affected with rabies, their conclusions in the application to the diagnosis of rabies are as follows: (1) During the incubation the study of the leucocytes cannot serve to recognize rabies; (2) the researches of total leucocytosis is not useful at any period of the disease; (3) confirmed rabies (from the beginning of the nervous symptoms) is always accompanied by noticeable polynucleosis. The absence of polynucleosis must discard the diagnosis of rabies. It is a negative sign, but one of the greatest value. On the contrary, the presence of polynucleosis cannot naturally be sufficient to make the diagnosis of rabies. Other affections are accompanied by polynucleosis.—(*Rèv. Veter.*)

The Humane Society of Washington, D. C., has notified Attorney-General Knox to lower the checks of his trotters. Mr. Knox has decided not to heed the notification and will continue to check his horses wherever he pleases. He has invited the society to bring the matter into the courts.

The English Army requires between 18,000 and 19,000 horses in time of peace.

VETERINARY LEGISLATION.

NEW YORK.

In Assembly, No. 982.—Introduced by Mr. PENDRY—(by unanimous consent)—read once and referred to the committee on MILITARY AFFAIRS.

EXPLANATION.—Matter in Italics is new; matter in brackets [] is old law to be omitted.

AN ACT TO AMEND THE MILITARY CODE, ENTITLED "AN ACT IN RELATION TO THE MILITIA, CONSTITUTING CHAPTER SIXTEEN OF THE GENERAL LAWS."

The People of the State of New York, represented in Senate and Assembly do enact as follows:

Section 1. Sections twenty-eight and twenty-nine of article two of chapter sixteen of the military code is hereby amended to read as follows:

§28. Troops of cavalry.—A troop of cavalry, part of a squadron or battalion, shall consist of one captain, one first lieutenant, one second lieutenant, one first sergeant, one quartermaster sergeant, one commissary sergeant, one guidon sergeant, four sergeants, eight corporals, four artificers, two trumpeters, eighty privates. The minimum strength of such troop shall be fifty-one enlisted men. A troop not part of a squadron or battalion, shall consist of one captain, two first lieutenants, two second lieutenants, one assistant surgeon of the grade of first lieutenant, one first sergeant, one quartermaster sergeant, one commissary sergeant, one guidon sergeant, one veterinary sergeant, *or one veterinarian as herein provided*, four sergeants, eight corporals, two musicians, two hospital corps privates, eighty privates. The minimum strength of such troop shall be fifty-one enlisted men. *The governor may, on the recommendation of the commanding officer of a separate troop or mounted battery, appoint and commission a veterinarian to the grade of second lieutenant.*

§29.—Batteries.—A battery shall consist of one captain, two first lieutenants, two second lieutenants, one assistant surgeon of the grade of first lieutenant, one first sergeant, one quartermaster sergeant, one commissary sergeant, one guidon sergeant, one veterinary sergeant, *or a veterinarian as herein provided*, four sergeants, eight corporals, four artificers, two trumpeters, two hospital corps privates, eighty-four privates. The minimum strength of the battery shall be fifty-one enlisted men. *The governor may, on the recommendation of the commanding officer of a separate troop or mounted battery, appoint and*

commission a veterinarian to the grade of second lieutenant.

§2. This act shall take effect immediately.

In Assembly, No. 964—Introduced by Mr. GRAEFF—read once and referred to the Committee on AGRICULTURE.

AN ACT TO AMEND THE AGRICULTURAL LAW RELATING TO THE IMPORTATION OF CATTLE FOR DAIRY AND BREEDING PURPOSES.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Article four of chapter three hundred and thirty-eight of the laws of eighteen hundred and ninety-three, entitled "An act in relation to agriculture, constituting articles one, two, three, four and five of chapter thirty-three of the general laws," as amended by chapter three hundred and twenty-one of the laws of nineteen hundred and one, is hereby amended by inserting therein a new section to be known as section seventy-e and to read as follows:

§70-e. Importation of neat cattle; inspection.—Neat cattle shall not be imported into this state for dairy or breeding purposes, unless they are in a healthy condition. The person importing or causing such cattle to be imported shall present to the person to whom they are delivered a certificate that such cattle are in a healthy condition and shall file a copy of such certificate in the office of the commissioner of agriculture. Such certificate shall be signed and executed by a practitioner of veterinary medicine and surgery duly authorized or licensed to practice in accordance with the laws of the state from which such cattle are imported. Such certificate shall be in the form prescribed by the commissioner of agriculture, and shall state the name and residence of the person from whom such cattle were purchased, and of the person importing them, also the name and residence of the person in this state to whom they are sold, unless they are shipped into the state to be sold or resold in which case the certificate shall give name and residence of consignee and place of consignment, the number of cattle imported and a brief description of such cattle, the date of the examination, and such other matters as may be required by the said commissioner. Such examination shall be made within ten days prior to the importation of such cattle into this state. No practitioner of veterinary medicine and surgery shall sign any such certificate unless he shall have first filed in the office of the commissioner of agriculture certified evidence of his au-

thority to practice in the state where he resides and where the examination of such cattle is made. Such certificate of health shall be invalid and of no effect for the purpose of this act, unless signed by a practitioner of veterinary medicine and surgery who has so filed such certified evidence of his authority to practice in the state where he resides. Any person who shall import any such neat cattle for dairy or breeding purposes, without such certificate of health or any person who shall receive any such cattle without such certificate, shall be liable to a penalty of twenty-five dollars for each head of cattle so imported, to be recovered in an action brought therefor by the commissioner of agriculture in the same manner as in cases of other violations of the agricultural law.

§2. This act shall take effect immediately.

MASSACHUSETTS.

AN ACT TO ABOLISH THE BOARD OF CATTLE COMMISSIONERS AND CREATE A CATTLE BUREAU OF THE STATE BOARD OF AGRICULTURE.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same as follows:

SECTION 1. The board of cattle commissioners is hereby abolished.

SECTION 2. A bureau of the state board of agriculture is hereby created, called the cattle bureau of the state board of agriculture.

SECTION 3. The governor shall annually appoint a chief of the cattle bureau of the state board of agriculture, who shall have the powers and perform the duties heretofore conferred and imposed upon the board of cattle commissioners: *provided*, that no orders or regulations made by him under authority of sections four and seven of chapter ninety of the Revised Laws shall take effect until approved by the governor and council. His appointment shall be confirmed by the executive council. He shall report on or before the tenth days of January and July in each year to the state board of agriculture, who shall include an abstract of his reports in their annual report to the legislature. He shall receive an annual salary of two thousand dollars and his necessary expenses, and may appoint a clerk at a salary of twelve hundred dollars a year.

SECTION 4. Section one of chapter eighty-nine of the Re-

vised Laws is hereby amended by inserting after the word "agriculture," in the third line, the words :—the chief of the cattle bureau of the state board of agriculture:—so as to read :

Section 1. The governor and lieutenant-governor, ex officiis, the Secretary of the Commonwealth, the president of the agricultural college, the secretary of the state board of agriculture, the chief of the cattle bureau of the state board of agriculture, one person appointed from and by the Massachusetts society for promoting agriculture, one person appointed from and by each agricultural society which receives an annual bounty from the Commonwealth, and three other persons appointed by the governor, with the advice and consent of the council, shall constitute the state board of agriculture.

SECTION 5. So much of section three of this act as authorizes the appointment of said chief of the cattle bureau shall take effect thirty days after the passage of the act, and the remainder of the act shall take effect as soon as the said chief has been appointed and qualified.

SOCIETY MEETINGS.

CHICAGO VETERINARY ASSOCIATION.

The meeting was called to order by Dr. Allen, Third Vice-President of the society, at 8.40 P. M., Jan. 13, at McKillip Veterinary College, 1639 Wabash Ave.

The minutes of the previous meeting were read and approved. The Secretary reported that invitations had been forwarded to officers of the A. V. M. A., but that thus far no reply had been received.

The Treasurer, Dr. Walker, reported the amount of money in the treasury.

Under reports of committees, each committee was called upon respectively. The Committee on Legislation had no report to make, but considerable interest was manifested by the members of the society relating to amendments of the State law, which would strengthen it and make it more effective. Dr. Robertson advised the committee to be more active in their endeavors to improve the law, stating that the Legislature would meet before the committee had any demands to make. The general sentiment of the society was in favor of having the committee learn what the profession most needed and to so frame these needs in the form of amendments, to be presented to the next Legislature.

Dr. Quitman next stated that he had been devoting all his energies in other directions and that he would resign his place on the committee in favor of parties who have more time to devote to the cause. This, however, did not meet the approval of the society, most of the members claiming that he was the right man for the place.

The President called upon Dr. Worms, Chairman of the Entertainment Committee, for a report. Dr. Worms stated that he did not know that he was chairman of the committee; and as there was some money in the treasury it was his opinion that the society should have a banquet. This consideration was deferred, however, to be brought up under new business.

The Literary and Publication Committee, Dr. Walker, chairman, announced that Dr. White would read a paper at the next meeting.

The report of the Intelligence Committee was deferred to be brought up on the regular programme in place of a paper, as it so happened that there was no prepared paper on the programme for the evening.

Dr. Quitman, chairman on the special committee on subscriptions to create a fund for the entertainment of the A. V. M. A., should the next meeting be held in Chicago, made a report stating that the committee had $852.50 pledged and that there were still other business men who had not responded, among whom were some who would contribute very liberally. From present indications he concluded that the results of the committee's efforts were very encouraging. He further mentioned that the State Association had made no report and that he was unable to make any statement as to their success.

Next under the regular order of business came admission of new members. Dr. J. J. Millar's application, signed by Drs. Walker and McKillip, was referred to the Board of Censors, who, when called upon, reported unfavorably, stating that from the evidence which they had obtained in reference to the applicant, they could not report otherwise. Dr. Walker, who had vouched for the applicant, mentioned that he was surprised at the Board's report, and would be pleased to know upon what grounds the applicant was rejected. Dr. M. H. McKillip, who also vouched for Dr. Millar, stated that when he found himself in need of an associate, he (Dr. McKillip) had taken particular pains to get evidence of his character and as a result of his investigations had obtained good recommendations from the best people (lawyers, business men and ministers) of Sioux City,

Iowa, and consequently could not understand why the Board of Censors should make such a report.

Considerable discussion followed as to the power of the Board of Censors; the proper course to pursue under such circumstances; and the advisability of relieving the Board of its responsibility. Some of the members claimed that everything should be left to the Board of Censors, as they were an elective body whose duties were designated by the Constitution and By-laws of the society, and that it fell upon them by virtue of their office to inquire into the eligibility and fitness of proposed members. Others believed that it was the Board's duty to obtain all possible evidence and if their report did not meet the approval of the society, that it was necessary for them to submit their evidence to the society for their consideration. Another position maintained by several members present was that the society should relieve the Board of Censors of their responsibility by asking them to give their evidence to the society and allow its members to draw their own conclusions respectively. After a great deal of consideration Dr. Robertson made a motion requesting the Board of Censors to make known to the society the evidence they had in their possession. The motion was carried.

The evidence was turned over to the society by Dr. Hughes, Chairman of the Board, who explained to the society that he had first written to one party, who referred him to another, and he to another, and so on, until the Board had accumulated the evidence which they held in their possession. The evidence was then read to the society, and each member allowed to express his views on the subject, until the Chair decided that the discussion was out of order. On motion of Dr. Quitman, the discussion was closed.

The question of voting upon the application of Dr. J. J. Millar for membership, was next considered. Dr. Hicks inquired as to whether the society could vote upon an application that the Board of Censors had rejected. The Chair decided that the matter had been taken from their hands and was now before the society, and that it was the duty of the society to decide whether the applicant should be admitted or rejected.

On motion of Dr. A. C. Worms, a ballet was taken, two members being appointed as tellers. The result of the ballot was 10 Nos, and 7 Yeas.

As no paper had been prepared for the regular literary programme, the report of the Committee on New Literature was

read by Dr. Hughes, which embodied the subject of "Azoturia"; "Methylene Blue in the Treatment of Catarrh"; "Surgical Operations on Aged Patients"; "Nocard's Discovery as to the Origin of 'White Scour'"; "Vaccination for Dog Distemper; "Chloretone in Experimental Surgery"; A New Horseshoe Pad to Prevent Nail-Pricks"; "Anthrax in Cook Co., Ill."; and "A New Float Patented by Mr. Fehr."

"*Azoturia.*—The subject of azoturia is a particularly important one at this season of the year, and the cases met in city practice are uncomfortably numerous as well as very fatal. The subject is brought up by this committee more for the purpose of introducing a discussion with hopes of determining the advancement made in its therapeutics. Potassium iodide has been referred to during the past two years as a potent remedy, but recent observations have shown that it possesses no special virtue. As far as this committee has been able to learn the therapeutics of azoturia is still unsatisfactory, and that beyond attending to the comforts of the patient but little can be accomplished. In fact, the mild cases recover without medical attention, while the acute ones succumb in spite of any form of treatment.

"Members of this society who have suggestions to offer at this time will confer a valuable favor upon this committee if they will present them at this meeting.

"*Methylene Blue in the Treatment of Catarrh.*—It is evident from medical literature that methylene blue has great value in the treatment of catarrh of the upper air passages, when applied locally to the diseased membrane. Irrigations are made three times a day, the strength of 2 gm. to the liter, injected into the nasal cavities. In horses suffering from catarrh in the sub-acute form its efficacy at once becomes apparent, as has been shown by several recent trials. Except for the stain it leaves on white nostrils, this remedy, we believe, will become popular in equine medicine wherever it is put into use.

"*Surgical Operations on Aged Patients.*—Investigations of several modern veterinarians bring out the rather surprising statement that old patients bear out the results of capital operations much better than young ones; that age is never to be regarded as a contraindication for operative treatment, the other things being equal. Surgical wounds in old patients under favorable conditions, will heal promptly, but rather slower than in the young, but age has never been found to entirely prevent regeneration. A particular feature to remember about operating upon aged animals is, that they are more susceptible to

shock from loss of blood than younger animals, and that the surgeon should respect every drop of blood when operating on such patients, while in younger ones nominal loss of blood is of no special significance. Aside from the danger of injuring aged patients in securing them, there is evidently no need of undertaking operations on them reluctantly.

"*Nocara's Discovery.*—Prof. Nocard, the well-known French veterinarian, has recently demonstrated conclusively that white scours of calves is the direct result of an infection through the umbilicus, contracted either during or immediately after parturition. He has proven that young animals, whose umbilicus is properly treated at the time of parturition, do not contract the disease. This places an entirely new phase on this dangerous disease, and immediately places it among the preventable diseases. The discovery was made while investigating the outbreak in Ireland, to which country he was called by the British Government.

"*Vaccination for Dog Distemper.*—The veterinarian who is interested in the treatment of dogs will be delighted to learn that animals may be successfully immunized against this disease, as demonstrated by two French veterinarians, Drs. Physalix and Lygnières. They have succeeded in isolating a bacillus to which they attribute the disease, and from which they prepare a vaccine by attenuation. The value of such a discovery can hardly be estimated, especially in the dog hospital, where dog distemper is no less than a pest. The difficulty of preventing dogs from contracting distemper in canine hospitals is well known. If animals brought to hospitals can be vaccinated against the disease the veterinarian will have overcome an obstacle of no mean dimensions.

"*Chloretone in Experimental Surgery.*—Chloretone is a new hypnotic prepared by Parke, Davis & Co. It was introduced into the category of medicine several years ago with the intention of supplanting inhalation anæsthetics. Subsequent experiment, however, has shown that chloretone is a dangerous drug, and that animals completely anæsthetized with it do not readily revive and in fact few will survive profound anæsthesia thus produced. The great value of this drug, however, in experimental physiology as shown by its frequent use throughout the United States, has led to its adoption in the surgical clinics at the Chicago Veterinary College. It is found that animals anæsthetized with chloretone pass immediately into a profound state of anæsthesia and will remain so through hours and hours

of experimental work, giving the instructor and students an opportunity to make the greatest use of animate material for surgical instruction.

"*A New Horseshoe Pad.*—A new horseshoe pad for the special purpose of preventing nail pricks, consists of three layers of canvas, strengthened across the heel with a sheet iron plate, two inches wide, riveted with two rivets to the canvas. This pad can be made quickly by the horseshoer at the time of shoeing. It is cheap; it does not, like leather, favor loosening of the shoe. A pair will outwear two pairs of shoes, and its efficacy in preventing nail pricks is shown by the fact that in a stable of over 300 horses not a single nail prick has been sustained since they were put into use six months ago. The invention is the work of Mr. Donolan, superintendent stables of Armour & Co. The objection to the leather, tin, etc., are well known, and are entirely met by this new invention.

"*Anthrax in Cook County.*—A severe outbreak of this fell disease occurred twenty-five miles northwest of Chicago during last summer, in which the lives of thousands of the most valuable dairy cattle in the country were threatened. The number of deaths, which included two human beings, was legion.

"This committee refers to this outbreak for the special purpose of exemplifying the value of vaccination in stamping out this disease. The live-stock owners in the vicinity took immediate measures to stamp out the disease, and were eminently successful in preventing its spread beyond the immediate neighborhood.

"*A New Float.*—Mr. Fehr, a senior student in the McKillip Veterinary College, has invented a float of no mean value. The instrument possesses the unique feature of holding the float blade tight without the use of screws, as well as being readily attached to an angular float without much ceremony. Such an invention is, indeed, a boon to the veterinarian who practices dentistry. The old floats are seldom in working order on account of the screws becoming rusted, and an invention that will overcome this defect will be received with open arms. The use of this float for several weeks on a large number of animals has given the writer confidence in its practicability."

The report was discussed by Dr. Quitman on chloretone, and by Drs. Campbell, Hughes and Quitman on the use of slings in the treatment of azoturia.

Under the head of new business Dr. Quitman tendered his resignation as a member of the Legislative Committee. On mo-

tion of Dr. Walker, however, his resignation was not accepted.

Dr. C. F. Griiner's calendar was presented to the society as a violation of Sec. 6, Art. IX of the By-laws of the society, and by motion of Dr. Walker the matter was referred to the Board of Censors and the Secretary authorized to write a letter to Dr. Griiner calling his attention to the violation of the By-laws and requesting him to discontinue the use of the calendar.

There being no other business before the society, a motion was made to adjourn and meet at Chicago Veterinary College Feb. 10, 1902. Motion carried. E. MERILLAT, *Secretary.*

ILLINOIS VETERINARY MEDICAL AND SURGICAL ASSOCIATION.

This association met in annual session at the Brunswick Hotel, Decatur, Ill., January 9th and 10th, 1902. The meeting was called to order by the President, Dr. V. G. Hunt, of Arcola, Ill. The roll-call was responded to by a goodly number of members.

The opening address of President Hunt was an exceedingly interesting discourse, replete with interest to the association.

Dr. J. C. Hoxsey, of Auburn, was elected to membership, following a favorable report from the committee upon his application. President Hunt then introduced Dr. Hoxsey to the society.

The election of officers for the ensuing year was then held and resulted as follows:

President—Dr. V. G. Hunt, Arcola.

First Vice-President—Dr. C. A. Hurlbutt, Stonington.

Second Vice-President—Dr. F. Glassbrenner, Alton.

Secretary—Dr. W. A. Swain, Mt. Pulaski.

Treasurer—Dr. J. M. Reed, Mattoon.

Standing committees appointed by the President for the coming year were:

Membership—Drs. S. H. Swain, J. M. Reed, A. Travis, C. A. Hurlbutt and W. C. Dawson.

Programme—Drs. V. G. Hunt, W. A. Swain and S. H. Swain.

Arrangements—Drs. V. G. Hunt and F. Glassbrenner.

Legislation—Drs. John Osborne, V. G. Hunt, S. H. Swain and C. A. Hurlbutt.

An excellent paper upon the subject of "Metro-Peritonitis,"*

* Published elsewhere in this number of the REVIEW.

contributed by Dr. J. M. Reed, brought out some very interesting and instructive points with reference to this disease. He was responded to by Dr. V. G. Hunt.

Owing to the absence of a paper assigned to Dr. R. W. Brathwaite upon "Bovine Tuberculosis," the subject was very generally and well discussed by several of those present.

Dr. S. H. Swain reported upon a case of "Herpes Circinatus," being a very extraordinary case, which brought forth some very interesting points in the treatment of this disease.

The second day's session was called to order by President Hunt. Much discussion was indulged in by those present as to what should constitute eligibility of members. On motion, any action on the subject was deferred until the next meeting.

An able and instructive paper by Dr. V. G. Hunt, on "Cerebro-Spinal Meningitis," was well received, and was then responded to by Drs. John Osborne and S. H. Swain.

Dr. W. A. Swain read a very interesting report of a case of "Summer Sores on the Penis," which brought out considerable discussion as to the various modes of treating this disease.

Among the visitors present was Dr. A. Babb, of Springfield.

On motion, the location of meeting was again fixed in Decatur and dates in August to be selected by the Committee on Programme.

Meeting adjourned until August, 1902, at Decatur, Ill.

W. A. SWAIN, *Secretary.*

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The annual meeting will convene in Philadelphia, March 4 and 5, in Room A, Odd Fellows' Temple, when the following papers will be presented: "Abortion," W. S. Phillips, Reading; "Calculi," J. F. Butterfield, South Montrose; "Poisoning in Cows," N. H. Allis, Wyalusing; "Rupture of the Flexor Tendons as a Complication of Azoturia," Chas. W. Boyd, Pittsburgh; "Municipal Meat Inspection," J. M. Carter, Philadelphia; "Peculiar Symptoms Attending Certain Forms of Colic," H. P. Eves, Wilmington, Del.; "The So-Called Black Tongue of the South," A. N. Lushington, Lynchburg, Va.; "My Experience with Argentum Colloidale Credé," John E. Spindler, Pittsburgh; "The Horse-shoer *vs.* the Veterinarian," Jno. E. Spindler, Pittsburgh; "Azoturia," James R. Mahaffy, Wilmington, Del.; "Breeding of the Trotting Horse," Charles

Lintz, Chester. Besides these Drs. Leonard Pearson, Philadelphia, and W. H. Mattson, Camp Ground, are down for papers whose titles are not yet announced. Numerons cases are also expected to be reported by members of the profession. On Tuesday, after luncheon, the convention, including the ladies, are invited to visit the "Vaccine and Anti-toxin Laboratories" of H. K. Mulford Co., Glenolden, Pa., after which a dinner will be served in Odd Fellows' Temple. The evening session will convene at 7.30.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The following resolutions were adopted by this association at the annual meeting, Feb. 4th, at Hartford.

WHEREAS, The Connecticut Veterinary Medical Association has learned with profound sorrow of the death of Dr. Rush S. Huidekoper, of Philadelphia, an honored member of the veterinary profession; a man who labored earnestly to improve the veterinary service in the United States Army, and one who devoted his life to the elevation of his chosen field of labors,

Resolved, That by his death the field of journalism has lost a valued helper; and, be it further

Resolved, That this association mourns his loss by causing a copy of these resolutions to be sent to the *Journal of Comparative Medicine and Veterinary Archives*, the AMERICAN VETERINARY REVIEW, and also be spread upon the association records.

WHEREAS, The Connecticut Veterinary Medical Association has lost, in the death of Dr. William H. Prophett, of Suffield, one of its older members; be it

Resolved, That this association hereby mourn his loss, and be it further

Resolved, That a copy of these resolutions be sent to the AMERICAN VETERINARY REVIEW, the *Journal of Comparative Medicine*, and also be spread upon the minutes of this meeting.

THE name of Dr. John J. Repp, of Ames, Iowa, was omitted from the list of members of the Committee on Pharmacopœia of the American Veterinary Medical Association, published in the February REVIEW, page 962, he having been appointed on that committee by President Winchester.

NEWS AND ITEMS.

GEERS, the celebrated driver, has recently added to his string a trotting mule who turned the Memphis track in 2:47¾.

DR. W. HORACE HOSKINS is now alone in the editorial and business conduct of the *Journal of Comparative Medicine*, Dr. H. D. Gill having retired from veterinary journalism.

DR. JAMES BEATTY (U. P., '98), Bureau of Animal Industry, stationed at Philadelphia, died at the Episcopal Hospital, Philadelphia, Dec. 21, of purpura hæmorrhagica.

DR. E. C. ROSS, of New Haven, Conn., has returned from the South, where he found the shooting excellent. The doctor has recently added many improvements to his hospital (previously fine), and now has one of the best equipped veterinary hospitals in the New England States.

DR. J. L. WILDER, formerly assistant to Prof. W. L. Williams, of the New York State Veterinary College, has removed to Dunkirk, N. Y., where he has located in practice, succeeding Dr. C. H. Jewell, who has accepted a position as meat inspector, B. A. I.

GREAT BRITAIN RID OF RABIES.—The London correspondent of the *Therapeutic Gazette* says: "The report of the Board of Agriculture from England on the eradication of rabies in a dog deserves careful reading. In England and Scotland there has not been a death from rabies since 1898, and this at a time, when France reports from 2000 to 3000 cases in a single year. A few cases of rabies in animals have occurred in South Wales, during this period, but no case has occurred in man. This result is entirely due to the uniform enforcement of the muzzling order throughout the country some three years ago. Now there is scarcely an area in which even a temporary muzzling is found necessary. May the government meet with the same results in the struggle with tuberculosis as in that with rabies!"

DR. DUNCAN MCEACHRAN, Principal of the Veterinary Department of McGill University, Montreal, Canada, has tendered his resignation as Dominion Veterinary Inspector, and Dr. Rutherford, former Member of Parliament, has been appointed in his stead. In an interview in relation to his retirement from this post, which he has held for so many years, Dr. McEachran made the following statement: "It must not be supposed that there is any friction between myself and the minister. On the contrary, our relations were never more friendly than at this mo-

ment, and in announcing his being obliged to carry out what we had on several previous occasions discussed, viz., the desirability of my taking my office to Ottawa, he was most complimentary in his expressions of respect and appreciation of my services. He said, in fact, that my services in organizing and for twenty-six years conducting a cattle quarantine service by which the animal plagues, such as pleuro-pneumonia, foot-and-mouth disease, etc., were effectually kept out of Canada, saved to Canadian agriculture many millions of dollars, and individually, I know that he regrets my resignation as much as any one. While I have resigned the active administrative duties of chief inspector, for the reason that I have had my home in Montreal for thirty-six years, my connection with veterinary education, and other important business matters requiring me to be located here, I would sacrifice too much were I to move to Ottawa to give my whole time to departmental work, at a salary far below that of a deputy minister. Consequently I tendered my resignation as chief inspector, and accepted the position of 'honorary veterinary adviser,' in which position I trust I may yet be allowed to assist in formulating and seeing carried out necessary measures for preventing the introduction of those ruinous animal plagues, and proper dealing with diseases occurring in animals in the country. I may say that, personally, I am too much interested financially in live stock production ever to become a passive spectator of a less vigorous policy in dealing with these matters than I have been for twenty-six years past."

Glycerin Suppositories for Veterinary Use.—The veterinary practitioner has often to face certain emergencies, when no other laxative is nearly so satisfactory as glycerin, applied directly to the rectal mucous membranes. Glycerin owes its efficacy to an increase of secretion, which it causes from the mucous glands, and to the rapid extraction of water from the membranes, causing a peristaltic action of the intestines. Glycerin, oil, soap or other enema heretofore used, have always been more or less impracticable, and so Messrs. Eimer & Amend, the well known veterinary druggists of New York City, have prepared a glycerin suppository which will produce a full evacuation without pain in from 5 to 15 minutes. A certain irritation observed by some practitioners which was induced after the application of glycerin, is entirely overcome in these suppositories by employing only the purest glycerin, and combining it with an excipient, which render them permanent under ordi-

nary conditions, without in any manner compromising their therapeutic activity. Their suppositories are endorsed by a large number of medical observers, who have found them to be a safe, prompt, unobjectionable and reliable means of attaining an evacuation of the lower bowels, without irritation to the alimentary tract, and without establishing a habit compelling the continued administration of drugs. Many cases of obstinate constipation, which failed to respond to the most powerful purgatives, yielded promptly to them. Constipation following foaling is promptly relieved without any disagreeable results. Every veterinary surgeon should carry a few of these suppositories in his satchel. In how many stables will he find hot water, soap or oil, or even a syringe to give an enema, especially when he is out on a hurry call at night? Equipped with one of these glycerin suppositories he will not lose any valuable time, and after inserting it, he can attend to other duties, being assured of its speedy and prompt action. Having selected a desirable cone for their shape, they are rendered easy for introduction, and they may readily be divided in two, to meet requirements of younger animals. Each suppository is enclosed separately in a glass bottle, securely stoppered with a screw cap to guard against any deteriorating influences. Price per single suppository, 25 cents; price per dozen suppositories, $2.50.

THE BRITISH PURCHASES OF AMERICAN HORSES.—In order to mount her army in South Africa Great Britain has purchased horses and mules rejected by the War Department for American troops. Since the beginning of the Boer war the United States has exported to Africa 82,427 horses and 95,460 mules. Practically all of these animals were obtained for the British service. Their cost aggregated $24,887,104 and the average price paid was $139. During the last four years the United States has purchased 59,995 horses and mules, which before acceptance passed a most rigid inspection. Their average cost was $88.90. The original purchase price of the horses and mules it obtained was not the full cost to the British government. Their transportation from New Orleans to Cape Town or to other African points was expensive, running the price considerably above that paid to the American stockmen. Officials of the War Department do not criticise the British officials for paying such a high price for animals, nor in view of the conditions existing in South Africa do they seriously blame British agents for selecting animals which were only "serviceably sound," no matter what blemishes they might have. It is said that a British agent

would make no objection to a horse which had a spavin provided it could do a reasonable amount of work. It is a fact that stockmen holding contracts to supply the United States with horses were not concerned if the animals were rejected. One of the dealers was asked by a curious officer: "What do you do with the rejected horses? I should think you would suffer bankruptcy in consequence of your inability to furnish horses which come up to the army specifications." "I don't mind how many you reject," was the response, "provided you finally select from the droves I bring horses which will meet your requirements. All those you reject I sell to the British at good prices." The British have not been by any means as careful as the War Department in its purchase of animals. In some quarters here the belief exists that the London government has paid a higher price for animals than was necessary, and it is believed there is foundation for the charge made by the *St. James Gazette* that "Horses, or at least four-legged creatures, have been bought for $165 when only worth a quarter of that sum. The difference—three-quarters—has gone into the pockets of certain persons." Major Arthur Lee, formerly British Military Attaché in Washington, reported that he had advised the English War Office that he could obtain the services of the "horse expert" of the United States Army. No one holds such a position in the American army, but undoubtedly civilians who have been employed as inspectors under the War Department notified Major Lee of their willingness to enter the British service. Had they been employed, undoubtedly the British government in many instances would have obtained better horses and have paid a smaller sum for them.—(*New York Herald*, *Feb.* 23.)

To Kill Stray Dogs.—A bill has been introduced in the New York Assembly prohibiting humane societies from disposing of lost or strayed dogs. At present the societies sell many of the dogs picked up by them and give away others. Under this proposed law, they will be required to kill them if not claimed within five days. The Review long ago protested against the sale of dogs that had been roaming the streets, exposed to all manner of contagion, particularly rabies. The circumstance which brought the subject prominently to our notice was the case of a collie, purchased from a "shelter," and presented to a little boy for a playmate. In a week or two he bit the child, and speedily died of dumb rabies, the child taking antirabic inoculations and escaping serious consequences.

PUBLISHERS' DEPARTMENT.

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Rejected manuscripts will not be returned unless postage is forwarded.

Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address.

Alex. Eger, 34 East Van Buren St., Chicago, Ill., Veterinary Publisher and dealer in Veterinary Instruments, Books, and Drugs, is the authorized agent for the REVIEW *in Chicago and the Middle West, and will receive subscriptions and advertisements at publishers' rates.*

THE "Combination Veterinary Dental and Surgical Halter," illustrated and described on page 1 (ad. dept.), is also an entirely new departure in veterinary equipment that has met the warm approval of all those that have seen it.

THE old-established firm of Jacob J. Teufel & Bro., whose advertisement appears on page 16 (ad. dept.), manufacture a line of veterinary instruments so uniformly good, that it will be noticed they do not specialize any in particular; but their "combination horse and mare catheter" is so good an instrument that we would not be doing our readers justice if we did not mention it.

THE ZENNER DISINFECTANT COMPANY very kindly offer to their professional friends their very handsome little 1902 calendar. The picture represents a very fine setter dog. It is gotten up in six colors, is beautifully printed, and with all a very attractive and neat calendar, which they will be very glad to send postpaid to any reader of the AMERICAN VETERINARY REVIEW who addresses them at 24 Bates St., Detroit, Mich.

THIS MONTH the advertisement department displays upon its "bulletins" some new things of especial interest to our readers, and the "old standards" display their worth by their constance. Among the "new things," Eimer & Amend (whose ad. constitutes one of the old "landmarks" of the REVIEW), have placed at the disposal of the veterinary profession a veterinary glycerin suppository, which promises to be a great aid in the treatment of acute bowel troubles in producing a rapid evacuation of their contents.

REVIEWS WANTED.

The publishers will pay 25 cents each for copies of the April, 1901, issue. Address, Robert W. Ellis, D. V. S., Bus. Mgr., 509 W. 152d Street, New York.

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